# SUPPLY - DEMAND ANALYSIS OF PROFESSIONAL AGRICULTURAL HUMAN RESOURCE IN KARNATAKA

**SHRUTI S. KABBUR**

**DEPARTMENT OF AGRICULTURAL ECONOMICS**
**COLLEGE OF AGRICULTURE, VIJAYAPUR**
**UNIVERSITY OF AGRICULTURAL SCIENCES**
**DHARWAD – 580 005**

**JUNE, 2017**

# SUPPLY - DEMAND ANALYSIS OF PROFESSIONAL AGRICULTURAL HUMAN RESOURCE IN KARNATAKA

*Thesis submitted to the*
*University of Agricultural Sciences, Dharwad*
*in partial fulfillment of the requirements for the*
*Degree of*

**Master of Science (Agriculture)**

***In***

**AGRICULTURAL ECONOMICS**

*By*

**SHRUTI S. KABBUR**

**DEPARTMENT OF AGRICULTURAL ECONOMICS**
**COLLEGE OF AGRICULTURE, VIJAYAPUR**
**UNIVERSITY OF AGRICULTURAL SCIENCES**
**DHARWAD – 580 005**

**JUNE, 2017**

**DEPARTMENT OF AGRICULTURAL ECONOMICS**

**COLLEGE OF AGRICULTURE, VIJAYAPUR**

**UNIVERSITY OF AGRICULTURAL SCIENCES, DHARWAD**

# CERTIFICATE

This is to certify that the thesis entitled "**SUPPLY - DEMAND ANALYSIS OF PROFESSIONAL AGRICULTURAL HUMAN RESOURCE IN KARNATAKA**" submitted by **SHRUTI S. KABBUR,** for the degree of **MASTER OF SCIENCE (AGRICULTURE)** in **AGRICULTURAL ECONOMICS**, to the University of Agricultural Sciences, Dharwad is a record of research work done by her during the period of her study in this university under my guidance and supervision and the thesis has not previously formed the basis for the award of any degree, diploma, associateship, fellowship or other similar titles.

**VIJAYAPUR**
**JUNE, 2017**

**(V. R. KIRESUR)**
**MAJOR ADVISOR**

**Approved by:**

**Chairman:** _____
**(V. R. KIRESUR)**

**Members**

**1.** _____
**(M. Y. TEGGI)**

**2.** _____
**(S. B. KALAGHATAGI)**

# *ACKNOWLEDGEMENT*

I feel that happiness lies in pursuit as much as in reaching the goal and today I stand with kernel of my Endeavour, while pursuing my work, I am always getting the help and grace of god.

I cannot but consider myself luck to have worked under the guidance of knowledge hungry, excellence pursuing, ever helpful personality and everlasting patience **Dr.V.R.KIRESUR,** Professor and Head, Department of Agricultural Economics, College of Agriculture, Vijayapur and Chairman of my Advisory Committee. He is a source of inspiration to me throughout the period of investigation. I am grateful to him for his guidance, constant fomenting, punctilious and impeccable advice. Above all his affectionate way of dealing with the thing throughout the period of my investigation, this helped to me consummate the research work and with a grand success. I take this opportunity to express my heartfelt gratitude towards him. I had really a great pleasure and privilege to be associated with him during this research work.

I avail this opportunity to express my deep sense of reverence and gratitude to **Dr.M.Y.TEGGI**, Associate Professor, Department of Agricultural Economics, College of Agriculture, Vijayapur, and **Dr.S.B.KALAGHATAGI** Professor and Head Department of Agronomy, College of Agriculture, Vijayapur. and the esteemed members of my advisory committee, for their sound, fruitful advice and constant encouragement throughout the period of investigation.

I extend my sincere thanks to all the teaching staff of Department of Agricultural Economics, College of Agriculture, Vijayapur, University of Agricultural Sciences, Dharwad, for their valuable suggestions and timely help during my research period.

My thanks are to the technical staff members of Project Planning and Monitoring Cell, University of Agricultural Sciences, Dharwad, staff members of Academic unit, College of Agriculture, Dharwad, and also to the staff members of University Library.

On my personal note, it is an immense pleasure to express my sincere gratitude and heartfelt respect to the blessings of my grandparents Sri. Tippanna G. Bannigidad, Smt. Girija T.B. And parents Smt. Channamma S. Kabbur, Smt. Mahadevi T. Bannigidad, Sri. T. B. Patil, Sri Mahesh T. B, Smt. Tejashwini M.B, Sri. Umesh T.B, Smt. Shilpa U. B. and my dear budding stars Pratik, Krutika, Krishang and Ujjwal for their boundless love, needy inspiration,

unshakable confidence with me, without whose affection I would not have come up to this level.

I have been highly fortunate having many friends in whose company I never felt the burden of my studies; their helping hands were evident at several stages of tension, anxiety and achievements. I lack in words to express my heartfelt thanks to my seniors Vijayalakshmi, Thejeswini, Rangegowda, Adithya, Dr. M. B. Boranayak, Mallappa, Dr. Vinod Nayak, Dr. Praveen Kumar, Sujatha, Chaitra, Sunil, Kadam, Bhavya, Yasmin, Gunabhagya, Jamaal, Roshan, Sunita, Nagaraj, Murali, Anil, and Siddeshwar, and Madhu, Suma, Devaraj, Anjali, Shubha, Harshitha, Harsha, Shruti, Chudayya, Prathibha, Anitha, Sourabh. I cannot forget to thank my juniors who have helped me all the way for my research work and also my seniors.

I also thank my other friends Vaishnavi, Arun, Bhargavi, Vaani, Aruna, Radha, Soumya, Pallavi, Chinnavva, Kirana, Niranjan, Buddha, Manjunath, Prabhavathi, Ningamma, Sushma, Nalina, Shewtha, Vijayalaxmi, Rubi, Surabhi, Prema, Sukanya, Veena, Shrija, Megha, Chitra, Kaarthik, Subramanya, Maulali, Mukanna, and Akshtha for their helping hands and encouraging words during the entire graduate programme. My well wishers, my grandparents, my uncles and aunts, brothers and sisters for their prayers and loads of affection.

I share my sincere thanks and inspirations to all those seen and unseen hand and minds.

Finally I thank GOD for bestowing me with divine spirit, essential strength and necessary succour to find my way towards a glorious career amidst several hurdles and struggles.

……. any omission in this brief acknowledgement doesn’t mean lack of gratitude.

**VIJAYAPUR**

**(JUNE, 2017)** **(SHRUTI S. KABBUR)**

# CONTENTS

# LIST OF ABBREVIATIONS

| SN | Abbreviation | Long Form |
|---|---|---|
| 1 | ARS | Agricultural Research Service |
| 2 | B.Sc. | Bachelor of Science |
| 3 | B.Tech | Bachelor of Technology |
| 4 | CAGR | Compound Annual Growth Rate |
| 5 | GKVK | Gandhi Krishi Vignana Kendra |
| 6 | HRD | Human Resource Development |
| 7 | IAMR | Institute of Applied Manpower Research |
| 8 | IARI | Indian Agriculture Research Institute |
| 9 | IAS | Indian Administrative Service |
| 10 | ICAR | Indian Council of Agricultural Research |
| 11 | IES | Indian Economic Service |
| 12 | IFS | Indian Foreign Service |
| 13 | M.Sc. | Master of Science |
| 14 | NAARM | National Academy of Agricultural Research Management |
| 15 | NABARD | National Bank for Agriculture and Rural Development |
| 16 | NAREES | National Agricultural Research, Education and Extension System |
| 17 | NGO’s | Non-governmental Organizations |
| 18 | OGPA | Overall Grade Point Average |
| 19 | PG | Post Graduate |
| 20 | Ph.D. | Doctorate of Philosophy |
| 21 | RAWE | Rural Agricultural Work Experience |
| 22 | SAU’s | State Agricultural Universities |
| 23 | SSLC | Secondary School Leaving Certificate |
| 24 | UASB | University of Agricultural Sciences, Bengaluru |
| 25 | UG | Under Graduate |

# LIST OF TABLES

# LIST OF FIGURES

# LIST OF APPENDICES

# 1. INTRODUCTION

Agricultural sector has an important position in Indian economy as it is crucial to the nation's food security apart from providing livelihood to about 58 per cent of working population of the country. India accounts for 7.68 per cent of total global agricultural output. Contribution of agriculture sector in Indian economy is much higher than world's average (6.1 %). India is a global agricultural powerhouse. It is the world's largest producer of milk, pulse, and spices, and has the world's largest cattle herd (buffaloes), as well as the largest area under wheat, rice and cotton. It is the second largest producer of rice, wheat, cotton, sugarcane, farmed fish, sheep and goat meat, fruits, vegetables and beverages (tea).

Indian Agriculture is in a way, a victim of its own past success-especially the green revolution, shows the dark reality of the agriculture sector at present and the havoc that has been wreaked by the green revolution. Agricultural Research, Education and Extension (AGREE) received limited attention during pre-independence period and greater attention during post-independence period, which helped in ushering the famous 'Green Revolution', turning the country from a state of acute food shortage to that of a food surplus state. It is considered to be the greatest achievement of mankind since the advent of agriculture.

The green revolution, which was often characterised by the introduction of high-yielding variety of seeds and fertilisers, undoubtedly increased the productivity of land considerably. But the growth in the productivity has been stagnant in recent years, resulting in a significant decline in the income of farmers. There have also been negative environmental effects in the form of depleting water table, emission of greenhouse gases, and the contamination of surface and ground water. Needless to say, the agriculture sector is in a state of distress, which is severely affecting peasants and marginal farmers and urgent policy interventions are required to protect their interests. Over the past fifty years, agricultural product has kept pace with the demand and has resulted in sizeable surpluses not only to ensure a measure of food security at domestic but also to meet periodic foreign demand, thus becoming a valuable export-earner in the process. This was made significantly by the contributions of the agriculture education system in the country (IAMR, 2011).

Some important features that have an impact on and are of grave concern to Indian agriculture today are the problems of small and marginal farmers, low productivity, issues relating to transfer of technology against the background of almost collapse of public

extension services, regional disparities in modernization of agriculture, constraints on land availability, depleting groundwater and deterioration of soil health, changing patterns of monsoon, climate change, commercialization of agriculture, movement of labour force away from agriculture, feminization of agriculture, post-harvest losses, policies of globalization and liberalisation and so on. Considerable efforts are needed to evolve alternative strategies to cope with the scenario outlined above including intensive problem-oriented research, transfer of solutions to the masses and skill development as well as adequate skill up-gradation. Hence, there is a need for assessment of needs, development and utilization of human resources at various levels.

## 1.1 Professional human resource in Indian agriculture

Human resources are the people who form the workforce of an organization, a sector of activity or an economy. "Human capital" is sometimes used synonymously with "human resources", although human capital generally refers to a narrower view. Human resources are critical to the growth of knowledge and technology, adding value and improving competitiveness in an economy through continuous improvement. In fact, the human resource is the only valuable resource that has the motivation and capacity to increase its value if appropriate conditions are provided, while all other resources - machinery, construction, materials, etc. - depreciate in value over time. The best companies consider their people as their main asset and the source of their competitive advantage (Nanda *et al*., 2005).

The quantity and quality of trained technical and professional human resources in agriculture are critical factors both in agricultural development (such as the self-sufficiency of food grain production and targeted growth) and more general human resource development. The sectors are to be served by manpower with higher skills and ensure that the technology generation, its transfer to and more importantly its application is based on the grass roots. This "human capital" is relatively scarce, because the training takes years and is costly. Manpower with diverse skills required by a wide and fast-growing food processing industry, private industries, NGOs, administration, academics, government, financial institutions and other unorganized sectors are now needed (ICAR, 2012).

Professional graduates coming out of the agricultural education system in the country constitute the supply whereas the demand stems from various employment avenues. However, investing in technical and professional education has a high multiplier effect when trained personnel are properly employed as extension agents, trainers, researchers, program makers,

policy makers and other private sectors. Employment demand depends on the growth of these sectors, the attrition rate and the growth of the existing stock. The actual employment depends on the technical and soft skills possessed by the graduates. If the skills held do not match the employer's expectations, a part of the total graduated population may remain unemployed (Nanda *et al*., 2005).

Professional human resource forecasting is a critical element in the process of human resource planning, both at the micro and macro levels. The forecasts of technical manpower demand and supply not only provide insight into the right quantity and quality of the human capital required to maintain the desired growth of a sector but also help in planning educational curricula commensurate with the requirements of the employment market needs. Human resources demand and supply can be viewed in terms of both flows as well as stocks. When considered in terms of flows, these terms imply net additional demand and supply during some period, say a year. In terms of stocks, they imply the total quantum of human resources deployed and the total stock of economically-active human resources available at a particular point of time (Agrawal *et al*., 2013).

Enhancing the quality of human resources is a prerequisite for implementing and upgrading research programmes, developing technologies, and developing institutional mechanisms to tackle the challenges and exploit opportunities. Maintaining global standards and increasing competitiveness are equally important to the development of agribusiness and technology. Vertical integration of agricultural education is the key to improving the quality of human resources. Efforts will be made to develop the state-of-the-art infrastructure and increase the competence of lecturers to improve higher education in agriculture and related disciplines. The existing base of talented human resources and infrastructure will be used to evolve a globally competitive innovative agricultural university by including all ICAR institutes. In developing countries, there is a strong desire to combine the skills needed with the skills available and to make efforts in the development of human resources, resulting in optimal utilization and minimization of losses.

There is a huge demand for professional agricultural graduates with knowledge, skills, abilities and entrepreneurial qualities. Skill gaps lead to reduced employment opportunities which exacerbate existing unemployment problems, increase unemployment, leading students to choose these courses, thus affecting the supply of professional agricultural human resources. If employers are to get trained agricultural professionals to master state-of-the-art

international competitiveness, technology, industrial and university partnerships are vital (Hegde, 2005).

Education in agriculture must meet the twin needs. One must meet the requirements of industries employing trained agricultural staff, and second, it must take into account the needs of farmers and other workers at the grass root level in the sector. Agricultural education and training must play an essential role for a large number of stakeholders. A reassessment of the current system would be necessary given the new challenges we are facing.

The national agricultural research, education and extension system (NAREES), played a key role in this remarkable development. However, the challenges ahead are enormous. NAREES has to play a much greater role to keep pace with the ever growing demand for food, in the backdrop of emerging challenges in the changing world. This requires imaging possibilities for NAREES to develop human resource equipped to find practical solutions to the emerging challenges of Indian agriculture (Varma, 2014).

Agricultural education programs in colleges and universities have expanded their attention beyond the preparation of teachers to encompass more diverse educational opportunities designed to meet the needs of a wider base of students. The cradle of success, besides government policies and the great receptivity of the agricultural community, was the establishment of institutions of higher agricultural education. A degree in agriculture gives the knowledge and skills needed to manage agricultural activities or work in the fields of agricultural sales, food production and agricultural journalism. The professional human resources developed by these institutions have contributed not only to the generation of new technologies, but also to their evaluation, refinement and dissemination to the agricultural community.

In the public system, agricultural research and education activities are coordinated by the ICAR at the national level and state agricultural universities (SAUs) at the state level. The establishment of SAUs in a similar fashion to that of United States Land Grant Colleges made a landmark in reorganization and strengthening of the agricultural education system. Although the central government supports agricultural development activities, the share of state governments outweighs that of the centre, with agriculture being a subject of the state. The SAUs receive funds from the governments of the respective states, the ICAR, the central government and other bodies in that order (ICAR, 2012).

## 1.2 Evolution of higher agricultural education

India has had a very rich heritage of higher education. There was no specialized Department of agriculture in British India until 1870 when a proposal was made to create a Department of Agriculture and Commerce. The first agricultural college was established at Saidapet (1877). It was only at the beginning of the 20$^{th}$ century that research and formal education in agriculture on a larger scale were carried out with the creation of the Imperial Institute of Agricultural Research (IARI) at Pusa (Bihar State) in 1905, followed by the creation of colleges in Kanpur, Nagpur, Lyallpur and Coimbatore in 1906, Pune in 1907 and Sabour in 1908 (ICAR, 2012).

The aim was to meet the needs of agriculture at the national level. The Indian Council for Agricultural Research (ICAR) was set up in 1929. A strong demand for skilled human resource in agriculture leads to two years' studies of the Diploma Associateship of IARI from 1923 to 1957. M Sc. (Agri.) and Ph.D. Programs were launched in agricultural education in 1930. The associatedship of IARI was recognized as equivalent to M.Sc. degree of Indian universities by the Ministry of Education in 1949. Right from its inception, ICAR supports its affiliated institutions in improving quality, relevance and access to higher agricultural education. The IARI Associates have become the backbone of the National Agricultural Research System (NARS). The Institute changed its present location to New Delhi in 1936 and was renamed the Indian Agricultural Research Institute (IARI) in 1947. The first State Agricultural University (SAU) was established in 1960 in Pantnagar (Uttar Pradesh). Soon, new state agricultural universities were established in Bhubaneshwar (1962) and Ludhiana (1962), Hyderabad (1964), Jabalpur (1964), Bangalore (1965) and others (ICAR, 2012).

However, India is also changing and so should the agricultural education. New India does not want to be trapped in the past. Today, we need the ability to assimilate, adapt, apply and develop new technology, as well as skill. Today we need high-quality agricultural graduates with problem solving and creative skills, ability to think and improve the productivity of the agricultural sector. Apart from technology and generic skills, our graduates need leadership and entrepreneurial skills, lead the team, practice innovation and respond to the competitive environment. ICAR Vision 2030 also emphasized the need to strengthen and rationalize the higher agricultural education system to enhance the quality of talent in the agricultural supply chain to address future challenges through cutting edge science and technology.

## 1.3 University of Agricultural Sciences (UAS), Bengaluru – The study domain

With the growing drive given by Government of India for the agricultural sector, many agricultural universities were established throughout the country. Mysore State Government through its Act No.22 adopted in 1963 provided the establishment of the University of Agricultural Sciences (UAS). UAS was inaugurated on August 21, 1964 by Vice President of India Zakir Hussain, in the presence of Chester Bowles, United States Ambassador to India and S.Nijalingappa, Chief Minister of Karnataka with operational jurisdiction across the state of Karnataka. Kullal Chickappu Naik was the university's first Vice Chancellor. Since its inception, the university has excelled both in academic and non-academic activities. With the following goals, UAS Bengaluru is serving the agricultural community: (1) To make agricultural education responsive to the growing and changing needs of the society in general and aspirations of the farming community in particular; (2) To establish a dynamic system of agricultural education to train highly skilled and competent manpower to address the challenging tasks with new emerging areas of research, extension and industry.

University of Agricultural Sciences, Bengaluru offers eight undergraduate degree programmes in the faculty of agriculture. These programmes are of 4 years duration, have been spread over five colleges of the university. The Master's degree programmes are offered in 27 courses in the faculty of Agriculture, Horticulture, Sericulture, Agricultural Marketing and Cooperation, Agricultural Engineering and others. Doctoral programmes were offered in 15 disciplines in the main campus of the university. The details of the undergraduate courses offered in four campuses are as shown in Table 1.1.

The University of Agricultural Sciences, Bengaluru currently has administrative headquarters at the Gandhi Krishi Vignana Kendra (GKVK) on the Bengaluru-Hyderabad Highway, and has Agriculture Colleges at Bengaluru (at GKVK), Mandya and Hassan, Sericulture College at Chintamani and College of Basic Science and Humanities, Bengaluru (GKVK). In 2001 and 2012, the university was recognised as the best agricultural university in India by the Indian Council of Agricultural Research for which it was conferred the "Sardar Patel Outstanding ICAR Institution Award" for excellence in teaching, research and extension. In 2008, UAS was ranked third among state agriculture universities.

**Table 1.1 Under-graduate courses offered by UAS, Bengaluru**

| Campus | College | Degree offered | Year of start |
|---|---|---|---|
| Bengaluru (GKVK) | College of Agriculture | B.Sc. (Agri.)<br>B.Sc .(Ag.MaCo.)<br>B.Tech. (Ag.Engg.) | 1965<br>1976<br>1996 |
| Mandya | College of Agriculture | B.Sc. (Agri.) | 1991 |
| Hassan | College of Agriculture | B.Sc. (Agri.)<br>B.Sc. (Agri-Bio-Tech.)<br>B.Tech.(Food Sci.) | 2007-08<br>2007-08<br>2007-08 |
| Chintamani | College of Sericulture<br>College of Agriculture | B.Sc. (Seri.)<br>B.Sc. (Agri.) | 1995<br>2007 |

Source: www.uasbanglore.edu.in

## 1.4 Rationale

Trained human resources are needed in different sectors of agriculture for targeted growth. The sectors should be served by staff with higher knowledge than before to ensure technology generation, transfer to and even more important application at grass root level. Further, professional agricultural resources with versatile skills are today required by a comprehensive and fast expanding food industry, companies and unorganized sector. In this context, the forecast of future requirements for agricultural resources assumes a significant role in identifying trends and visualizing emerging technologies and corresponding needs for appropriate staff mix. The assessment of human resources, sectoral search and capacity utilization of qualified candidates is indispensable to predict future agricultural needs.

A large number of institutions in agriculture and allied sectors contribute to research in the development of high yield varieties of crops, technological innovations and other initiatives to enhance production and development of human resources. The National Commission on Farmers also raised the issue of knowledge deficits, which directly impinges on agricultural productivity. There are significant gaps in the backward and forward linkages, relationship between agricultural laboratories and farmers, as regards communication of technology.

The educated youth would play a leading role in agricultural development, but the rural environment with medium of education does not like agriculture to be attractive. They barely choose agriculture as a profession. Most people try to get a job and migrate to rural towns. Youth especially in educated agricultural areas can be a resource for changing the shape of agriculture. But the situation is completely different. There are a number of reasons that distract young people to shy away from farming. They believe that the results are low, while significant efforts must be made in agriculture. Secondly, they consider that work on agricultural land is under dignity. Thirdly, highly educated professionals consider that work on farms is not intellectually satisfactory because it does not involve creativity and expression. The status of youth advancements must be determined and serious thought is needed to make agriculture attractive in the agricultural and non-agricultural sectors.

While agricultural education generally keeps up with scientific advances in the past, the pace of change is faster today. The level of scientific progress in the areas of biotechnology, computers and communication allows shorter integration times. In the global economy, food processing, storage and marketing is increasingly important to agriculture

producers, and thus agricultural education. There is a need for institutions to develop ways to keep in touch with the employment market and changing agricultural education curricula accordingly. It was felt that, perhaps, institutions should establish permanent mechanisms for observation of the market in the form of new courses, but acknowledged that institutional inflexibility and lack of resources would often do this difficult to achieve.

## 1.5 Scope of the study

The present investigation provides estimates of the number of professional agricultural human resources available currently as well as in the next decade. The study also estimates the demand for such graduates in different sectors of employment (such as the government, private businesses, financial institutions, etc.) and also the supply-demand gap. Further, the quality of graduates supplied by the University and the quality/skills required by the employers is also assessed for skill-gap analysis and thus, to provide solutions to bridge this gap. The study also tries to link the socio-economic and academic profile of students and career preferences. Finally, the study aims to provide useful recommendations to the policy makers to make agricultural education more effective.

Keeping all these aspects in view, the present study entitled “Supply – Demand Analysis of Professional Agricultural Human Resource in Karnataka” with the following specific objectives.

## 1.6 Objectives of the investigation

1. To estimate the growth in the supply of and demand for agricultural graduates, postgraduates and doctorates in the study area, and gaps therein;

2. To assess the quality of agricultural graduates, postgraduates and doctorates produced by UAS, Bengaluru versus requirements of employers in terms of extent and diversity of skills required;

3. To analyze the relationship between profile characteristics, choices of courses and career preferences of agricultural graduates, post graduates and doctorates; and

4. To identify the areas/issues which need immediate attention of the policy makers and other stake holders and suggest strategies to make agriculture education more effective.

## 1.7 Hypotheses

1. There is a significant positive growth in the supply of and demand for agricultural graduates, postgraduates and doctorates in the study area.

2. The quality of agricultural graduates, postgraduates and doctorates produced by UAS, Bengaluru in study area is good and they have acquired diversity of skills.

3. The choice of courses and career preferences of agricultural students mainly depend on their profile characteristics.

4. There are several issues at student level, faculty level, and administrative level which need immediate attention of the policy makers to make agricultural education more effective.

## 1.8 Limitations of the study

As it is true of any scientific investigation, being an academic study conducted by a single investigator, this study had the limitation of time, resources and other facilities. Despite all the constraints, efforts were made by the researcher to keep the study as objective as possible by deliberately following all norms of scientific research, well structured schedule and objective measurement.

## 1.9 Presentation of thesis

The entire study is presented in six chapters. Chapter-1 introduces the topic covering nature and importance of the present study, specific objectives, set hypotheses and limitations of the study. Second chapter presents a comprehensive review of relevant research work done on the related topics by different scientists. Methodology adopted in the study is presented in Chapter-3, which outlines the features of the study area, sampling procedure followed, relevant data and analytical tools used in the study. Chapter-4 presents the significant findings of the study through tables and graphs. Chapter-5 provides a meaningful interpretation and discussion of the results of the study, presented in the previous chapter. Next chapter (Chapter-6) gives an account of the entire research work and suggests suitable policy implications that emerge from the study. The thesis ends with the list of references cited in the text, followed by appendices.

**Table 1.1 Under-graduate courses offered by UAS, Bengaluru**

| Campus | College | Degree offered | Year of start |
|---|---|---|---|
| Bengaluru (GKVK) | College of Agriculture | B.Sc. (Agri.)<br>B.Sc .(Ag.MaCo.)<br>B.Tech. (Ag.Engg.) | 1965<br>1976<br>1996 |
| Mandya | College of Agriculture | B.Sc. (Agri.) | 1991 |
| Hassan | College of Agriculture | B.Sc. (Agri.)<br>B.Sc. (Agri-Bio-Tech.)<br>B.Tech.(Food Sci.) | 2007-08<br>2007-08<br>2007-08 |
| Chintamani | College of Sericulture<br>College of Agriculture | B.Sc. (Seri.)<br>B.Sc. (Agri.) | 1995<br>2007 |

Source: www.uasbanglore.edu.in

# 2. REVIEW OF LITERATURE

Review of literature helps the researcher in understanding the research problem and also to learn from previous theory on the subject. Illustrate how the subject has been studied previously, highlight flaws in previous research, outline gaps in previous research, and identify the relationship between concepts and areas for further consideration. It gives a theoretical basis to the research and helps the researcher to determine the nature of research. According to the objectives of the study, the literature reviewed is presented under the following headings:

1. Growth in supply of and demand for agricultural graduates, postgraduates and doctorates, and gaps therein

2. Quality of agricultural graduates, postgraduates and doctorates produced by UAS, Bengaluru versus requirements of employers

3. Relationship between profile characteristics, choice of courses and career preferences of agricultural graduates, postgraduates and doctorates

4. Areas/issues which need immediate attention of the policy makers/other stake holders and strategies to make agriculture education more effective

## 2.1 Growth in supply of and demand for agricultural graduates, postgraduates and doctorates, and gaps therein

Nanda *et al.* (2005) examined a system dynamics model developed for dynamic analysis of human resource for the agricultural sector. The study shows supply and demand scenario of trained agricultural human resource for a period of 2001 to 2020. Results indicated that the annual supply-demand gap declined from 27.1 per cent in 2001 to a minimum of 5.93 per cent in 2019 and thereafter registers a slow growth to 6.1 per cent in 2020. During 2018 to 2020 annual intake of students by agricultural universities would go up by about 14 per cent, whereas the out turn will increase by 20 per cent. Correspondingly, the dropout rate reduces from 26 to 22 per cent. This was because of increased interest in the courses due to improved employment opportunity.

Ashokrao (2006) in his study on “Manpower planning in agriculture for Vidarbha region of Maharashtra”, observes that the total demand for agricultural graduates was estimated at 4839 graduates during the year 1981-2005 out of which government department demand was the highest (1776), accounting for 36.70 per cent of the total demand, followed by corporate (28.68%), faculty (16.43%), banking (11.16%) and NGO’s (7.03%). The demand increased during the study period due to establishment of new colleges, offices, etc.

IAMR (2011), in their abridged report on “Assessment of future human capital requirements in agriculture and allies sectors”, showed that currently there were substantial gaps between demand and supply of manpower. Shortfall was high in case of rapidly growing horticulture, dairy and fisheries sectors and less in others. The study recommended 2 to 3 times increase in undergraduate intake and strengthening research as a precursor to expand in post graduate /Ph.D. programmes in the existing colleges.

Ramarao *et al.* (2011) investigating rural female students in agricultural education, found that the demand for higher education in agriculture was partly due to better job opportunities and partly due to lack of urban based jobs. The skills and knowledge imparted by the SAUs and other institutions was, apparently, neither adequately relevant to changing job market nor was directly useful to create self-employment and led to mismatch in employment sectors. The intake of women students in undergraduate courses was 24.8 per cent in 1991-92, practically same in 2004-05 (26.4 per cent) but increased in case of PG and Ph.D. courses.

Balagopal *et al.* (2012) made a study to develop an integrated demand-supply model to forecast the requirements of technical manpower in the Indian agriculture sector. The study shows that demand for degree holders in agriculture in India would exceed the supply during the forecasting period 2010 to 2030 and demand-supply gap exists. Also study indicates that, there were more employment opportunities in the future for graduates from agriculture sector.

Pratley (2012) conducted a study on agricultural professionals and presented that the number of agricultural graduates supplied from Australian universities declined significantly whereas more than 4,000 jobs per year were advertised annually with a sizeable job market. The supply was less than 20 per cent of the job force needed to meet the market demand. To take advantage of the opportunities created by food security, the study suggests to make the prospective students aware that careers in agriculture were at least as interesting, rewarding and challenging as in most other industries.

Agrawal *et al.* (2013) forecasted human resource in agricultural sector. The study shows that in 2010, the existing system of education produced nearly 24,000 agricultural graduates in various disciplines of agriculture with two-third contribution from crop science. In 2020, the required outturn of graduates would be 54,000, indicating a demand-supply gap of 30,000 in agriculture and allied sectors. The study made use of mixed methodology to forecast the future scenarios based on planned growth, investment and other desirable documentations.

Sasidhar and Reddy (2013) in a study on veterinary manpower in India revealed that, India was training fewer veterinary graduates and more postgraduates than the system required. The study suggests that attention and resources be directed to the expansion of education system to fill the supply-demand gap, while postgraduate education should be contained and consolidated.

Ramarao *et al.* (2014) made a study on "Agri-manpower forecasting and educational planning" wherein **s**upply was assessed by the graduates coming out of agricultural education. Demand across subsectors was evaluated using a combination of quantitative and qualitative forecasting tools. Based on workforce gaps and extensive interactions with stakeholders, manpower needs were becoming educational requirements. The gap in supply and demand for agricultural professionals would accumulate to around 200,000 by 2020, which would require an additional annual supply per 10,000 graduate and graduate degrees. The study makes three main recommendations: first, to increase the supply of graduates and steam-staff to respond to emerging demand; secondly, agricultural education must meet the changing professional structure; thirdly, the responsibility for meeting agricultural education was to be shared with the private sector.

Varma (2014) stressed that there was an urgent need to provide hands-on experience on the ground to our graduates. This could be best achieved by providing the internship program for about one year during graduation. The internship could take the form of seizure of private companies and/or allow time to practice agriculture in the villages. He also suggested that, at the postgraduate level, an international exposure of four to six months would provide valuable experience in a high-tech laboratory and develops long-term interactions through the internship and international exposure, help students develop maturity, leadership skills to lead change and build capacity to meet emerging challenges, thereby filling gaps in the demand for professional agricultural graduates.

## 2.2 Quality of agricultural graduates, postgraduates and doctorates produced by UAS, Bengaluru versus requirements of employers

Birkenbolz and Schumacher (1994) while examining leadership skills of agricultural graduates at University of Missouri found that participation in high school and college level activities positively influenced leadership development whereas participation in boys/girls scouts was negatively related. The study also recommended encouraging students to participate in activities of clubs and organizations. The demand for future agricultural graduates was great, who were able to guide and direct the industry effectively in future.

Marrison (1994) analysed the effect of learning style of students on their academic performance. It was found that, learning style had no significant effect on achievement of agricultural graduates. The study recommended that teachers who utilized the technology should strive to identify learning contexts in which computer multimedia applications produce superior academic achievement and positive perceptions for both the type of learners.

Acker (1999) in a study on "Improving the quality of higher education in agriculture globally in the 21$^{st}$ century: constraints and opportunities", opined that mutual improvement of the education system should be the aim of global cooperation. The study concluded that professional agricultural graduates need to think strategically about how to prepare human resource required for feeding the world's population and protection of environment. Improvements in the quality of higher agricultural education worldwide will depend on variety of interrelated changes. Some changes will require efforts at the individual institution while others will require global cooperation. Higher education in agriculture suffers from myopic views of its role in the global change processes in which it could exercise considerably greater leadership. But this shortcoming is curable.

Cartmell and Garton (2004) investigated on agricultural education program's ability to prepare students for careers in teaching and industry positions. The study shows that, approximately 95 per cent of the graduates were gainfully employed and continuing their education part-time or full-time. Majority of them were teaching agriculture at the secondary level and one fourth of the graduates were employed in industry positions in the areas of sales. The employable skills needed by teachers of agriculture did not differ from those skills needed by graduates with careers in agriculture. Food and fibre industry also indicated that graduates were satisfied with the overall quality of the agricultural education program. In their study effective verbal communication skill was the highest rated employability skill.

Shelton *et al.* (2006) examined perceptions of Masters of Science graduates regarding agricultural and natural resource program quality in Cal Poly State University, England. The study shows that, due to M.Sc. work nearly 63 per cent of respondent's technical skills were enhanced greatly. Alumni felt that a significant percentage of graduates' writing skills were improved due to thesis writing program. Majority of the graduates opined that their leadership skills were enhanced as a result of their creative project work. Nearly 52 per cent M.Sc. alumni responded that their decision making skills were substantially improved.

Bridgstock (2009) in a study on "Graduates' attributes overlooked: enhancing graduate employability through career management skills", showed that there was a shift in education and labour market policy which resulted in producing employable graduates. Employability involves generic skills attained by graduates which in turn help them in career building process.

Manathunga *et al.* (2009) conducted a study on "Graduate attribute development and employment outcomes, tracking Ph.D. students", in which they state that the provision of diversified research training was regarded as one of the most significant contributions made by the Australian Cooperative Research Centres (CRC) programme. The participants under study were science based research graduates who were awarded with a Ph.D. The study investigates perceptions about particular skills required by industry settings and acquired in university. Understanding the perceptions and employment experiences was a vital way of ensuring that Ph.D. programmes were more effectively designed so as to prepare research graduates for various career opportunities.

IAMR (2011) summarized that there was a need for entry of private sector colleges to maintain quality in agricultural education. Private colleges already existed in Maharashtra and Tamil Nadu. To expand agricultural education, it was necessary to solve the issues related to course syllabus, effective teaching methods and skill development, and quality of teaching staff. Stake holders also opined that that the continuous decline in the quality of graduating students affected their employability. Unemployment rate of agricultural graduates was as low as 4 to 5 per cent for fresh graduates; 90 per cent of them get employment within 6 months of their graduation.

Gowda *et al.* (2012) conducted a study at the agriculture college, Hassan during the academic year 2009-10. Covering all the degree programmes, *viz.*, B.Sc.(Agri), B.Sc.(Agri. Biotech.) and B.Tech.(Food Science), 180 students were chosen for the study. Findings reveal

that joining agriculture and its related program were beneficial to the students, with 50 per cent of students agreeing for this statement. Three-quarters of the students agreed that practical exercises, village visits and study tours were conducted to enable students to get closer to real life. About 50 per cent of students had a positive attitude towards teachers because college teachers kept students informed of updated knowledge on the subject. More than 69 per cent of students felt comfortable in understanding the courses. Nearly 42 per cent agreed that the hostel environment was favourable for their training at the College of Agriculture, Hassan.

Sanyang *et al.* (2013) made a study on "Employment and performance of agricultural graduates" in Republic of Congo, Ghana and the Gambia. They examined employment sector over 10 years of time period and found that majority of the agricultural graduates were employed by public sector (94 % in Mali, 84 % Gambia and 55 % Ghana) followed by NGOs (4 % in Mali, 7 % Gambia and 14 % Ghana), agri-business sector (1-2 % in Mali, 7 % Gambia and 12 % Ghana) and 4 per cent in farmers organization. Employers of public sector in all countries were trained theoretically and remain weak in applying knowledge to practical situations. Public sector employers focused largely on academic qualification of agricultural graduate employees, whereas, NGOs and agri-business in all four countries preferred graduates with analytical and practical skills in innovation system.

Preeti (2015) conducted a study on "Economics of agriculture education in Karnataka: a case study of UAS Dharwad". The results showed that 47.02 per cent respondents had knowledge about basics of computer, followed by typing (29.46 %), out of which a majority of the students (22.25 %) learnt basics of computer and typing (13.47 %) during their B.Sc. programme, on the other side, 25.68 per cent of respondents had acquired stage confidence and power point presentation skills, followed by eye contact (24.70 %) and about 12.13 per cent of respondents acquired stage confidence and power point presentation skills (14.04 %). Among leadership skills 53.13 per cent of respondents were well verse with team management skills, 21.42 per cent of respondents learnt management skills in B.Sc. level. Majority of the students (25.92 %) were well verse with English grammar skills, followed by English speaking (25.75 %), English vocabulary (24.75 %), writing English literature (23.58 %). All the students learnt regarding grammatical skills in B.Sc.

## 2.3 Relationship between profile characteristics, choice of courses and career preferences

McGhee and Cheek (1990) examined the assessment of preparation and career patterns of agricultural graduates. Purpose of the study was to identify demographic and professional characteristics and career patterns of agricultural graduates from the University of Florida. Graduates perceived the adequacy of the coursework as above average to good in the areas of pre-professional studies, technical agricultural and agricultural education and perceived quality of advisement and teaching by the faculty to be of very high quality. The suggested that the data relative to career patterns and program perception should be collected annually and formal analysis of these data conducted every three to five years.

Esters and Bowen (2004) made a study to determine the extent to which career exploration process behaviours influenced the level of career certainty of agricultural students' with population size of 312 students. The study shows that the relationships among career certainty and environmental exploration, self-exploration, intended systematic exploration, amount of information and focus for freshmen ranged from negligible negative to substantial positive. It ranged from low to substantial positive for seniors; for freshmen, there was significant low positive relationship.

Adedokun and Balschweid (2008) investigates the links between community contexts/factors and rural 11$^{th}$ grade agriculture science students, choice career in agriculture. A logistic regression model was developed and tested to examine the extent to which measures of community contexts influence the odds of a student choosing a career in agriculture. The results show that the major community factors influencing the choice of agriculture related career are membership in 4-H club, preference for living close to natural environment, opportunity to achieve dream career in rural community and participation in volunteer activities within the community.

Robinson and Garton (2008) investigated on employability skills needed by the graduates at University of Missouri. The purposes of this descriptive study were to assess graduates' perception of the importance and competence levels of performing identified transferable skills in the workplace and used the Borich (1980) needs assessment model to identify the skills most in need to enhance the curriculum. The findings revealed that solving problems, working independently, and functioning well in stressful situations were perceived by graduates as being most important to their job, and identifying political implications of the

decisions to be made was the least important. In terms of competence, graduates perceived themselves to be most competent at working independently, relating well with supervisors, and working well with fellow employees and least competent at identifying political implications of the decisions to be made.

Rahim and Nataraju (2011) conducted a study on occupational aspirations of students studying in different colleges of the University of Agricultural Sciences, Bangalore in 2009. 120 sample respondents of B.Sc.(Agri) final year students were given prescribed schedule. The study revealed that, majority of the students preferred to secure administrative (position) job in government department, Department of Agriculture and academic position in agricultural university as top priority followed by job in cooperative societies and nationalized banks and least preferred to enter the politics, sales and business occupation.

Adebo and Sekumade (2013) conducted a study aiming at identification of factors determining the choice of agricultural professional career among 160 students of the faculty of agriculture sciences in Ekiti State University, Nigeria. The study found that most of the respondents perceived agriculture as a stepping stone to other professions, while access to financial resources, fear of crop/livestock failure, unpredictable future and psychological problems were some of the barriers. The study recommended early simulation of student's interest in agriculture, award of scholarship to agricultural students and provision of grants to graduates who desire to embark an enterprises and practical experiences towards commercial agriculture.

Jeevankumar (2013) made a study on the Agricultural Experiential Learning Programme (AELP) at Agricultural College, Bapatla. Detailed analysis of profile characteristics of students indicated that majority of students belonged to urban background followed by rural and semi urban background, respectively, and parental occupation was service, followed by agriculture, business, agriculture and agricultural labourer, agriculture and business, service and business. Many of the students parental income was low followed by medium income and high income, respectively. Majority of the students had medium scientific orientation, management orientation, decision making ability, self-confidence, achievement motivation and marketing orientation.

Pathak and Rahman (2013) made a study to examine the career preferences of under graduate students in relation to their sex, rural urban inhabitation and level of media exposure. Career preferences in areas, namely, law and order, education, artistic and designing, mass

media and journalism, commerce and management, science and technology, defence, tourism and hospitality management, agriculture and medicine was administered. The study revealed existence of significant difference between male and female as well as between rural and urban exposure and some areas of career preferences of undergraduate students. The result, in this way would go a long way to help parents, teachers, government, counsellors and media personnel to use their human and material resources in planning and implementing policies to direct students in the path most suitable to them.

A study conducted on aspiration of agriculture students towards agriculture enterprise at Palli Siksha Bhavana Institute of Agriculture, Visva Bharati in West Bengal, by Dhakre (2014) reveals that 73.8 per cent students joined Agriculture College for getting job and 2.5 per cent students for enterprise. It was further reported that 69 per cent were assisting their families in fodder cutting and 49 per cent revealed they were busy pre-cultivation, 43 per cent were found actively involved in spraying and supervision, etc. It was also observed that aspiration of the students towards agriculture enterprise was positively and significantly associated with father's education, father's occupation, family size and aim of joining.

Preeti (2015) conducted a study on "Economics of agriculture education in Karnataka: a case study of UAS Dharwad". The study revealed that majority of the respondents and their parents had higher preferences for service sector (93 %) less preference was given to farming (3 %) and business (4 %). B.Sc., M.Sc. and Ph.D. respondents joined agricultural degree programme based on their own motivation, as evidenced from 69.23 per cent, 76 per cent, and 80 per cent of the respondents, respectively, followed by father and family member and least motivated by relatives.

## 2.4 Areas/issues which need immediate attention of the policy makers/ other stake holders and strategies to make agriculture education more effective

Ramarao *et al.* (1997) made an investigation on "Planning agricultural education in India". It is an attempt to report the growth and status of agricultural education in India. Issues relating to educational policy to achieve supply-demand adjustments are subsequently discussed. Three main recommendations emerged from this study and they are: (1) the number of diploma holders at the lower end of the professional ladder needs to be increased to cater for the social demand for more trained and readily available manpower to help clientele to enhance the level of awareness concerning technological developments in agriculture; (2)

the number of specializations at postgraduate level needs to be decreased and agricultural education needs to be broader based in commensuration with occupational demands; this would allow skilled and qualified manpower to be directed into areas of employment where they are needed most; (3) the participation of the private sector in the institutionalization of agricultural education may offer healthy competition to state supported agricultural universities and inculcate better entrepreneurship. Finally, recommendations pertaining to the job preferences of graduates and remedies to certain internal inconsistencies such as inbreeding in the system are also made.

Croom (2003) conducted a study on “Teacher burnout agricultural education”. The study investigated the teachers’ experience, personal accomplishment, emotional exhaustion, depersonalization in relationship with students, colleagues and others. Burnout is manifested in various ways such as work overload, lack of community among the teachers in school, fairness in working assignments and control over ones work environment. The study shows that the age of the agricultural teacher and the years of teaching experience are related to depersonalization scores, but not to emotional exhaustion and personal accomplishment. scores on the Maslach Burnout Inventory.

DAFF (2005) examined agricultural education and training (AET) in Africa. The study was commissioned to identify and analyze the factors hindering access to AET. Because of these women, youth and disabled were affected. The study recommended Adult Basic Education and Training (ABET) classes should become an avenue for delivering agricultural information and providing skills.

Murray *et al.* (2011) investigated the agricultural teachers’ struggle for balance between career and family. Research shows that agricultural education graduates were hesitant to enter the profession and seemingly quick to leave, often citing long hours of working as a main contributing factor. Difficulty faced by both male and female teachers was in balancing the career and the family. To overcome the shortage of teaching faculty, the study recommends placing new teachers or teachers with young families with an experienced mentor, also providing time management workshops as a part of teacher in service. Pressure to perform for state and regional expectations leads agricultural teachers to feel over burdened.

Bunch *et al.* (2012) reported that, as age and years of teaching experience increased, levels of self-efficacy and outcome expectations decreased. Younger and less experienced

teachers were more efficacious and had higher expectations regarding the use of interactive whiteboards (IWBs). The study also revealed that teachers had an interest in learning about other educational technologies, and recommends professional development opportunities should be created for teachers to learn how to use IWBs effectively to engage students better. The two teacher groups “digital native” and “digital immigrants” needed to have workshops or in service sessions.

Gill *et al*. (2012) made a study on “Exploration of graduate student satisfaction with advising in departments of agricultural education, leadership, communications, and extension” with the purpose of determining the satisfaction of graduate students in the department of agricultural education, leadership, communications, and extension with their advisors in terms of communication, trust, openness, acceptance, and growth. The findings revealed that overall agricultural education graduate students (N=274) were satisfied with their advisor. Agricultural education graduate advisors are knowledgeable in the areas of (a) research, (b) university and departmental policies and procedures, (c) funding opportunities, and (d) available coursework. Agricultural education advisors, who were student-oriented, cared about their advisees’ well–being, both academically and personally.

Gowda *et al.* (2012) made a study on “Attitude of agricultural students towards agricultural education and their perceived organizational climate” in Agriculture College Hassan. The study revealed that 69 per cent of the students were comfortable in understanding the courses. About 42 per cent agreed that hostel environment was conducive for their study at Agriculture College, Hassan. Some of the technical problems of the students were needed to be addressed by the college administration and faculty by arranging subject specific teacher training programmes, periodical review of curriculum and providing adequate number of teachers to the College.

Kitchel *et al*. (2012) conducted a study for understanding job satisfaction, stress and burnout within agricultural education. The purpose of the study was to determine if relationships existed between social comparison and job satisfaction and for burnout among secondary agricultural teachers representing 6 states. Findings indicated that engaged teachers were satisfied with their jobs and tended to engage most frequently in upward assimilative comparisons, leading to inspiration emotional outcomes. According to the Maslach Burnout Inventory for education, teachers experienced low levels of burnout related to personal accomplishment, depersonalization and moderate levels needed to emotional exhaustion.

Makwana (2013) in a study on “Agricultural education in India: challenges and prospects”, described the status of agricultural education in India, highlighting the challenges and suggesting strategies to overcome them. Report also says that concerted efforts would be required to transform Indian agricultural education system to make it more sensitive and responsive to the need of stakeholders. The study concluded that with aggressive but sensible political will and commitment of all stakeholders, system would achieve excellence.

Jonaki and Prasenjit (2015) in their study on “Higher education in India”, tried to trace higher education from long past, status and recent trend in Indian higher education system. They briefly discussed on fields of education, enrolment pattern, teacher availability and constitutional provision on higher education, disparity access to higher education, governance practice, quality control mechanism and trend in finance. Recent introduction of liberalization, privatization, and globalization (LPG) was an avenue to revive the system and, on the other hand, globalization might help to improve the quality of education; it could also affect the indigenous development of educational sector. A domestic regulatory mechanism should be put into place to avoid negative impact of it.

Preeti (2015) investigated agricultural education in University of Agricultural Sciences, Dharwad and reported that, majority of the student respondents were fully satisfied with the academic, library, co-curricular and campus facilities provided by the university. Results also show that teachers were very punctual in taking class and thereby they could finish syllabus within time. Teacher respondents were fully satisfied with students’ attendance and behaviour in classroom. Conduct of examination, evaluation and marks announcement were within time and accounted for higher share of students’ appreciation.

# 3. METHODOLOGY

This chapter focuses on the research design of the study including the brief description of the study area, selection of the sample, sampling methods, the statistical techniques used in the study for data analysis and various concepts used in the present study. The details are presented under the following sub headings.

1. Description of the study area
2. Selection of the study area and sampling procedure
3. Nature and source of data
4. Analytical tools employed
5. Definition of important concept and terms used in the study

## 3.1 Description of the study area

The present study was undertaken in Karnataka, one of the peninsular states of India. The University of Agricultural Sciences, Bengaluru is located in the Bengaluru Urban district of Karnataka state of India. Karnataka is the seventh largest state in India with a geographical area covering of 5.83 per cent of total geographical area of India and eighth largest state by population. It is situated between $11^0\ 5^{'}$ and $18^0\ 45^{'}$ North Latitude and between $74^0\ 12^{'}$ and $78^0\ 40^{'}$ East Longitude in the Southern plateau. The state receives the average rainfall of about 1139 mm both for southwest and northeast monsoons. The temperature ranges from $14^0$ C to $40^0$ C. The important crops grown in the state are sorghum, paddy, ragi, maize and wheat among cereals and pigeon pea, chickpea, green gram, black gram, among pulses, while groundnut, sunflower and safflower are major ones among oilseed crops. The crops namely cotton, chilli, sugarcane and tobacco are important ones among commercial crops, mango, sapota and banana among fruit crops and coconut, arecanut and coffee among plantation crops.

Karnataka has a literacy rate of 75.60 per cent, with 82.85 per cent of males and 68.13 per cent of females in the state being literate. The state is home to some of the premier educational and research institutions of India such as the Indian Institute of Science (CV Raman Rd, Devasandra Layout, Bengaluru), the Indian Institute of Management

(Bannerghatta, Bengaluru), the Indian Institute of Technology (PB Road, Dharwad) and the National Institute of Mental Health and Neurosciences (Wilson garden, Bengaluru), the National Institute of Technology (Surathkal, Mangaluru) and the National Law School of India University (Nagarbhavi, Bengaluru). Currently, 481 degree colleges affiliated with one of the universities in the state, viz. Bangalore University, Gulbarga University, Karnataka University, Kuvempu University, Mangalore University and Mysore University. In 1998, the engineering colleges in the state were brought under the newly formed Visvesvaraya Technological University headquartered at Belgaum, whereas the medical colleges are run under the jurisdiction of the Rajiv Gandhi University of Health Sciences (Jayanagar, Bengaluru). Some of these baccalaureate colleges are accredited with the status of a deemed university. There are 186 engineering, 39 medical and 41 dental colleges in the state. In 2015 the Central Government decided to establish the first Indian Institute of Technology (IIT) in Karnataka at Dharwad.

### 3.1.1 Location of the study area

Bengaluru lies in the southeast of the South Indian state of Karnataka. It is in the heart of the Mysore Plateau (a region of the larger Precambrian Deccan Plateau) at an average elevation of 900 m (2,953 ft). It is located at 12.97°N 77.56°E and covers an area of 741 $km^2$ (286 sq m). The majority of the city of Bengaluru lies in the Bengaluru Urban district of Karnataka and the surrounding rural areas are a part of the Bengaluru Rural district. Bengaluru district borders with Kolar and Chikkaballapur in the northeast, Tumkur in the northwest, Mandya and Ramanagaram in the southeast and Mysore Due to its high elevation, Bengaluru usually enjoys a more moderate climate throughout the year. With an estimated population of 8.5 million in 2011, Bengaluru is the fifth most populous city in India and the $18^{th}$ most populous city in the world. Bengaluru was the fastest-growing Indian metropolis. The Bengaluru metropolitan area, referred to as the Garden City of India has an abundance of fauna and flora. The city has two nationally renowned botanical gardens — Cubbon Park and Lal Bagh.

The district is endowed with agricultural and horticultural crops such as ragi, rice, groundnut, sugarcane, castor, grapes, mulberry, etc. There are adequate infrastructural facilities such as transport and communications, banking, credit, and marketing. Though the region is not rich in mineral resources, its non-metallic mineral resources are utilised for bricks, tiles, and stoneware manufacture. For many years, weaving has also been a major

occupation for a large section of the population. The soil and such climatic conditions are congenial for the cultivation of mulberry, rearing of silkworms, and production of silk, besides other agro-based industries. There are a number of wineries and quantity of production of wine has been increasing.

### 3.1.2 Education in Bengaluru

Bengaluru is sometimes referred to as the "Silicon Valley of India" (or "IT capital of India") because of its role as the nation's leading information technology (IT) exporter. Indian technological organisations ISRO, Infosys, Wipro and HAL are headquartered in the city. A demographically diverse city, Bengaluru is the second fastest-growing major metropolis in India. It is home to many educational and research institutions in India, such as, R.V. College of Engineering, PES University, BMS College of Engineering, M. S. Ramaiah Institute of Technology and Bengaluru Institute of Technology. Nationally renowned professional institutes such as, University of Agricultural Sciences, Bengaluru (UASB), National Institute of Animal Nutrition and Physiology (NIANP), National Institute of Design (NID), National Institute of Fashion Technology (NIFT), National Law School of India University (NLSIU), Indian Institute of Management, Bengaluru (IIM-B), Indian Statistical Institute and International Institute of Information Technology, Bengaluru (IIIT-B), Indian Institute of Science (IISc), Indian Institute of Management (Bengaluru) (IIMB) , National Institute of Fashion Technology, National Law School of India University (NLSIU), National Centre for Biological Sciences (NCBS), Jawaharlal Nehru Centre for Advanced Scientific Research (JNCASR), Raman Research Institute are the premier institutes for scientific research and study in India.

The city is also home to the premier mental health institution in India National Institute of Mental Health and Neuro Sciences (NIMHANS). Bengaluru also has some of the best medical colleges in the country, like St. John's Medical College (SJMC) and Bengaluru Medical College and Research Institute (BMCRI). The M. P. Birla Institute of Fundamental Research has a branch located in Bengaluru. Numerous state-owned aerospace and defence organisations, such as Bharat Electronics, Hindustan Aeronautics and National Aerospace Laboratories are located in the city. The city also houses the Kannada film industry.

#### *3.1.2.1 University of Agricultural Sciences, Bengaluru*

With the growing impetus given by the Government of India for the agricultural sector, many agricultural universities were established throughout the country. The UAS came into existence on October 1, 1965 with the transfer of Colleges of Agriculture at Hebbal (Bengaluru) and Dharwad. In 1986, the erstwhile, UAS, Bengaluru was bifurcated into two universities by establishing one more Agricultural University at Dharwad. Presently UAS, Bengaluru has jurisdiction over ten southern Districts of Karnataka. Research of the University is carried out in two Zonal and nine Agricultural Research Stations located in four agro-climatic zones covering nine southern districts of the State. All the research stations undertake lead, testing and verification functions, as prescribed by ICAR. Zonal research stations of UAS Bengaluru are at Arasikere, Tiptur and Pavagada (Central Dry Zone), Balajigapade, Chintamani, Hebbal and Gandhi Krishi Vignana Kendra (GKVK) (Eastern Dry Zone), Madenur, mandya and Nagenahalli (Southern Dry Zone) and Gunjevu (Sothern Transition Zone).

The University offers 8 under graduate programmes in the faculty of Agriculture. These programmes have been spread over at seven different campuses of the university. The master's degree programmes are offered in 26 disciplines in the faculty of Agriculture, Horticulture, Sericulture, Agricultural Marketing and Cooperation, Agricultural Engineering and Doctoral programmes in 14 disciplines. The UAS Bengaluru currently has administrative headquarter at the Gandhi Krishi Vignana Kendra (GKVK) on the Bengaluru Hyderabad Highway with the following colleges: College of Agriculture, Bengaluru (GKVK), College of Agriculture, Mandya, College of Agriculture, Hassan, College of Sericulture, Chintamani, College of Basic Science and Humanities, Bengaluru (GKVK).

## 3.2 Sampling procedure

The selection of the study area and the sampling procedure adopted is described below.

### 3.2.1 Selection of study area

The University of Agricultural Sciences, Bengaluru was purposively selected for the study to analyse the supply of and demand for professional agricultural human resources in Karnataka owing to the considerations of cost, time, and convenience of the researcher. All

the five teaching campuses are included in the study along with alumni who graduated from the university between 2001- 2010 in various disciplines.

### 3.2.2 Sampling procedure

To achieve the objectives of study, purposive sampling, stratified proportionate random sampling and snow ball sampling techniques were adopted. From the selected University, a sample of 345 respondents including 214 students, 80 teachers, 50 alumni and one Registrar were chosen. The sample students and teachers were selected using stratified proportionate random sampling method. The alumni were chosen by snowball sampling technique, while the Registrar of UASB was selected purposively. The sample of students includes students studying in the final semester of bachelor, master and doctoral degrees across different faculties (agriculture, agricultural marketing and cooperation, home science, etc.), while the sample of teachers comprises of Assistant Professors, Associate Professors and Professors across different disciplines. Sample of alumni comprises of employed graduates in different sectors such as, government (including both central and state governments), private industries (both input and output industries), financial institutions, academic and administration, non-governmental organizations and self-employed. Thus in all, 345 respondents form the sample for the study.

## 3.3 Nature and sources of data

Both primary and secondary data were collected for the study. The data pertaining to the enrolment, admissions, passed-out, placements of graduates have been collected from University Registrar's office and ICAR website. The data required for estimation of demand for agricultural graduates was obtained from the Institute of Applied Manpower Research (IAMR) reports.

The primary data was collected with the help of well structured, pre-tested and comprehensive schedules specifically designed for the Register of the selected agricultural university, alumni, teachers and students (Appendices-1 to 4). The schedules were prepared after discussing with various specialists. The survey was conducted during 2016-17. The data pertained to general profile characteristics of the respondents, achievement, motivation to join the degree programme, curricular and extra-curricular activities conducted by university, mass media exposure and career preferences of students, time and resource requirement of each teacher, employer requirements in terms of skills, etc. Requirement and availability of

physical resources required for teaching/research, viz., books in library, vehicles for field visits, practical exposure to real life situations, computing, printing, internet and photocopying facilities, research and field laboratories, etc. were also included. Qualitative primary data pertaining to problems faced by students, teachers and administrators and certain critical issues requiring immediate attention of the University policy makers, administrators, teachers and students were also included.

## 3.4 Analytical tools employed

To achieve the objectives of the study, appropriate analytical techniques were employed.

3.4.1 Compound annual growth rate

3.4.2 Descriptive analysis

3.4.3 Garrett Scoring Method

### 3.4.1 Compound annual growth rate

To estimate the growth in the intake and out-turn of the graduates, postgraduates and doctorates form the selected University, compound annual growth rate was used.

### 3.4.2 Descriptive analysis

The descriptive analysis was done to study the general characteristics of sample respondents, to document the quantity and quality of agricultural graduates, post-graduates doctorates and alumni emerging from the university in terms of extent and diversity knowledge acquired. These were documented using sums, averages and percentages. The descriptive analysis was also done to assess the time investment by teachers in the university and to estimate their HRD and physical resource requirements in discharging their duties.

Weighted Average Score (WAS) was calculated for assessing the satisfaction/ perception level of the students and teachers. Opinions from students and teachers were sought on a 5-point scale, for example, on a particular parameter, the respondent was asked as to whether he/she was “Fully Satisfied”, “Somewhat Satisfied”, “Neither Satisfied nor Dissatisfied”, “Somewhat Dissatisfied” and “Fully Dissatisfied”. Later the frequency distribution of the responses were obtained, multiplied by suitable weights (5, 4, 3, 2 and 1,

respectively) and average taken to get the Weighted Average Score (WAS) of the entire sample respondents. In other case, the responses were grouped into “Excellent”, “Very Good”, “Good”, “Moderate” and “Poor”, while in some other case, the groups were “Strongly Agree”, “Agree”, “Neither Agree nor Disagree”, “Disagree” and “Strongly Disagree”.

### 3.4.3 Garrett’s ranking technique

This technique is useful for quantifying interval scaled data. The data pertaining to issues and constraints were ranked using Garrett scores. This helps in identifying the most important factors influencing particular choice process. As per this method, respondents were asked to assign the ranks for all the listed factors and outcome of such ranking has been converted in to score values with the help of the following formula:

Percentage position = $100\ (R_{ij}-0.5) / N_j$

Where,

$R_{ij}$ = rank given for the $i^{th}$ factor by the $j^{th}$ respondent

$N_{ij}$ = number of factors ranked by the $j^{th}$ respondent

By referring the Garrett’s table, the percentage position estimated is converted in to scores. Then for each factor the scores of each individual are added and then mean value is computed for each factor; the highest mean value got first rank, the second highest mean value got second rank, and so on.

Forecast of the supply of and demand for agricultural graduates for the period from 2016-17 to 2029-30 was done using Linear Trend with the help of Ordinary Least Squares Method.

### 3.4.5 Definition of important concepts and terms used in the study

**Intake:** It is the total number of seats that the university would offer for the students to get enrolled in a particular year.

**Out-turn:** The total number of students graduating from the university in a particular year.

**Supply-Demand Gap:** The difference between the supply of and demand for agricultural graduates in a particular year, that is, demand minus supply.

**Forecast:** Estimate of future supply and demand of graduates by considering the growth in the supply of and demand for graduates in the past decade.

**Alumni:** Students of a particular university who have graduated from the university. In this case, it is University of Agricultural Sciences, Bengaluru (UASB).

**Profile characteristics:** Characteristics of the person that account for consistent patterns of feelings, thinking, and behaving developing system in the society which influence his or her interactions with, and adaptations to, the intra-psychic, physical, and social environments. These characteristics include gender, religion, caste, education and occupation of parents, household income, family type (nuclear/joint), place of residence, native place, etc.

**Career preferences:** It is the preference / choice of the student about the next level of action in his professional career. It involves the process of deciding the career in which the students want themselves to be engaged with.

**Source of motivation:** The sources from which the students have got motivation/ guidance to pursue their higher education in agriculture and allied studies, such as self, father, mother, sibling, relative, friend, teacher, etc.

# 4. RESULTS

In this chapter, the data collected from different sources were analysed and presented. The findings of the study are presented as per the set objectives, under the following headings.

1. Growth in supply of and demand for agricultural graduates, postgraduates and doctorates, and gaps therein;

2. Quality of agricultural graduates, postgraduates and doctorates produced by UAS, Bengaluru versus requirements of employers;

3. Relationship between profile characteristics, choice of courses and career preferences of agricultural graduates, postgraduates and doctorates; and

4. Areas/issues which need immediate attention of the policy makers/other stake holders and strategies to make agriculture education more effective.

## 4.1 Growth in supply of and demand for agricultural graduates, postgraduates and doctorates, and gaps therein

### 4.1.1 College wise intake of students at bachelor, master and doctoral levels as on 2017-18 (constituent and affiliated colleges)

Table 4.1 presents college-wise intake of students by University of Agricultural Sciences, Bengaluru (UASB). UASB offers 8 under-graduate, 27 postgraduate and 15 doctoral degree programmes. Out of total 695 students 427 students belong to UG, 192 were from PG and 76 from Ph.D. degree. 427 students were distributed among 5 colleges and 4 different campuses such as College of Agriculture, Bengaluru (166) followed by College of Agriculture, Hassan (81), College of Agriculture, Mandya (80), College of Agriculture, (70) and College of Sericulture, Chintamani (30). Master's degree programmes were conducted in GKVK, campus (172) and Mandya Agriculture College (20). Doctorate degree programmes were carried out only in main campus.

### 4.1.2 Discipline-wise and college wise intake of students for PG and PhD courses (constituent and affiliated colleges)

Table 4.2 shows different disciplines in which PG and doctoral degree programmes had been conducted by the university and their intake in respective faculties. Five PG programmes (faculties such as, Genetics and Plant Breeding, Agronomy, Soil Science and Agricultural Chemistry, Agricultural Entomology and Plant Pathology) were offered with intake capacity of four students in College of agriculture Mandya. Presently, 27 master's programmes carried out in various disciplines with intake capacity ranging between six to ten students and for Ph.D. programmes intake capacity ranges between four to six students. The highest intake in case of PG courses was seen in Agricultural Microbiology (6.40 %) followed by Genetics and Plant Breeding, Agronomy, Soil Science and Agricultural Chemistry, Agricultural Entomology, Plant Pathology, Agricultural Economics, Agricultural Extension, Agricultural Statistics and horticulture with intake capacity of ten students. Intake was limited to only two seats in case of Apiculture and Plant Biochemistry. 7.46 per cent of Ph.D. students' intake was there in faculties like Genetics and Plant Breeding, Agronomy, Soil Science and Agricultural Chemistry, Agricultural Entomology, Plant Pathology, Agricultural Economics, Agricultural Extension and Crop Physiology whereas Sericulture was seen with minimum intake (3.13 %).

### 4.1.3 Year-wise and gender-wise intake of students at different degree levels and their compound annual growth rate (CAGR)

Degree-wise, year-wise and gender-wise intake of students in UAS, Bengaluru, presented in Table 4.3, reveals that there was a positive growth in the intake of graduates at all the three degree levels (5.36 % on an average). Highest growth in the annual intake was observed in the case of bachelor degree (7.34 %, significant at 5 per cent probability level) followed by doctorates (3.29 %) and master's graduates (1.70 %) during the study period. However, the intake of male students at master's level had shown a negative growth (-1.00 %, significant at 10 per cent level) while in the case of male graduates at doctoral level, 0.75 per cent growth rate was observed, but of course, non-significant.

Gender-wise speaking, the growth rate of intake was relatively higher in the case of female students than male students. It was highest at bachelor level (10.36 %), followed by doctoral level (8.35 %) and master level (6.33 %). These growth rates were statistically found significant at 5 %, 1 % and 1 % levels, respectively.

Further, the period 2007-08 to 2010-11 witnessed maximum growth in the intake of students at all the degree levels (from 817 to 1,345 students). For the last six years (2010-11 to 2015-16) intake was observed to be decreasing (from 1,345 to 1,027 students).

### 4.1.4 Year-wise and gender-wise out-turn of students at different degree levels and their compound annual growth rate (CAGR)

There was a positive growth in the outturn of the graduates from the University (3.36 %, significant at 1 % level) (Table 4.4). This was true at all the three degree levels, with the highest being observed in case of doctoral degree graduates (5.19 %), followed by bachelor graduates (4.21 %) and master's graduates (1.38 %).

In terms of gender, at master's level, the outturn of male graduates has shown a negative growth (-1.65 %, but non-significant). Compared to male graduates, the outturn of female graduates was relatively higher at all degree levels; the highest being at doctoral level (15.79 %), followed by bachelor's and master's levels (11.75 % and 8.12 %, respectively). The out-turn of graduates from the university was 705 in 2005-06, which was on the declining trend till 2010-11 (656 graduates). However, the trend got reversed from the year 2011-12, wherein it touched 922 in 2015-16.

### 4.1.5 Forecast of out-turn of graduates at different degree levels up to 2029-30

The forecasts for the supply of agricultural graduates at various degree levels for the period from 2016-17 to 2029-30, done using linear trend with the help of the Ordinary Least Squares Method (Table 4.5) revealed that as many as 951 graduates would be supplied at the end of the year 2019-20, 1075 for the year 2024-25 and 1198 for 2029-30. Over the years the cumulative supply of students from the university will be 16,292 in total during the period from 2016-17 to 2029-30. In terms of different degree levels, it was 10,827 at bachelor's level, followed by masters and doctorates (4,005 and 1,456). Compared to the male graduates more cumulative supply could be seen in the case of female graduates at both bachelor's and master's level (6,578 and 2,123 respectively), while in the case of doctoral level, the corresponding figure was 762.

### 4.1.6 Supply-demand gap of agricultural graduates up to 2029-30

The supply-demand gap (as measured by excess of demand over supply) was estimated for all the degree levels during the entire study period from 2005-06 to 2029-30

(Table-4). In the year 2005-06, the gap of graduates was (-)562, meaning thereby that there were 562 graduates, who were in excess of demand, that is, potentially unemployed. This gap increased to (-)744 in 2015-16, (-)863 in 2024-25 and (-)969 in 2029-30. Currently (2016-17), the supply-demand gap in the case of bachelors was (-)429, followed by master's and doctoral levels (-202 and -63 respectively). The corresponding figures for 2029-30 are (-)652, (-)216 and (-)101.

The supply demand gap was increasing at an increasing rate over the years from 2005-06 to 2029-30 except in some of the years, wherein the gap was comparatively low (-444 for the year 2006-07, -427 for the year 2008-09 and -694 for the year 2016-17).

## 4.2 Quality of agricultural graduates, postgraduates and doctorates produced by UAS, Bengaluru versus requirements of employers

### 4.2.1 Students' behavioural attributes during graduation

Sample teacher respondents were satisfied with the student's behavioural attributes both in classroom and outside activities. Table 4.7 presents that teacher respondents were fully satisfied with student's attendance in the class and behaviour in examination hall, given by Weighted Average Score (WAS) (4.81 and 4.65 respectively) followed by, submission of practical records and assignments (WAS=4.56 each). Whereas sample teachers mentioned that they were somewhat satisfied with behaviour of students in the class, co-curricular activities and merit-wise quality of the students was given by WAS (4.45 4.39 and 4.38 respectively). Also respondents were somewhat satisfied with cordial relationship between students and teachers (WAS=4.41) followed by quality of presentation given in UG courses and PG seminars (WAS=4.13 and WAS=4.15 respectively) and to be improved. Students language level and their participation in extension activities were of great matter of concern as per sample respondents since they have somewhat satisfied with their behaviour was given by WAS (3.85 and 4.18 respectively).

### 4.2.2 Quality/employability skill parameters of respondents

Sincerity, punctuality, commitment, confidence, decision making capacity and leadership skills are some of the student quality/employability skill parameters were given by respondent teachers and sample students. Table 4.8 shows scores given by both student and teachers; scores at the beginning and during graduation were given by teachers and at the end of graduation were given by students. Sample teachers stated that students have good quality

attributes such as, sincere at their work (WAS=3.80), following the rules of the University (WAS=3.79), get along with co-students and teachers given by WAS (3.61 and 3.68 respectively), punctual and hardworking (WAS=3.70 and WAS=3.56 respectively). Students have moderate employment qualities like followed by committed to work (WAS=3.50), organized in their work (WAS=3.29), good at time management (WAS=3.34), innovative (WAS=3.19), confident in oral presentations and writing skills given by WAS (3.25 and 3.24 respectively), well informed about the subject matter and current affairs (3.49 and 3.24 respectively), have moderate skills like good presence of mind (WAS=3.44), followed by decision making skills and stage courage (WAS=3.28 and WAS=3.31 respectively).

At the end of their graduation students felt that they were very good at taking risks to achieve goals (WAS=4.03), following the rules of the institution (WAS=3.94), relationship with co-students (WAS=3.92), followed by commitment, punctuality, sincerity towards work, decision making skills, alertness and relationship with teachers shown by WAS (3.87, 3.64, 3.60, 3.74, 3.58 and 3.58 respectively). Student respondents felt that they are moderate at acquiring skills like time management (WAS=3.40), innovativeness, and students are moderately updated with current affairs (WAS=3.34 and WAS=3.13 respectively). Good reading skills can improve the knowledge of students and their thinking style.

Some of the quality / employability skills acquired by the students programme were improved due to during their degree such as ready to take risk to achieve goals, decision making skills (18.53 % and 14.02 % respectively). Sincerity, punctuality, knowledge about the subjects as well as current affairs yet to be improved since these skills were showing negative scores (-5.26, -1.62, -2.29 and -3.40 respectively).

### 4.2.3 Improvement in students' quality attributes due to degree programme

Soft skills like computer literacy, presentation skills (includes both oral and written), and leadership skills are necessary for a student to present the knowledge known to them. Student respondents felt that due to their present degree programme there is an improvement in the skills acquired (Table 4.9). It shows sample students had good written presentation skills (WAS=3.71), followed by improvement in oral presentation skills, leadership skills and computer skills which were given by WAS (3.66, 3.59 and 3.49 respectively).

### 4.2.4 Important selection criteria for recruitment of the graduates

Most important selection criteria for recruiting the graduates, listed with the help of employability skills is given by Table 4.10. In the view of teacher respondents academic qualification stands first rank with Garrett Score (GS) 70.18 followed by interpersonal and communication skills, knowledge of industry, drive/commitment/attitude and work experience, ($2^{nd}$, $3^{rd}$ and $4^{th}$ rank respectively). Among the employability skills team work and leadership skill stands $5^{th}$ and $6^{th}$ rank (GS=53.39 and GS=51.51 respectively) followed by emotional intelligence, intra and extracurricular activities ($8^{th}$ and $9^{th}$ respectively). Cultural alignment/values Fit stands at $10^{th}$ position (GS=28.54) in selection criteria for recruitment which needs more attention of policy makers to have graduates suitable for employer requirements.

### 4.2.5 Expectations of the students from their respective universities

Expectations of the students from their respective universities were furnished in Table-4.11. It reveals that majority of the students (41.32 %) of all the degree levels expect campus placement from their respective universities, followed by coaching for competitive examinations (29.20 %). However, about 18.46 per cent of the students expect help in start-up/business incubation. Furthermore, about 10 per cent of the respondents expect help to mobilize credit/finance from their respective universities. Among the students of various degrees, the expectation for campus placement from the university was high among the Master's degree students (44 %), followed by doctoral degree students (40 %) and bachelor's (39.77 %). Next to campus placement, most of the student respondents in both bachelors (31 %) and masters (28 %) degree expect coaching for competitive exams from their respective universities. On the other hand, in case of doctoral degree students, majority of the respondents (26 %) expect help in start-up or business incubation. It should be noted that, expectation of help in mobilizing fund was the least expected criteria by the students of all the degree levels from their respective universities Fig.2.

### 4.2.6 Mode of getting jobs by the sample alumni respondents

Based on the mode of getting job the alumni were distributed as shown in Fig. 3. 64 per cent of the alumni were employed by way of direct interview may be through open advertisement/walk-in-interview, followed by competitive examination and campus interview (21 % and 15 %, respectively).

### 4.2.7 Time taken to acquire first job after graduation by the alumni respondents

Out of the total alumni respondents, 22 (47 %) were employed immediately after the completion of their graduation. Majority of the alumni were acquired job within 3 months of completion of their degree programme. Only in case of Master's and Doctoral students' employment after 4 to 6 months of their graduation can be seen. One respondent each at both M.Sc. and Ph.D. level acquired first job after 16 months of graduation as shown in Table 4.12.

### 4.2.8 Students' willingness to start their own enterprise after graduation

The response of students about starting their own enterprise is displayed in Table 4.13. It is clear from the table that about 48 per cent of the total respondents were willing to start their own enterprise and about 52 per cent were not willing to start their own enterprise. The table further shows that more than 50 per cent of the respondents in bachelors (55.26 %) and master's degree (49.30 %) were not willing to start their own enterprise. On the contrary, about 55.17 per cent of the respondents from doctoral degree were willing to start their own enterprise.

### 4.2.9 Self-employment of graduates by type of unit and period of employment

The distribution of self-employed alumni respondents based on their type of unit and average period of employment is presented in Table 4.14. About 50 per cent of the self-employed alumni were doing farming (includes sericulture, organic farming etc.,), followed by input and output marketing (both 25 %). Alumni respondents were carrying out their self-employment on an average from 5 years.

### 4.2.10 Perception of student respondents about the present course curriculum

The perception of the students about the present course curriculum is listed in Table 4.15. The table shows that student respondents were agreeing that the present course curriculum is matching with the requirements of jobs in both government and self-entrepreneurship was given by WAS (3.98 and 3.85 respectively). Students agree that the present course curriculum has lot of repetition / overlapping (WAS=4.29) followed by including more field visits (WAS=3.79) and there were lot many credit hours in the present curriculum (WAS=3.79). Besides, Respondents neither agreed nor disagreed for the fact that the current course curriculum had covering courses which cover more theory than practical

and also it was focused more on providing information rather than imparting problem solving skills (WAS=3.49 and WAS=3.14).

#### 4.2.11 Requirement of employers in terms of the course curriculum of the universities as felt by the alumni respondents

Out of 50, 23 alumni respondents believed that the present course curriculum is adequate whereas 27 alumni opined that education provided by University was partially adequate / not at all adequate to meet the requirements of employment market there are some additions to the course curriculum to meet the further requirements of various employer categories and are represented in Table 4.16. Some of the additions were as follows, managerial skills (WAS=44), more technical knowledge (WAS=43) and more practical work (WAS=28) stands with first three ranks (for Rank-1). More interaction with industries stands fifth position followed by more advanced theoretical knowledge, information technology and more courses on specific subject was some other requirements from different employer requirements.

## 4.3 Relationship between profile characteristics, choice of courses and career preferences of agricultural graduates, postgraduates and doctorates

### 4.3.1 Profile of sample student respondents

The sample of students, who provided very valuable data for this study, is of the size of 214. General profile picture of ample respondents with respect to various degree levels, gender, hailing area, parents present residence, religion, caste, fathers' and mothers' education and qualification, family type and average family income was given in Table 4.17. Most of the sample respondents belonged to bachelor's degree (53 %), followed by master's degree (33 %) and doctoral degree (14 %). This was because of the sampling technique adopted in the study, i.e., proportionate random sampling technique.

Gender-wise speaking, female participation was to the tune of 38.60 per cent at graduate level, while it was 65 per cent in the case of postgraduate and 38 per cent in case of doctoral levels. Among the respondents, about 58 per cent of the students were hailing from rural area and 42 per cent were from urban area. Among various degree levels, the proportion of students hailing from rural area was highest in Ph.D. (79 %) followed by master's (56 %)

and bachelors' (54.39 %). Around 56 per cent of parents of student samples were belonged to rural area whereas 44 per cent reside in urban area.

Majority of the student respondents were belongs to Hindu religion (91 %) followed by Muslim, Christian and others (7 %, 1 % and 1 % respectively). The data revealed that about 63 per cent of the respondents belong to Other Backward Class, followed by General category (22 %), Scheduled Caste (13 %) and Scheduled Tribes (2 %).

The table further reveals that about 59 per cent of the respondent's fathers do not have their graduate degrees, about 30 per cent of the respondent's fathers were graduates and 10 per cent were post graduates. However the share of students with their fathers holding a Ph.D. or a Post Graduate Diploma was nil. Number of students based on their mother's education, which shows that about 80 per cent of the respondents' mothers not completed their graduation. It should be noted that about 14 per cent of the respondents' mothers possess a graduate degree and 5 per cent holds a post graduate degree. The respondents' mothers' with a post graduate diploma was only about 0.47 per cent. 83 per cent of the respondents belong to nuclear type of family rest of them belong to joint families (17.29 %).

Around 69.63 per cent of the families had an annual income less than 2.0 lakh followed by 20 per cent of the respondent families were having annual income around 2 to 5 Lakh and only 3 per cent of the families have income more than 10 Lakh. More than 62 per cent of the student respondents have family income less than 2 Lakh such as, B.Sc. (74.56 %), M.Sc. (64.79 %) and Ph.D. (62.07 %). Among the degree levels, 7 per cent of the Ph.D. respondents have family income more than 10 Lakh and 17 per cent of them were having family income 5 to 10 Lakh. 26.76 per cent of the M.Sc. respondents had family income 2 to 5 Lakh followed by bachelors (17 %).

### 4.3.2 General Profile of Alumni graduates

To analyse the employment requirements, employing sectors and overall employment pattern among alumni of University of Agricultural Sciences, Bengaluru, those graduated within 2001-2010 information was collected. The present study involves 50 sample respondents who responded to the mailed questionnaires sent to them and provided valuable information to the study.

Table 4.18 represents the general profile characteristics of alumni graduates such as qualification, gender, hailing area, religion, caste, marital status, father's education and

occupation and mother's education and occupation. Among the alumni graduates, 44 per cent were post graduates, followed by doctorates and bachelors (28 % each) were qualified in various streams of agricultural and allied disciplines. About 18 per cent sample alumni were female graduates. Maximum number of graduates belongs to rural area (88 %) Majority of the respondents belongs to Hindu religion (98 %), caste wise more of the sample alumni belongs to General Category (40 %) followed by Other Backward Classes and Scheduled Caste (38 % and 22 % respectively).

About 88 per cent of the alumni were married. Majority of the father's of sample alumni were qualified with Secondary (50 %), Tenth (18 %) and 10 per cent of the respondents father's were completed their twelfth, graduation and post graduation diploma. Farming is the main occupation of father's of majority of alumni graduates (82 %) followed by bank employee (12 %) and 2 per cent of the respondents father's were ex-service man, forest officer and teacher.

Most of the respondent's mother's were passed out of Secondary education followed by tenth and Twelfth (50 %, 26 % and 12 % respectively). Only 8 per cent of them are graduates followed by post graduates (2 %). All respondent's mothers' were housewives (100 %).

### 4.3.3 Selection of course based on choice or chance at UG, PG and Ph.D. level

Selection of courses for bachelor degree, master's degree and doctoral degree along with alumni were shown in Fig. 4. In which 66.82 per cent respondents were selected UG course based on their choice and 33.18 per cent were by chance. It is clear from the data that about 94 per cent of the sample respondents have chosen their post graduate courses by choice and only 6 per cent of them have came into the course by chance. The selection of Ph.D. course by respondents based on their choice, chance or by force. Out of 29 Ph.D. respondents, 96.55 per cent respondents have chosen their Ph.D. course by choice and 3.45 per cent respondents by chance. About 60 per cent alumni selected agricultural and allied sciences degree programme by their choice followed by chance and by force (28 % and 12 % respectively).

### 4.3.4 Reasons for joining degree programme in agricultural/ allied sciences by choice

Reasons behind choosing the degree programme by choice are listed in Table 4.19. 36.17 per cent of graduates taken up degree programme due to more employment

opportunities in the sector followed by interest in the subject and professional degree (30 % and 17 % respectively). 6.38 per cent of the graduates felt that degrees in agricultural and allied sciences are the best degree as compared to qualification and also for competitive examinations (4.26).

### 4.3.5 Opinions about Agriculture / Allied disciplines which have better job opportunities

Table 4.20 depicts that, 74 per cent of the respondents opined that Agriculture discipline has better job opportunities than any other disciplines followed by Horticulture and Veterinary, (16 % and 10 % respectively).

### 4.3.6 Present specialisation of sample student respondents

Table 4.21 shows various disciplines enrolled by sample respondents at different degree levels. Around 85 per cent of student respondents were taken agriculture discipline for their bachelor's degree level followed by Biotechnology (15 %). At post graduate level 84.51 per cent of students had taken M.Sc. Agriculture at various disciplines followed by Agribusiness Management and Biotechnology (10 % and 6 % respectively). Around 29 respondents enrolled to doctoral degree at various disciplines.

### 4.3.7 Specialisation of all the sample respondents at their graduate level

Table 4.22 displays the distribution of number of students at under graduate level among various disciplines such as, Agriculture, Agricultural Engineering, Horticulture, Home Science, Agricultural Biotechnology, Forestry, Agricultural Marketing and Cooperation, etc.

At graduation level, 66.36 per cent of sample students were specialised in field of Agriculture followed by Agricultural Engineering, Agricultural Marketing and Cooperation, Agricultural Biotechnology and Sericulture (7.48 %, 6.54 %, 6.07 % and 5.14 % respectively). Only 2.34 per cent of the student were specialised in Home Science, Food science and Horticulture faculty at their graduation level.

### 4.3.8 Source of motivation for higher studies

The data reveals that the student respondents have taken up the field by their own decisions as well as by the motivation from the external sources such as, opinions of their family members (father, mother, siblings, and relatives), teachers, friends, news

paper/magazines/books, radio and television to get into their higher education with agriculture and allied sciences as a major subject.

It is observed that own decisions as a source of motivation for the selection of course had increased its role at various degree levels, which was 40.43 per cent in case of graduates, 56.39 per cent in case of post graduates, and 61.54 per cent in case of doctoral students. On the other hand, the role played by the father of the respondents in taking up a course had decreased at various degree levels, which was 20.92 per cent in case of bachelor degree, 17.29 per cent in case of Master's degree and 7.69 per cent of doctoral degree. Radio stands as the least motivational source for the students, influencing them a very little to take up the course for their higher studies ( Fig.5).

### 4.3.9 Career preferences of the sample student respondents

Career preferences of the sample student respondents are depicted in the Table 4.23. It should be noted that the rank that has been given in both the cases (parents' and students' wish) is similar for all the career options. Among the listed career preferences, Higher education was the most desired career option which holds the top spot with a score of 12.73 by parents and 12.06 by students, whereas service sector stands first rank for among all other career options for students. Farming is the second least preferred career from parents and has been given third rank from students. Business is second least preference given by students. Social service is the least preferred career option by both students and parents.

### 4.3.10 Career preferences of the sample student respondents within service sector

The preference for various service sector career options is portrayed in Table 4.24. The preferences were given by both sample students and their parents. Service sector ranked second among all other career preferences. Students' wish among the various posts of service sector career in state government stands first position with score 12.01 followed by ICAR (ARS) (score=11.89), Government of India. Besides, Teacher/Scientist in State Agricultural Universities has been given 4th rank, Banking 5th rank and Central Civil Service with 6th rank. Whereas, working in private organizations has been given 8th rank by the student respondents.

ICAR-Agricultural Research Scientist is the most preferred career option from parents for their children with score 12.29 (1$^{st}$ rank) followed by State Government (score=12.25), Government of India (score=12.02), Banking (score=11.85), Teacher/ Scientist in State

Agricultural Universities (score=11.72), Central Civil Service (6th rank), State Civil Service (7th rank) and private organization (8th rank).

### 4.3.11 Employment prospects of alumni respondents by employed sectors (from first job to the latest job)

Around 47.67 per cent of alumni were working in Research and Development sector followed by Financial Institutions, Input industries and Private industries (15 %, 13 % and 9 % respectively). 8 per cent of the alumni respondents were employed in Academic working as Professor followed by Central Government (5.81 %) and very minimum number of sample alumni were employed in State Government (Fig. 6).

### 4.3.12 Employed sectors and nature of employment of alumni respondents (from first job to the latest job)

Alumni respondents were distributed based on employed sectors and nature of employment such as contractual, regular and temporary is depicted in Table 4.26. Around 65.12 per cent of the respondent alumni were working on regular basis followed by contractual and temporary (26.74 % and 8.14 % respectively). Among the Research and development sector 22.09 per cent of the sample alumni were working based on contract followed by regular basis (17.44 %) and temporary (8.14 %). All the respondents working in financial institutions (15.12 %), academic (8.14 %), Central and State Government (5.81 % and 1.16 % respectively) were on regular basis.

### 4.3.13 Career preferences of the sample student respondents at different degree levels

Career preferences of the sample respondents at different degree levels were given in Table 4.27. Results shows that 40.83 per cent of the student respondents want to take up higher education, followed by social service (16.67 %), service sector (15 %) and business (14.17 %). Farming is the least preferred among all other career preferences (11.67 %) (Fig. 7).

Around 33.33 per cent of the bachelor's choose higher education as the most preferred career preference which was around 50 per cent in case of master's and doctoral students (48.89 % and 50 % respectively). Service sector was the highest preferred career among the bachelor degree students (17.46 %) followed by doctoral and master's students (16.67 % and 11.11 % respectively). 25 per cent of the doctoral students wants to do farming followed by

bachelor's and master's (12.7 % and 6.67 % respectively). 19.05 per cent of the graduate students wants to work in social services followed by master's (17.78 %) and nil in case of doctorates.

### 4.3.14 Career preferences of the sample student respondents within service sector

Table 4.28 presents career preferences of the sample student respondents within service sector at different degree levels. ICAR- Agricultural Research Scientist was the most preferred career from student respondents (25.49 %) followed by Government of India, Banking and jobs in State Government (16.34 %, 13.73 % and 13.07 % respectively). Around 10.46 per cent of the sample student wants to join as Teacher/Scientist in State Agricultural Universities followed by joining Central and State Civil Service and Private Organization (7.19 % and 5.88 % respectively) (Fig. 8).

### 4.3.15 Expected monthly salary of sample student respondents

The average expected first monthly salary of all the student respondents was about 50,000. Looking into various degree levels, the average expectation of doctoral degree student respondents was about 97,000, the bachelor degree students follow the doctoral degree respondents with an average expectation of about 43,800 and the master's degree students expect about 41,000 as their first month salary.

Further the distribution of sample student respondents' expected minimum monthly salary was displayed in the Table. The frequency of respondents was high in the range of 25,000 to 50,000 (59.35 % of the total respondents) followed by 50,000 to 1 lakh (28.04 %). It was obvious from the table that the frequency of student respondents was very less in the category of more than 1 Lakh, with only 5.61 per cent of the respondents. Among the respondents about, about 8 per cent of the bachelor degree and 7 per cent doctoral degree respondents expect more than 1 Lakh as their first month salary, which was only 1.41 per cent in case of Master's degree students (Fig. 9).

### 4.3.16 Distribution of alumni respondents based on annual salary received

Based on salary received the alumni respondents were distributed in 6 categories shown in Table 4.29. 37.21 per cent of alumni were having salary between 3,00,000 to 5,00,000 followed by alumni getting salary 1,00,000 to 3.00.000 and 5,00,000 to 8,00,000 (27.91 % and 25.58 % respectively). 1.16 per cent of alumni working in input

industries were getting salary more than 14, 00,000. Majority of the alumni respondents working in research and development sector (20.93 %) had salary 3 Lakh to 5 Lakh.

### 4.3.17 Constraints faced by the students for choosing their career options

Table 4.30 presents constraints faced by the students while choosing career options. Income of the parents, family background of the parents stands first two major constraints faced by the student respondents with Garrett scores 34.27 and 27.90, respectively, followed by career planning by students (GS=27.82), occupation of parents (GS=26.35), guidance/support from family (GS=26.22), relatives and friends and family type were some other constraints hindering the student respondents in planning their career (have 3$^{rd}$ 4$^{th}$ 5$^{th}$ and 6$^{th}$ ranks respectively). Socio-political participation of parents, OGPA and medium of study at XII standard level were least bothered constraints from student respondents for their career planning (with ranks 12$^{th}$ , 11$^{th}$ and 10$^{th}$, respectively).

## 4.4 Areas/issues which need immediate attention of the policy makers/ other stake holders and strategies to make agriculture education more effective

### 4.4.1 Students' perception about the present course curriculum

Student respondent's perceptions regarding the present course curriculum RAWE programme, Experiential Learning, Farm / industries / Institution visits, state tour, all India tour, Inter-college and Inter-university cultural, literary, and sports activities were enlisted in Table 4.31.

Students were somewhat satisfied with usefulness of RAWE programme given by weighted average scores (WAS) (4.28), followed by experiential learning (4.09) and field visits (3.73). Sports meet at university and college level are really helpful in achieving extracurricular activities (WAS=3.79 and WAS=3.99 respectively). Scores for usefulness of state tour, inter-university cultural and literary activities conducted by their respective universities were indicated by WAS (3.81, 3.69 and 3.59 respectively). Students' respondents opined that the present course curriculum was sufficient to fulfil their academic and non-academic goals of their graduation.

### 4.4.2 Teachers' perception about efficacy of various curricular and co-curricular activities

Efficacy of various activities / events was shown in Table 4.32. Respondent teachers stated that efficacy various curricular and co-curricular activities such as Youth festival, literary activities, State tour, All India tour conducted by University were really very good which was shown by scores (scores ranges between 3.78 and 3.94). Usefulness of RAWE, Usefulness of Experiential Learning, was good rather than excellent (3.56 and 3.63 respectively).

### 4.4.3 Students' perception about the teachers and teaching/learning environment

Student perceptions about the teachers, teaching / learning environment was given in Table 4.33. Student somewhat satisfied with punctuality of teachers in conduct of examinations and taking classes (WAS=4.23 and WAS=4.05 respectively) followed by, approachability, friendliness and interaction between students and teachers (WAS=3.90 and WAS=3.71 respectively). Sample students merely satisfied with practical knowledge of teachers, quality of teaching and evaluation and examination system in their respective campuses shown by scores (3.70, 3.85 and 3.71 respectively). Students also felt that there are adequate numbers of teachers (WAS=3.86), knowledge upgrading faculty in respective fields (WAS=3.68) teachers' use of multi-media aids and other audio-visual aids efficiently (WAS3.85).

### 4.4.4 General profile of sample teacher respondents

The teacher respondents who provided necessary data for the study, is of the size of 80. The structure of this sample in terms of cadre and gender was shown in Tables 4.34. Out of the total sample respondents 57.50 per cent were Assistant Professors followed by Associate professors and Professors (20 % and 22.50 % respectively).

Out of 80 sample teachers 31.25 per cent of the respondents were from College of Agriculture, Mandya campus followed by Hassan, Chintamani and GKVK campus (25 %, 23.75 % and 20 % respectively). 30.43 per cent of Assistant Professors were from both College of Agriculture Mandya and College of Sericulture Chintamani campus, followed by College of Agriculture, Hassan and Gandhi Krishi Vignanana Kendra (GKVK) (19.57 % each). Around 37.50 per cent of Associate professors were from Hassan campus followed by Mandya, GKVK and Chintamani campus (31.25 %, 25 % and 6.25 % respectively).

Maximum numbers of Professors were from Mandya campus (33.33 %) followed by Hassan, Chintamani and GKVK campus of University of Agricultural Sciences Bengaluru (27.78 %, 22.22 % and 16.67 % respectively).

Around 60 per cent of the respondent teachers were doctorates followed by masters and post doctorates (27.50 % and 12.50 % respectively). Gender wise speaking, among the sample respondents female teachers were at the tune of 25 per cent. 34.78 per cent of Assistant Professors are female teachers followed by Associate Professor and Professor (12.50 %, and 11.11 % respectively).

Religion and Caste wise distribution of sample teachers were further presented in Table. 96.25 per cent of respondents belong to Hindu religion followed by Muslim (3.75 %,). Among all the sample teachers 42.50 per cent of them belong to general category followed by other backward classes, scheduled caste and scheduled tribe (28.75 %, 16.25 % and 12.50 % respectively).

### 4.4.5 Teaching experience and workload of sample teachers

Respondent teachers were distributed based on cadre, their experience, courses handled at under graduate, post graduate and Ph.D. level. As shown in Tables 4.35. Professors have on an average 4years experience in the present university and 5 years of experience in total career followed by Associate Professors and Assistant Professors (4 and 1 year of experience in the present university and 5 and 2 years of experience in career total respectively).

At the graduate level on an average 3.93 courses are handled by Assistant Professors with 10.26 contact hours per week followed by Associate professors and Professors (4.44 courses with 9.5 hours, and 3.61 courses with 13.17 hours respectively).

At M.Sc. / Ph.D. level on an average 2.28 courses are handled by Professors with 6.39 contact hours per week followed by, Assistant Professors and Associate professors (1.37 with 3.50, and 1.25 courses with 2.63 hours respectively).

### 4.4.6 Research projects and extension activities handled by sample teachers

Teachers were distributed based on the projects handled and extension / outreach activities carried out with the funds provided by the university and external sources and is shown in Table 4.36. As Principal Investigator of the projects nearly on an average 0.39

projects were handled by Professor though funds provided by the university and 0.44 projects though external funds. Assistant Professors handled an average 0.30 project funded by university and 0.41 by externally provided funds followed by Associate Professor (0.19 university funded and 0.19 externally funded projects).

As Co-Principal Investigator Professor handled, on an average, 0.50 projects though university funds and 0.56 projects by externally generated funds, followed by Assistant professor, and Associate Professor (0.52 and 0.44 university funded projects and 0.35 and 0.13 projects through external funds respectively).

An average of 0.83 extension / outreach activities were carried out by Professor as leader/ Coordinator with the aid of funds provided by university and 0.39 Activities through Financial assistance given by external sources followed by, Assistant Professors and Associate Professors (0.63, and 0.31 university funded activities and 0.02 and 0.00 activities funded through external sources respectively).

As Co-leader / Co-Coordinator, Assistant Professors handled on an average 0.52 extension / outreach activities funded by university and 0.02 activities handled though external funds followed by, Professors and Associate Professors (0.33 and 0.11 activities carried out with the aid of university funds and 0.00 and 0.38 activities handled by external funds).

### 4.4.7 Time allocation for teaching, research, extension and corporate/administrative activities by teachers

64.88 per cent of time is actually allocated for teaching whereas desirable time is 56.95 per cent followed by research, Corporate / Administration and Extension (13 %, 8.89 % and 8.91 % actual allocated time and 15.58 %, 4.56 % and 10.73 % desirable time respectively) (Fig.10).

### 4.4.8 Satisfaction level of teachers with respect to HRD opportunities

Satisfaction level with respect to Human Resource Development Opportunities such as Seminars / Conferences / Symposia, Workshops, trainings and Consultancies provided by University to the teacher respondents were given in Table 4.37. As shown in table, the sample respondents were somewhat satisfied with all the human resource development opportunities provided by the University for its Faculty. The teacher respondents were somewhat satisfied

with the permission and support given by the University for Seminars, Organization of the event, participation within the University and within India were indicated by giving scores (4.28, 4.41 and 4.21 respectively) followed by Workshops, (4.44, 4.39 and 4.19 respectively), trainings (4.49, 4.45 and 4.25 respectively) and Consultancies received by farm experts and provided to clients (WAS=4.03 and WAS=4.09). Permission and support to participate in seminars, workshops, trainings in abroad have been least scored by teacher respondents.

### 4.4.9 Teachers' perception about students' quality, behaviour and activities

Table 4.38 shows sample teachers' perception about students' quality, behaviour and activities. Score ranging between 3.34 and 3.60 shows attributes were very good among the students of the university. Quality of students in the college and their level of learning and research work done by them were good (WAS=3.60, WAS=3.58 and WAS=3.34 respectively).

### 4.4.10 Perception of students about the college infrastructure

Perception of students about the college infrastructure facilities such as classrooms, laboratories, access to computers, internet/mail, library and supporting amenities like hostel accommodations, mess / canteen / food facilities, outdoor and indoor sports facility, auditorium, bank, medical shop, post office are given in Table 4.39.

Sample respondents were satisfied with the facilities like classrooms measured by weighted average score (WAS) (WAS=4.25), library (WAS=4.41), and conference / seminar hall are well equipped (WAS=3.87), computers and other accessories (WAS=3.68), internet/mail (WAS=3.67), is accessible. Students neither satisfied nor dissatisfied with availability of vehicles for field visits (WAS=2.83) and accessibility of photocopying facility (WAS=3.52) provided by the university.

Students satisfied with the supporting facilities like hostel accommodation, food, bank and post office, auditorium, medical clinic, outdoor and indoor sports are sufficient. But neither agrees nor disagrees for the supporting amenities like gymnasium hall (WAS=2.76), medical and grocery shop shown by scores (2.80 and 3.34 respectively), room and instruments for cultural activities (WAS=3.17). Student respondents were dissatisfied with the availability of swimming pool in their respective college premises (WAS=1.50).

### 4.4.11 Satisfaction level of sample teachers with respect to physical facilities and staff

Satisfaction level of the sample respondents with respect to physical facilities and staff at office is shown in Table 4.40. As shown in the table sample respondents were somewhat satisfied with the most of the facilities provided by the University such as, office stationary (WAS=4.33) followed by office furniture (WAS=4.20) and computer and other accessories (WAS=4.24). Teacher respondents were neither satisfied nor dissatisfied with adequacy and quality of supporting staff available at office (scored least 3.39).

### 4.4.12 Availability and accessibility of amenities to the teachers in the campus

Availability and accessibility of amenities to the teacher respondents is given in Table 4.41. Table shows that more than 50 per cent of the respondent teachers satisfied with the availability and accessibility of facilities like staff quarters, medical service, bank, post office, and canteen/cafeteria. Sample teachers somewhat satisfied with amenities post office and bank Teachers were neither satisfied nor dissatisfied with amenities like staff quarters and medical shop (WAS=3.79 and WAS=3.77 respectively). Teacher respondents were neither satisfied nor dissatisfied with the facility like grocery shop which scores 3.54.

### 4.4.13 Students' perception about the college administration

Perceptions about college administration by students are depicted in Table 4.42. Student respondents are somewhat satisfied with the safety and security system available for students in the campus (WAS=3.71), there is encouraging / supporting administration in the college (WAS=3.66), student's admission procedure is really good (WAS=3.47) and not biased in the treatment of students. Respondents neither satisfied nor dissatisfied with the fund available for students academic (WAS=3.09) and curricular activities (WAS=3.13), functioning of placement cell/campus recruitments (WAS=2.81), present fee structure (WAS=2.78) and also functioning of students and alumni association (WAS=2.87 and WAS=3.17 respectively) in the university.

### 4.4.14 Teachers' perception about university/college administration/programmes

Perception of sample teachers about University / College Administration / Programme is given in Table 4.43. Respondents agree that there were supportive colleague in the section (WAS=4.28), followed by supportive / encouraging college administration, supporting staff in the dept / section, safety and security system in the campus and supportive / encouraging

University administration given by weighted average scores (WAS) (4.14, 4.08, 4.07 and 4.03 respectively). And also agreed that present students' admission procedure is appropriate, there were good job prospects for graduates / post graduates and present course curriculum matches job requirements and also present fee structure was appropriate indicated by WAS (3.98, 3.85, 3.83 and 3.84 respectively). Respondent teachers agree that sufficient funds were available for teaching and students' activities (WAS=3.99 and 3.83) whereas sample teachers were neither agree nor disagree for research and extension activities (3.60 and 3.64). Sample teachers were neither agree nor disagree for functioning of teachers', students' and alumni association (3.56, 3.52 and 3.47 respectively), staff recruitment procedure is appropriate and periodical, curriculum not focused on imparting problem solving skills and present curriculum loaded with more theory than practical's (WAS=3.40, WAS= 3.33 and WAS=3.46 respectively).

### 4.4.15 Students' perception about the course on graduation

Student's perception about the completion of courses is presented in Table 4.44. Respondents agree that they are proud to complete the course and consider that the course is on par with other professional degrees (WAS=4.13 and WAS=3.91). Besides, students are satisfied with the knowledge that they have gained from the course to start their own farming/business, also recommend this for others (WAS=3.82 and WAS=3.67 respectively). Disagree that students were regretting by joining the course (WAS=2.30).

**Table-4.1: College wise Intake of students at bachelor, master and doctoral levels as on 2017-18 (Constituent and Affiliated Colleges)**

| SN. | College | Bachelor | Master | Doctorate | Total |
|---|---|---|---|---|---|
| **A]** | **Constituent College** | | | | |
| 1 | College of Agriculture, Bengaluru | 166 | 172 | 76 | 414 |
| 2 | College of Agriculture, Mandya | 80 | 20 | | 100 |
| 3 | College of Agriculture, Hassan | 81 | | | 81 |
| 4 | College of Sericulture, Chinthamani | 30 | | | 30 |
| 5 | College of Agriculture, Chinthamani | 70 | | | 70 |
| | **Total** | **427** | **192** | **76** | **695** |

**Table-4.2: Discipline – wise and College wise Intake of students for PG and PhD courses for the year 2017-18 (Constituent and Affiliated Colleges)**

| SN | Subject | MSc | | | | Total | | PhD | | Overall | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | COA, GKVK | | COA, Mandya | | | | | | | |
| | | No | % | No | % | No | % | No | % | No | % |
| 1 | Genetics and Plant Breeding | 10 | 5.81 | 4 | 20.00 | 14 | 7.29 | 6 | 7.89 | 20 | 7.46 |
| 2 | Agronomy | 10 | 5.81 | 4 | 20.00 | 14 | 7.29 | 6 | 7.89 | 20 | 7.46 |
| 3 | Soil Science and Agricultural Chemistry | 10 | 5.81 | 4 | 20.00 | 14 | 7.29 | 6 | 7.89 | 20 | 7.46 |
| 4 | Agricultural Entomology | 10 | 5.81 | 4 | 20.00 | 14 | 7.29 | 6 | 7.89 | 20 | 7.46 |
| 5 | Plant Pathology | 10 | 5.81 | 4 | 20.00 | 14 | 7.29 | 6 | 7.89 | 20 | 7.46 |
| 6 | Seed Science and Technology | 10 | 5.81 | | | 10 | 5.21 | 4 | 5.26 | 14 | 5.22 |
| 7 | Crop Physiology | 10 | 5.81 | | | 10 | 5.21 | 6 | 7.89 | 16 | 5.97 |
| 8 | Plant Biochemistry | 2 | 1.16 | | | 2 | 1.04 | | | 2 | 0.75 |
| 9 | Plant Biotechnology | 10 | 5.81 | | | 10 | 5.21 | 4 | 5.26 | 14 | 5.22 |
| 10 | Agricultural Microbiology | 11 | 6.40 | | | 11 | 5.73 | 6 | 7.89 | 17 | 6.34 |
| 11 | Apiculture | 2 | 1.16 | | | 2 | 1.04 | | | 2 | 0.75 |
| 12 | Sericulture | 6 | 3.49 | | | 6 | 3.13 | 2 | 2.63 | 8 | 2.99 |
| 13 | Agricultural Economics | 10 | 5.81 | | | 10 | 5.21 | 6 | 7.89 | 16 | 5.97 |
| 14 | Agricultural Extension | 10 | 5.81 | | | 10 | 5.21 | 6 | 7.89 | 16 | 5.97 |
| 15 | Agricultural Statistics | 10 | 5.81 | | | 10 | 5.21 | | | 10 | 3.73 |
| 16 | Agricultural Marketing and Cooperation | 9 | 5.23 | | | 9 | 4.69 | | | 9 | 3.36 |
| 17 | Food Science and Nutrition | 6 | 3.49 | | | 6 | 3.13 | 4 | 5.26 | 10 | 3.73 |
| 18 | M. Tech. Agri. Engineering | 6 | 3.49 | | | 6 | 3.13 | | | 6 | 2.24 |
| 19 | Environmental Science | 6 | 3.49 | | | 6 | 3.13 | | | 6 | 2.24 |
| 20 | Horticulture | 10 | 5.81 | | | 10 | 5.21 | 4 | 5.26 | 14 | 5.22 |
| 21 | M. Tech (Ag. Engg.) Soil and Water Engineering | 4 | 2.33 | | | 4 | 2.08 | | | 4 | 1.49 |
| 22 | Forestry and Environmental Science | | 0.00 | | | | 0.00 | 4 | 5.26 | 4 | 1.49 |
| | **Total** | **172** | **100.00** | **20** | **100.00** | **192** | **100.00** | **76** | **100.00** | **268** | **100.00** |

Note: COA= College of Agriculture; No= number; %=percentage

**Table-4.3: Year-wise and gender-wise intake of students at different degree levels and their compound annual growth rate (CAGR)**

| Year | Bachelor | | | Master | | | Doctoral | | | Total |
|---|---|---|---|---|---|---|---|---|---|---|
| | Male | Female | Total | Male | Female | Total | Male | Female | Total | |
| 2005-06 | 269 | 119 | 388 | 123 | 57 | 180 | 47 | 14 | 61 | 629 |
| 2006-07 | 234 | 122 | 356 | 145 | 73 | 218 | 52 | 23 | 75 | 649 |
| 2007-08 | 256 | 214 | 470 | 192 | 81 | 273 | 49 | 25 | 74 | 817 |
| 2008-09 | 345 | 250 | 595 | 208 | 95 | 303 | 43 | 17 | 60 | 958 |
| 2009-10 | 326 | 230 | 556 | 221 | 85 | 306 | 53 | 22 | 75 | 937 |
| 2010-11 | 555 | 457 | 1012 | 155 | 99 | 254 | 49 | 30 | 79 | 1345 |
| 2011-12 | 500 | 430 | 930 | 129 | 94 | 223 | 58 | 35 | 93 | 1246 |
| 2012-13 | 378 | 444 | 822 | 155 | 106 | 261 | 39 | 39 | 78 | 1161 |
| 2013-14 | 396 | 337 | 733 | 151 | 112 | 263 | 46 | 33 | 79 | 1075 |
| 2014-15 | 388 | 295 | 683 | 151 | 105 | 256 | 54 | 26 | 80 | 1019 |
| 2015-16 | 384 | 280 | 664 | 138 | 127 | 265 | 57 | 41 | 98 | 1027 |
| **CAGR*** | **5.34*** | **10.46**** | **7.34**** | **-1.00*** | **6.33***** | **1.70** | **0.75** | **8.35***** | **3.29**** | **5.36**** |

Source: Data processed from Registrar's questionnaire

**Note:** ***Significant at 1% probability level
**Significant at 5% probability level
*Significant at 10% probability level

**Table-4.4: Year-wise and gender-wise out-turn of students at different degree levels and their compound annual growth rate (CAGR)**

| Year | Bachelor | | | Master | | | Doctoral | | | Total |
|---|---|---|---|---|---|---|---|---|---|---|
| | Male | Female | Total | Male | Female | Total | Male | Female | Total | |
| 2005-06 | 321 | 112 | 433 | 171 | 64 | 235 | 30 | 7 | 37 | 705 |
| 2006-07 | 295 | 115 | 410 | 97 | 42 | 139 | 35 | 7 | 42 | 591 |
| 2007-08 | 278 | 121 | 399 | 202 | 100 | 302 | 47 | 13 | 60 | 761 |
| 2008-09 | 230 | 119 | 349 | 142 | 18 | 160 | 62 | 9 | 71 | 580 |
| 2009-10 | 257 | 114 | 371 | 181 | 71 | 252 | 31 | 13 | 44 | 667 |
| 2010-11 | 225 | 113 | 338 | 177 | 95 | 272 | 38 | 8 | 46 | 656 |
| 2011-12 | 213 | 174 | 387 | 202 | 91 | 293 | 20 | 10 | 30 | 710 |
| 2012-13 | 270 | 201 | 471 | 123 | 86 | 209 | 36 | 20 | 56 | 736 |
| 2013-14 | 321 | 245 | 566 | 136 | 86 | 222 | 28 | 31 | 59 | 847 |
| 2014-15 | 282 | 292 | 574 | 117 | 87 | 204 | 48 | 19 | 67 | 845 |
| 2015-16 | 285 | 299 | 584 | 134 | 111 | 245 | 57 | 36 | 93 | 922 |
| **CAGR*** | **-0.19** | **11.75*** ** | **4.21**** | **-1.65** | **8.12*** | **1.38** | **1.27** | **15.79*** ** | **5.19*** | **3.36*** ** |

Source: Data processed from Registrar's questionnaire
Note: ***Significant at 1% probability level
**Significant at 5% probability level
*Significant at 10% probability level

**Table-4.5: Forecast of out-turn of graduates at different degree levels up to 2029-30**

| Year | Bachelor | | | Master | | | Doctoral | | | Grand Total |
|---|---|---|---|---|---|---|---|---|---|---|
| | Male | Female | Total | Male | Female | Total | Male | Female | Total | |
| 2016-17 | 267 | 295 | 562 | 135 | 106 | 242 | 43 | 30 | 73 | 877 |
| 2017-18 | 266 | 316 | 582 | 133 | 111 | 244 | 44 | 33 | 76 | 902 |
| 2018-19 | 266 | 336 | 602 | 130 | 116 | 245 | 44 | 35 | 79 | 926 |
| 2019-20 | 265 | 356 | 622 | 127 | 121 | 247 | 45 | 37 | 82 | 951 |
| 2020-21 | 265 | 377 | 641 | 124 | 125 | 249 | 45 | 40 | 85 | 976 |
| 2021-22 | 264 | 397 | 661 | 121 | 130 | 251 | 46 | 42 | 88 | 1000 |
| 2022-23 | 263 | 417 | 681 | 118 | 135 | 253 | 47 | 45 | 91 | 1025 |
| 2023-24 | 263 | 438 | 701 | 115 | 140 | 255 | 47 | 47 | 94 | 1050 |
| 2024-25 | 262 | 458 | 720 | 112 | 145 | 257 | 48 | 50 | 97 | 1075 |
| 2025-26 | 262 | 479 | 740 | 109 | 150 | 259 | 48 | 52 | 100 | 1099 |
| 2026-27 | 261 | 499 | 760 | 106 | 154 | 261 | 49 | 54 | 103 | 1124 |
| 2027-28 | 260 | 519 | 779 | 103 | 159 | 263 | 50 | 57 | 106 | 1149 |
| 2028-29 | 260 | 540 | 799 | 101 | 164 | 264 | 50 | 59 | 109 | 1173 |
| 2029-30 | 259 | 560 | 819 | 98 | 169 | 266 | 51 | 62 | 113 | 1198 |
| **Cumulative Supply** | **4250** | **6578** | **10827** | **1883** | **2123** | **4005** | **762** | **698** | **1456** | **16292** |

Source: Data processed from Registrar's questionnaire.

**Table-4.6 Supply, demand and gap of agricultural graduates up to 2029-30**

| Year | Bachelor | | | Master | | | Doctoral | | | Total | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | S* | D* | G* | S | D | G | S | D | G | S | D | G |
| 2005-06 | 433 | 104 | -329 | 235 | 31 | -204 | 37 | 8 | -29 | 705 | 143 | -562 |
| 2006-07 | 410 | 107 | -303 | 139 | 32 | -107 | 42 | 8 | -34 | 591 | 147 | -444 |
| 2007-08 | 399 | 110 | -289 | 302 | 33 | -269 | 60 | 8 | -52 | 761 | 151 | -610 |
| 2008-09 | 349 | 112 | -237 | 160 | 33 | -127 | 71 | 8 | -63 | 580 | 153 | -427 |
| 2009-10 | 371 | 115 | -256 | 252 | 34 | -218 | 44 | 9 | -35 | 667 | 158 | -509 |
| 2010-11 | 338 | 118 | -220 | 272 | 35 | -237 | 46 | 9 | -37 | 656 | 162 | -494 |
| 2011-12 | 387 | 120 | -267 | 293 | 36 | -257 | 30 | 9 | -21 | 710 | 165 | -545 |
| 2012-13 | 471 | 123 | -348 | 209 | 36 | -173 | 56 | 9 | -47 | 736 | 168 | -568 |
| 2013-14 | 566 | 125 | -441 | 222 | 37 | -185 | 59 | 9 | -50 | 847 | 171 | -676 |
| 2014-15 | 574 | 128 | -446 | 204 | 38 | -166 | 67 | 9 | -58 | 845 | 175 | -670 |
| 2015-16 | 584 | 130 | -454 | 245 | 39 | -206 | 93 | 9 | -84 | 922 | 178 | -744 |
| 2016-17 | 562 | 133 | -429 | 242 | 40 | -202 | 73 | 10 | -63 | 877 | 183 | -694 |
| 2017-18 | 582 | 136 | -446 | 244 | 41 | -203 | 76 | 10 | -66 | 902 | 187 | -715 |
| 2018-19 | 602 | 139 | -463 | 245 | 39 | -206 | 79 | 10 | -69 | 926 | 188 | -738 |
| 2019-20 | 622 | 141 | -481 | 247 | 43 | -204 | 82 | 10 | -72 | 951 | 194 | -757 |
| 2020-21 | 641 | 144 | -497 | 249 | 43 | -206 | 85 | 10 | -75 | 975 | 197 | -778 |
| 2021-22 | 661 | 146 | -515 | 251 | 43 | -208 | 88 | 10 | -78 | 1000 | 199 | -801 |
| 2022-23 | 681 | 149 | -532 | 253 | 44 | -209 | 91 | 10 | -81 | 1025 | 203 | -822 |
| 2023-24 | 701 | 152 | -549 | 255 | 45 | -210 | 94 | 11 | -83 | 1050 | 208 | -842 |
| 2024-25 | 720 | 154 | -566 | 257 | 46 | -211 | 97 | 11 | -86 | 1074 | 211 | -863 |
| 2025-26 | 740 | 157 | -583 | 259 | 47 | -212 | 100 | 11 | -89 | 1099 | 215 | -884 |
| 2026-27 | 760 | 159 | -601 | 261 | 47 | -214 | 103 | 11 | -92 | 1124 | 217 | -907 |
| 2027-28 | 779 | 162 | -617 | 263 | 48 | -215 | 106 | 11 | -95 | 1148 | 221 | -927 |
| 2028-29 | 799 | 165 | -634 | 264 | 49 | -215 | 109 | 11 | -98 | 1172 | 225 | -947 |
| 2029-30 | 819 | 167 | -652 | 266 | 50 | -216 | 113 | 12 | -101 | 1198 | 229 | -969 |

Source: Data processed from Registrar's questionnaire, Demand data collected from IAMR.
* S=Supply; D=Demand; G=Gap

**Table-4.7: Students' behavioural attributes during graduation**

| SN | Behavioural Attributes | Satisfaction Level | | | | | WAS* |
|---|---|---|---|---|---|---|---|
| | | FS | SWS | NSD | SWD | FD | |
| 1 | Students response/interaction in the class | 31 | 41 | 5 | 3 | 0 | 4.25 |
| 2 | Students' attendance in the class | 65 | 15 | 0 | 0 | 0 | 4.81 |
| 3 | Quality of students (merit) | 35 | 40 | 5 | 0 | 0 | 4.38 |
| 4 | Class strength of students (intake) | 42 | 19 | 13 | 6 | 0 | 4.21 |
| 5 | Submission of practical records | 51 | 25 | 2 | 2 | 0 | 4.56 |
| 6 | Submission of assignments | 48 | 29 | 3 | 0 | 0 | 4.56 |
| 7 | Performance in exam | | | | | | |
| | a. Subject matter | 29 | 41 | 8 | 2 | 0 | 4.21 |
| | b. Language level | 17 | 38 | 21 | 4 | 0 | 3.85 |
| 8 | Quality of presentation in UG courses | 27 | 37 | 15 | 1 | 0 | 4.13 |
| 9 | Quality of PG seminars given | 19 | 55 | 5 | 1 | 0 | 4.15 |
| 10 | Students' interest in extension activities | 31 | 36 | 9 | 4 | 0 | 4.18 |
| 11 | Students' relationship with teachers (cordiality) | 41 | 32 | 6 | 1 | 0 | 4.41 |
| 12 | Students' behavior in the class | 42 | 33 | 4 | 1 | 0 | 4.45 |
| 13 | Students' behavior outside class/campus | 32 | 34 | 12 | 1 | 1 | 4.19 |
| 14 | Students' behavior in the exam hall | 55 | 22 | 3 | 0 | 0 | 4.65 |
| 15 | Students' behavior in co-curricular activities | 39 | 35 | 4 | 2 | 0 | 4.39 |

Source: Data processed from Teachers' questionnaires

Note: *Weighted average score calculated from the responses of the teachers weighted by scores, 5=Fully Satisfied (FS); 4=Somewhat Satisfied (SWS); 3=Neither Satisfied nor Dissatisfied (NSD); 2=Somewhat Dissatisfied (SWD); 1=Fully Dissatisfied (FD);

**Table-4.8: Quality / employability skill parameters of respondents**

| SN | Quality / Employability Skill Parameters | Perception at the beginning of graduation | | | | | | Perception at the end of graduation | | | | | | Difference in WAS | % Difference |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | E | VG | M | P | VP | WAS# | E | VG | M | P | VP | WAS* | | |
| 1 | Sincere | 19 | 31 | 26 | 3 | 1 | 3.80 | 46 | 65 | 78 | 21 | 4 | 3.60 | -0.20 | -5.26 |
| 2 | Hard working | 16 | 28 | 22 | 13 | 1 | 3.56 | 42 | 78 | 66 | 21 | 7 | 3.59 | 0.03 | 0.84 |
| 3 | Punctual | 14 | 33 | 28 | 5 | 0 | 3.70 | 49 | 69 | 72 | 19 | 5 | 3.64 | -0.06 | -1.62 |
| 4 | Committed to work | 11 | 27 | 33 | 9 | 0 | 3.50 | 68 | 67 | 64 | 14 | 1 | 3.87 | 0.37 | 10.57 |
| 5 | Innovative | 10 | 22 | 22 | 25 | 1 | 3.19 | 32 | 63 | 77 | 30 | 12 | 3.34 | 0.15 | 4.70 |
| 6 | Organized at my work | 10 | 22 | 29 | 19 | 0 | 3.29 | 41 | 76 | 69 | 16 | 12 | 3.55 | 0.26 | 7.90 |
| 7 | Good at time management | 10 | 25 | 28 | 16 | 1 | 3.34 | 36 | 74 | 61 | 25 | 18 | 3.40 | 0.06 | 1.80 |
| 8 | Confident in oral presentation | 8 | 24 | 29 | 18 | 1 | 3.25 | 45 | 63 | 66 | 29 | 11 | 3.48 | 0.23 | 7.08 |
| 9 | Confident in writing skills | 8 | 27 | 25 | 16 | 4 | 3.24 | 43 | 65 | 68 | 26 | 12 | 3.47 | 0.23 | 7.10 |
| 10 | Well informed about the subject | 13 | 25 | 30 | 12 | 0 | 3.49 | 28 | 70 | 82 | 30 | 4 | 3.41 | -0.08 | -2.29 |
| 11 | Well informed about the current affairs | 9 | 21 | 31 | 18 | 1 | 3.24 | 30 | 50 | 70 | 46 | 18 | 3.13 | -0.11 | -3.40 |
| 12 | Have stage courage | 8 | 24 | 34 | 13 | 1 | 3.31 | 47 | 72 | 55 | 29 | 11 | 3.54 | 0.23 | 6.95 |
| 13 | Get along well with co-students | 17 | 27 | 25 | 10 | 1 | 3.61 | 72 | 75 | 47 | 17 | 3 | 3.92 | 0.31 | 8.59 |
| 14 | Get along well with teachers | 17 | 29 | 25 | 9 | 0 | 3.68 | 49 | 70 | 64 | 19 | 12 | 3.58 | -0.1 | -2.72 |
| 15 | Have good presence of mind (alertness) | 14 | 26 | 21 | 19 | 0 | 3.44 | 45 | 66 | 76 | 23 | 4 | 3.58 | 0.14 | 4.07 |
| 16 | Have good decision making skill | 12 | 20 | 27 | 20 | 1 | 3.28 | 57 | 68 | 68 | 18 | 3 | 3.74 | 0.46 | 14.02 |
| 17 | Usually follow rules of the university/college | 22 | 28 | 22 | 7 | 1 | 3.79 | 69 | 83 | 46 | 12 | 4 | 3.94 | 0.15 | 3.96 |
| 18 | Ready to take risk to achieve my goal | 12 | 28 | 23 | 14 | 3 | 3.40 | 91 | 64 | 36 | 21 | 2 | 4.03 | 0.63 | 18.53 |

Source : Data processed from students' and teachers' questionnaires.

Note : Weighted average score (WAS) computed using the scores 5=Excellent (E); 4=Very Good (VG); 3= Good (G); 2=Moderate (M); 1=Poor (P)

# Computed based on scores given by the teacher respondents. * Computed based on scores given by the student respondents.

**Table-4.9: Improvement in students' quality attributes due to degree programme**

| SN | Skills | Perception of the students about quality attributes | | | | | |
|---|---|---|---|---|---|---|---|
| | | E# | VG | G | M | P | WAS# |
| 1 | Computer skills | 48 | 70 | 49 | 32 | 15 | 3.49 |
| 2 | Oral presentation skills | 56 | 62 | 68 | 24 | 4 | 3.66 |
| 3 | Written presentation skills | 59 | 70 | 54 | 27 | 4 | 3.71 |
| 4 | Leadership skills | 54 | 63 | 61 | 28 | 8 | 3.59 |

Source: Data processed from Students' questionnaires.

Note: #Weighted Average Score (WAS) calculated from the responses of the students weighted by scores, 5=Excellent (E); 4=Very Good (VG); 3= Good (G); 2=Moderate (M); 1=Poor (P)

**Table-4.10: Important selection criteria for recruiting the graduates**

| SN | Selection Criteria | Garrett Score | Rank |
|---|---|---|---|
| 1 | Academic Qualifications | 70.18 | 1 |
| 2 | Interpersonal and communication skills | 61.19 | 2 |
| 3 | Passion/ knowledge of industry/ drive/ commitment/ attitude | 59.43 | 3 |
| 4 | Work experience | 57.45 | 4 |
| 5 | Leadership skills | 53.39 | 5 |
| 6 | Team work skills | 51.51 | 6 |
| 7 | Critical reasoning and analytical skills/ problem solving/ technical skills | 51.49 | 7 |
| 8 | Emotional intelligence (including self-awareness, strength of character, confidence, motivation) | 41.74 | 8 |
| 9 | Intra and extracurricular activities | 33.80 | 9 |
| 10 | Cultural alignment/ values fit | 28.54 | 10 |

Source: Data processed from Teachers' questionnaires.

**Table-4.11: Expectations of the students from their respective universities**

| Expectation | Bachelor Degree | | Master Degree | | Doctoral Degree | | Overall | |
|---|---|---|---|---|---|---|---|---|
| | **No.** | **% to Total** | **No.** | **% to Total** | **No.** | **% to Total** | **No.** | **% to Total** |
| Campus placement | 70 | 39.77 | 60 | 43.80 | 20 | 40.00 | 150 | 41.32 |
| Help to mobilize credit/ finance | 20 | 11.36 | 11 | 8.03 | 5 | 10.00 | 36 | 9.92 |
| Help in start-up/business incubation | 27 | 15.34 | 27 | 19.71 | 13 | 26.00 | 67 | 18.46 |
| Coaching for competitive exams | 55 | 31.25 | 39 | 28.47 | 12 | 24.00 | 106 | 29.20 |
| Others | 4 | 2.27 | 0 | 0.00 | 0 | 0.00 | 4 | 1.10 |
| **Total** | **176** | **100.00** | **137** | **100.00** | **50** | **100.00** | **363** | **100.00** |

Source: Data processed from Students' questionnaires.
Note: No= number; %= percentage

**Table-4.12: Time taken to acquire first job after graduation by the alumni respondents**

| **Qualification↓** | | **Months** | | | | | | | **Grand Total** |
|---|---|---|---|---|---|---|---|---|---|
| | | **0** | **1** | **2** | **3** | **4** | **6** | **16** | |
| BSc | No. | 5 | 2 | 2 | 2 | | | | 11 |
| | % | 10.64 | 4.26 | 4.26 | 4.26 | | | | 23.40 |
| MSc | No. | 9 | 4 | 3 | 5 | | | 1 | 22 |
| | % | 19.15 | 8.51 | 6.38 | 10.64 | | | 2.13 | 46.81 |
| PhD | No. | 8 | 1 | 1 | 1 | 1 | 1 | 1 | 14 |
| | % | 57.14 | 7.14 | 7.14 | 7.14 | 7.14 | 7.14 | 7.14 | 100.00 |
| **Total** | **No.** | **22** | **7** | **6** | **8** | **1** | **1** | **2** | **47** |
| | **%** | **46.81** | **14.89** | **12.77** | **17.02** | **2.13** | **2.13** | **4.26** | **100.00** |

Source: Data processed from Alumni's questionnaires
Note: No= number; %=percentage

**Table-4.13: Students' willingness to start their own enterprise after graduation**

| Expectation | Bachelor Degree | | Master Degree | | Doctoral Degree | | Overall | |
|---|---|---|---|---|---|---|---|---|
| | **No.** | **% to Total** | **No.** | **% to Total** | **No.** | **% to Total** | **No.** | **% to Total** |
| Not willing to start own enterprise | 63 | 55.26 | 35 | 49.30 | 13 | 44.83 | 111 | 51.87 |
| Willing to start own enterprise | 51 | 44.74 | 36 | 50.70 | 16 | 55.17 | 103 | 48.13 |
| **Total** | **114** | **100.00** | **71** | **100.00** | **29** | **100.00** | **214** | **100.00** |

Source: Data processed from Students' questionnaires.
Note: No= number; %= percentage

**Table-4.14: Self-employment of graduates by type of unit and period of employment**

| Type of Unit | No. of employed graduates | % to total | Average period of employment (in years) |
|---|---|---|---|
| Farming | 2 | 50 | 5.5 |
| Input Marketing | 1 | 25 | 4 |
| Output Marketing | 1 | 25 | 5 |
| **Grand Total** | **4** | **100** | **5** |

Source: Data processed from Alumni's questionnaires
Note: No= number; %= percentage

**Table-4.15: Perception of student respondents about the present course curriculum**

| SN | The present course curriculum | Perception of students about present course curriculum | | | | | |
|---|---|---|---|---|---|---|---|
| | | SA@ | A | NAD | D | SD | WAS@ |
| 1. | Needs to include more of field visits | 65 | 84 | 36 | 14 | 15 | 3.79 |
| 2. | Matches requirements of self-entrepreneurship | 55 | 98 | 42 | 12 | 7 | 3.85 |
| 3. | Matches requirements of job in govt. Sector | 83 | 71 | 37 | 18 | 5 | 3.98 |
| 4. | Matches requirements of job in private sector | 40 | 61 | 47 | 53 | 13 | 3.29 |
| 5. | Covers more of theory than practical sessions | 57 | 61 | 41 | 40 | 15 | 3.49 |
| 6. | Is more focused on providing information than imparting problem solving skills | 33 | 51 | 56 | 61 | 13 | 3.14 |
| 7. | Is loaded with heavy course work (lot many credits) | 68 | 76 | 37 | 24 | 9 | 3.79 |
| 8. | Has lot of repetition / overlapping | 113 | 71 | 13 | 13 | 4 | 4.29 |

Source: Data processed from Students' questionnaires

Note: @Weighted average score (WAS) computed using the scores, 5=Strongly Agree (SA); 4=Agree (A); 3= Neither Agree nor Disagree (NAD), 2=Disagree (D), 1=Strongly Disagree (SD).

**Table-4.16: Requirement of employers in terms of the course curriculum felt by the alumni respondents**

| SN | Particulars | Rank-1 | Rank-2 | Rank-3 | WAS# | Rank |
|---|---|---|---|---|---|---|
| 1 | Managerial skills | 13 | 0 | 5 | 44 | 1 |
| 2 | More technical knowledge | 9 | 1 | 14 | 43 | 2 |
| 3 | More practical work | 4 | 8 | 0 | 28 | 3 |
| 4 | More advanced theoretical knowledge | 1 | 0 | 1 | 4 | 6 |
| 5 | More interaction with industries | 0 | 10 | 6 | 26 | 4 |
| 6 | Information technology | 0 | 8 | 1 | 17 | 5 |
| | Total | 27 | 27 | 27 | | |

Source: Data processed from Alumni's questionnaires.
Note: @Weighted average score (WAS) computed using the scores, 3=Rank-1; 2=Rank-2; 1= Rank-3.

**Table-4.17: Profile of sample student respondents**

| SN | Particulars | Bachelors | | Masters | | Doctoral | | Total | |
|---|---|---|---|---|---|---|---|---|---|
| | | No | % | No | % | No | % | No | % |
| **A)** | **Gender** | | | | | | | | |
| 1) | Male | 70 | 61.40 | 25 | 35.21 | 18 | 62.07 | 113 | 52.80 |
| 2) | Female | 44 | 38.60 | 46 | 64.79 | 11 | 37.93 | 101 | 47.20 |
| | **Total** | **114** | **100.00** | **71** | **100.00** | **29** | **100.00** | **214** | **100.00** |
| **B)** | **Hailing area** | | | | | | | | |
| 1) | Rural | 62 | 54.39 | 40 | 56.34 | 23 | 79.31 | 125 | 58.41 |
| 2) | Urban | 52 | 45.61 | 31 | 43.66 | 6 | 20.69 | 89 | 41.59 |
| | **Total** | **114** | **100.00** | **71** | **100.00** | **29** | **100.00** | **214** | **100.00** |
| **C)** | **Parents' present residence** | | | | | | | | |
| 1) | Rural | 59 | 51.75 | 39 | 54.93 | 21 | 72.41 | 119 | 55.61 |
| 2) | Urban | 55 | 48.25 | 32 | 45.07 | 8 | 27.59 | 95 | 44.39 |
| | **Total** | **114** | **100.00** | **71** | **100.00** | **29** | **100.00** | **214** | **100.00** |
| **D)** | **Religion** | | | | | | | | |
| 1) | Hindu | 101 | 88.60 | 65 | 91.55 | 29 | 100.00 | 195 | 91.12 |
| 2) | Muslim | 8 | 7.02 | 6 | 8.45 | | | 14 | 6.54 |
| 3) | Christian | 2 | 1.75 | | | | | 2 | 0.93 |
| 4) | Others | 3 | 2.63 | | | | | 3 | 1.40 |
| | **Total** | **114** | **100.00** | **71** | **100.00** | **29** | **100.00** | **214** | **100.00** |
| **E)** | **Caste** | | | | | | | | |
| 1) | Other Backward Classes | 72 | 63.16 | 48 | 67.61 | 15 | 51.72 | 135 | 63.08 |
| 2) | General category | 23 | 20.18 | 15 | 21.13 | 9 | 31.03 | 47 | 21.96 |
| 3) | Scheduled Caste | 14 | 12.28 | 8 | 11.27 | 5 | 17.24 | 27 | 12.62 |
| 4) | Scheduled Tribe | 5 | 4.39 | | 0.00 | | 0.00 | 5 | 2.34 |
| | **Total** | **114** | **100.00** | **71** | **100.00** | **29** | **100.00** | **214** | **100.00** |
| **F)** | **Fathers' education** | | | | | | | | |
| 1) | Primary | 14 | 12.28 | 8 | 11.27 | 12 | 41.38 | 34 | 15.89 |
| 2) | Secondary | 8 | 7.02 | 7 | 9.86 | 3 | 10.34 | 18 | 8.41 |
| 3) | Tenth | 29 | 25.44 | 13 | 18.31 | 3 | 10.34 | 45 | 21.03 |

| SN | Particulars | Bachelors | | Masters | | Doctoral | | Total | |
|---|---|---|---|---|---|---|---|---|---|
| | | No | % | No | % | No | % | No | % |
| 4) | Twelfth | 17 | 14.91 | 14 | 19.72 | | 0.00 | 31 | 14.49 |
| 5) | Graduate | 35 | 30.70 | 22 | 30.99 | 7 | 24.14 | 64 | 29.91 |
| 6) | Post Graduate | 11 | 9.65 | 7 | 9.86 | 4 | 13.79 | 22 | 10.28 |
| 7) | Postgraduate Diploma | | 0.00 | | 0.00 | | 0.00 | | 0.00 |
| 8) | PhD | | 0.00 | | 0.00 | | 0.00 | | 0.00 |
| | **Total** | **114** | **100.00** | **71** | **100.00** | **29** | **100.00** | **214** | **100.00** |
| **G)** | **Mothers' education** | | | | | | | | |
| 1) | Primary | 18 | 15.79 | 11 | 15.49 | 11 | 37.93 | 40 | 18.69 |
| 2) | Secondary | 19 | 16.67 | 12 | 16.90 | 8 | 27.59 | 39 | 18.22 |
| 3) | Tenth | 34 | 29.82 | 28 | 39.44 | 3 | 10.34 | 65 | 30.37 |
| 4) | Twelfth | 18 | 15.79 | 6 | 8.45 | 4 | 13.79 | 28 | 13.08 |
| 5) | Graduate | 19 | 16.67 | 9 | 12.68 | 2 | 6.90 | 30 | 14.02 |
| 6) | Post Graduate | 5 | 4.39 | 5 | 7.04 | 1 | 3.45 | 11 | 5.14 |
| 7) | Postgraduate Diploma | 1 | 0.88 | | 0.00 | | 0.00 | 1 | 0.47 |
| 8) | PhD | | 0.00 | | 0.00 | | 0.00 | | 0.00 |
| | **Total** | **114** | **100.00** | **71** | **100.00** | **29** | **100.00** | **214** | **100.00** |
| **H)** | **Family Type** | | | | | | | | |
| 1) | Nuclear | 100 | 87.72 | 60 | 84.51 | 17 | 58.62 | 177 | 82.71 |
| 2) | Joint | 14 | 12.28 | 11 | 15.49 | 12 | 41.38 | 37 | 17.29 |
| | **Total** | **114** | **100.00** | **71** | **100.00** | **29** | **100.00** | **214** | **100.00** |
| **I)** | **Average family Income** | | | | | | | | |
| 1) | Less than 2 Lakh | 85 | 74.56 | 46 | 64.79 | 18 | 62.07 | 149 | 69.63 |
| 2) | 2 to 5 Lakh | 19 | 16.67 | 19 | 26.76 | 4 | 13.79 | 42 | 19.63 |
| 3) | 5 to 10 Lakh | 7 | 6.14 | 5 | 7.04 | 5 | 17.24 | 17 | 7.94 |
| 4) | More than 10 Lakh | 3 | 2.63 | 1 | 1.41 | 2 | 6.90 | 6 | 2.80 |
| | **Total** | **114** | **100.00** | **71** | **100.00** | **29** | **100.00** | **214** | **100.00** |

Source: Data processed from Students' questionnaires
Note: No= Number; % = Percentage

**Table-4.18: General profile of alumni respondents**

| SN | Category | Particulars | No. | % |
|---|---|---|---|---|
| 1 | Qualification | BSc | 14 | 28 |
| | | MSc | 22 | 44 |
| | | PhD | 14 | 28 |
| | | Total | 50 | 100 |
| 2 | Gender | Female | 9 | 18 |
| | | Male | 41 | 82 |
| | | Total | 50 | 100 |
| 3 | Hailing area | Rural | 44 | 88 |
| | | Urban | 6 | 12 |
| | | Total | 50 | 100 |
| 4 | Religion | Hindu | 49 | 98 |
| | | Muslim | 1 | 2 |
| | | Total | 50 | 100 |
| 5 | Caste | General Category | 20 | 40 |
| | | Other Backward Classes | 19 | 38 |
| | | Scheduled Caste | 11 | 22 |
| | | Total | 50 | 100 |
| 6 | Marital Status | Married | 44 | 88 |
| | | Unmarried | 6 | 12 |
| | | Total | 50 | 100 |
| 7 | Father's education | Primary | 1 | 2 |
| | | Secondary | 25 | 50 |
| | | Tenth | 9 | 18 |
| | | Twelfth | 5 | 10 |
| | | Graduate | 5 | 10 |
| | | Postgraduate Diploma | 5 | 10 |
| | | Total | 50 | 100 |

| SN | Category | Particulars | No. | % |
|---|---|---|---|---|
| 8 | Father's Occupation | Ex-Serviceman | 1 | 2 |
| | | Range Forest Officer | 1 | 2 |
| | | Teacher | 1 | 2 |
| | | Bank Employee | 6 | 12 |
| | | Farming | 41 | 82 |
| | | Total | 50 | 100 |
| 9 | Mother's education | Primary | 1 | 2 |
| | | Secondary | 25 | 50 |
| | | Tenth | 13 | 26 |
| | | Twelfth | 6 | 12 |
| | | Graduate | 4 | 8 |
| | | Postgraduate | 1 | 2 |
| | | Total | 50 | 100 |
| 10 | Mother's Occupation | Housewife | 50 | 100 |
| | | Total | 50 | 100 |

Source: Data processed from Alumni's questionnaires
Note: No= number; %= percentage

**Table-4.19: Reasons for joining degree programme in agricultural/allied sciences by choice**

| SN | Reasons | Total | % to Total |
|---|---|---|---|
| 1 | More employment opportunities in sector | 17 | 36.17 |
| 2 | Interest in the subject | 14 | 29.79 |
| 3 | It is a professional degree | 8 | 17.02 |
| 4 | Best degree as per my qualification | 3 | 6.38 |
| 5 | Others | 3 | 6.38 |
| 6 | Degree useful for competitive examination | 2 | 4.26 |
| | **Total** | **47** | **100.00** |

Source: Data processed from Alumni's questionnaires
Note: %= percentage

**Table-4.20: Alumni's opinions about agriculture/allied disciplines which have better job opportunities**

| SN | Disciplines | No. of respondents | % to Total |
|---|---|---|---|
| 1 | Agriculture | 37 | 74 |
| 2 | Horticulture | 8 | 16 |
| 3 | Veterinary | 5 | 10 |
| | **Total** | **50** | **100** |

Source: Data processed from Alumni's questionnaires
Note: No= number; %= percentage

**Table-4.21: Present specialisation of sample student respondents**

| Sl. No. | Degree Enrolled | Number of respondents | Percentage |
|---|---|---|---|
| **A]** | **Bachelor Level:** | | |
| 1) | Bachelor of Biotechnology (B.Tech) | 17 | 14.91 |
| 2) | Bachelor of Science (BSc) | 97 | 85.09 |
| | **Sub-Total [A]** | **114** | **100.00** |
| **B]** | **Master's Level:** | | |
| 1) | Master of Biotechnology (M.Tech) | 4 | 5.63 |
| 2) | Agribusiness Management (MABM) | 7 | 9.86 |
| 3) | Master of Science (MSc) | 60 | 84.51 |
| | **Sub-Total [B]** | **71** | **100.00** |
| **C]** | **Doctoral Level:** | | |
| **1)** | **Doctorate in Philosophy (PhD)** | 29 | 13.55 |
| | **Sub-Total [C]** | **29** | **13.55** |
| | **Grand Total** | 214 | 100.00 |

Source: Data processed from Students' questionnaires

**Table-4.22: Specialisation of all the sample student respondents at their graduate level**

| Faculty | No. of respondents | % to total |
|---|---|---|
| Agriculture | 142 | 66.36 |
| Agricultural Engineering | 16 | 7.48 |
| Agricultural Marketing and Cooperation | 14 | 6.54 |
| Agricultural Biotechnology | 13 | 6.07 |
| Sericulture | 11 | 5.14 |
| Horticulture | 5 | 2.34 |
| Food Science | 5 | 2.34 |
| Home Science | 5 | 2.34 |
| Others | 3 | 1.40 |
| **Grand Total** | **214** | **100.00** |

Source: Data processed from Students' questionnaires
Note: No.= number; %= percentage

**Table-4.23: Career preferences of the sample student respondents**

| Sl.No. | Career preference | Students' wish | | Parents' wish | |
|---|---|---|---|---|---|
| | | Score# | Rank | Score# | Rank |
| 1 | Higher Education | 12.06 | 2 | 12.73 | 1 |
| 2 | Service sector | 10.61 | 1 | 11.55 | 2 |
| 3 | Business | 10.79 | 4 | 10.98 | 3 |
| 4 | Farming | 10.91 | 3 | 10.91 | 4 |
| 5 | Social service | 10.64 | 5 | 9.91 | 5 |

# Score is computed as the weighted average of sample students' ranks.
Source: Data processed from Students' questionnaires

**Table-4.24: Career preferences of the sample student respondents within service sector**

| Sl.No. | Career preference | Students' wish | | Parents' wish | |
|---|---|---|---|---|---|
| | | Score | Rank | Score | Rank |
| 1 | ICAR(ARS) | 11.89 | **2** | 12.29 | 1 |
| 2 | Government of India | 11.71 | **3** | 12.02 | 3 |
| 3 | State Government | 12.01 | **1** | 12.25 | 2 |
| 4 | SAU's (Scientist/Teacher) | 11.35 | **4** | 11.72 | 5 |
| 5 | Central Civil Service (IAS, IPS, etc.) | 10.60 | **6** | 10.66 | 6 |
| 6 | Banking | 10.92 | **5** | 11.85 | 4 |
| 7 | State Civil Service | 10.09 | **7** | 10.06 | 7 |
| 8 | Private organization | 9.43 | **8** | 8.67 | 8 |
| 9 | Others | 7.45 | **9** | 6.00 | 9 |

Source: Data processed from Students' questionnaires

**Table-4.27: Career preferences of the sample student respondents at different degree levels**

| SN | Career preference | Bachelor | | Master | | Doctoral | | Overall | |
|---|---|---|---|---|---|---|---|---|---|
| | | **No.** | **%** | **No.** | **%** | **No.** | **%** | **No.** | **%** |
| 1 | Higher Education | 21 | 33.33 | 22 | 48.89 | 6 | 50 | 49 | 40.83 |
| 2 | Service Sector | 11 | 17.46 | 5 | 11.11 | 2 | 16.67 | 18 | 15.00 |
| 3 | Farming | 8 | 12.7 | 3 | 6.67 | 3 | 25.00 | 14 | 11.67 |
| 4 | Business | 10 | 15.87 | 6 | 13.33 | 1 | 8.33 | 17 | 14.17 |
| 5 | Social Services | 12 | 19.05 | 8 | 17.78 | 0 | 0 | 20 | 16.67 |
| 6 | Others | 1 | 1.59 | 1 | 2.22 | 0 | 0 | 2 | 1.67 |
| | **Total** | **63** | **100** | **45** | **100** | **12** | **100** | **120** | **100** |

Source: Data processed from Students' questionnaires
Note: No= number; %=percentage

**Table-4.28: Career preferences of the sample student respondents within service sector**

| SN | Career preference | Bachelor | | Master | | Doctoral | | Overall | |
|---|---|---|---|---|---|---|---|---|---|
| | | **No.** | **%** | **No.** | **%** | **No.** | **%** | **No.** | **%** |
| 1 | ICAR(ARS) | 17 | 18.48 | 12 | 28.57 | 10 | 52.63 | 39 | 25.49 |
| 2 | Government of India | 12 | 13.04 | 7 | 16.67 | 6 | 31.58 | 25 | 16.34 |
| 3 | State Government | 14 | 15.22 | 4 | 9.52 | 2 | 10.53 | 20 | 13.07 |
| 4 | SAU's (Scientist/Teacher) | 8 | 8.70 | 7 | 16.67 | 1 | 5.26 | 16 | 10.46 |
| 5 | Central Civil Service (IAS, IPS, etc.) | 8 | 8.70 | 3 | 7.14 | 0 | 0.00 | 11 | 7.19 |
| 6 | Banking | 16 | 17.39 | 5 | 11.90 | 0 | 0.00 | 21 | 13.73 |
| 7 | State Civil Service | 9 | 9.78 | 2 | 4.76 | 0 | 0.00 | 11 | 7.19 |
| 8 | Private organization | 7 | 7.61 | 2 | 4.76 | 0 | 0.00 | 9 | 5.88 |
| 9 | Others | 1 | 1.09 | 0 | 0.00 | 0 | 0.00 | 1 | 0.65 |
| | **Total** | **92** | **100.00** | **42** | **100.00** | **19** | **100.00** | **153** | **100.00** |

Source: Data processed from Students' questionnaires
Note: No= number; %=percentage

**Table-4.25: Employment prospects of alumni respondents by employed sectors (from first job to the latest job)**

| Sl. No | Sector | No. of responses | % to total |
|---|---|---|---|
| 1 | Research and Development | 41 | 47.67 |
| 2 | Financial institutions | 13 | 15.12 |
| 3 | Input Industries | 11 | 12.79 |
| 4 | Private Industries | 8 | 9.30 |
| 5 | Academic | 7 | 8.14 |
| 6 | Central Government | 5 | 5.81 |
| 7 | State Government | 1 | 1.16 |
| | Grand Total | 86 | 100.00 |

Source: Data processed from Alumni's questionnaires
Note: No= number; %=percentage

**Table-4.26: Employed sectors and nature of employment of alumni respondents (from first job to latest job)**

| SN | Sector | Regular | | Contractual | | Temporary | | Total | |
|---|---|---|---|---|---|---|---|---|---|
| | | No. | % | No. | % | No. | % | No. | % |
| 1 | Research and development | 15 | 17.44 | 19 | 22.09 | 7 | 8.14 | 41 | 47.67 |
| 2 | Financial institutions | 13 | 15.12 | | 0.00 | | 0.00 | 13 | 15.12 |
| 3 | Input industries | 9 | 10.47 | 2 | 2.33 | | 0.00 | 11 | 12.79 |
| 4 | Private industries | 6 | 6.98 | 2 | 2.33 | | 0.00 | 8 | 9.30 |
| 5 | Academic | 7 | 8.14 | | 0.00 | | 0.00 | 7 | 8.14 |
| 6 | Central government | 5 | 5.81 | | 0.00 | | 0.00 | 5 | 5.81 |
| 7 | State government | 1 | 1.16 | | 0.00 | | 0.00 | 1 | 1.16 |
| | **Grand Total** | 56 | 65.12 | 23 | 26.74 | 7 | 8.14 | 86 | 100.00 |

Note: No= Number; %= Percentage;
Source: Data processed from Alumni's questionnaires

**Table-4.29: Distribution of alumni respondents based on the annual salary received**

*(in rupees)*

| SN | Sector | A | | B | | C | | D | | E | | F | | Grand Total | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | # | % | # | % | # | % | # | % | # | % | # | % | # | % |
| 1 | R&D | 1 | 1.16 | 16 | 18.60 | 18 | 20.93 | 5 | 5.81 | 1 | 1.16 | | | 41 | 47.67 |
| 2 | Financial institutions | 1 | 1.16 | 3 | 3.49 | 3 | 3.49 | 4 | 4.65 | 2 | 2.33 | | | 13 | 15.12 |
| 3 | Input Industries | | | 1 | 1.16 | 6 | 6.98 | 3 | 3.49 | | | 1 | 1.16 | 11 | 12.79 |
| 4 | Private Industries | | | 4 | 4.65 | 4 | 4.65 | | | | | | | 8 | 9.30 |
| 5 | Academic | | | | | | | 7 | 8.14 | | | | | 7 | 8.14 |
| 6 | Central Government | | | | | 1 | 1.16 | 3 | 3.49 | 1 | 1.16 | | | 5 | 5.81 |
| 7 | State Government | 1 | 1.16 | | | | | | | | | | | 1 | 1.16 |
| | **Grand Total** | **3** | **3.49** | **24** | **27.91** | **32** | **37.21** | **22** | **25.58** | **4** | **4.65** | **1** | **1.16** | **86** | **100.00** |

Note: A=< 1,00,000; B= 1,00,000 to 3,00,000; C= 3,00,000 to 5,00,000; D= 5,00,000 to 8,00,000; E= 8,00,000 to 12,00,000; F=> 14,00,000;
#= Number; %= Percentage

Source: Data processed from Alumni's questionnaires;

**Table-4.30: Constraints faced by the students for choosing their career options**

| SN | Particulars | Garrett Score | Rank |
|---|---|---|---|
| 1 | Income of parents | 34.27 | 1 |
| 2 | Family background | 27.90 | 2 |
| 3 | Career planning by me | 27.82 | 3 |
| 4 | Occupation of parents | 26.35 | 4 |
| 5 | Guidance/support from family, relatives & friends | 26.22 | 5 |
| 6 | Family type | 25.31 | 6 |
| 7 | Education of parents | 23.45 | 7 |
| 8 | Medium of study at higher secondary level | 23.17 | 8 |
| 9 | Mass media exposure in parents | 22.96 | 9 |
| 10 | Medium of study at XII standard level | 22.77 | 10 |
| 11 | OGPA | 22.31 | 11 |
| 12 | Socio-political participation of parents | 20.59 | 12 |
| 13 | Others | 17.00 | 13 |

Source: Data processed from Student's questionnaires

**Table-4.31: Students' perception about the present course curriculum**

| SN | Particulars | Students' perception | | | | | WAS* |
|---|---|---|---|---|---|---|---|
| | | FS | SWS | NSD | SWD | FD | |
| 1 | RAWE programme | 109 | 76 | 16 | 5 | 8 | 4.28 |
| 2 | Experiential Learning | 76 | 99 | 24 | 12 | 3 | 4.09 |
| 3 | Field Visits (Farms /Industries / Institutions) | 61 | 85 | 35 | 16 | 17 | 3.73 |
| 4 | State tour | 93 | 55 | 26 | 13 | 27 | 3.81 |
| 5 | All India Tour | 127 | 51 | 18 | 5 | 13 | 4.28 |
| 6 | Inter-Collegiate Youth Festival | 66 | 59 | 42 | 28 | 19 | 3.58 |
| | a) Cultural | 67 | 72 | 43 | 13 | 19 | 3.72 |
| | b) Literary | 63 | 64 | 46 | 20 | 21 | 3.60 |
| 7 | Inter-Collegiate Sports Meet | 83 | 76 | 34 | 11 | 10 | 3.99 |
| 8 | Inter-University Youth Festival | 64 | 62 | 44 | 22 | 22 | 3.58 |
| | c) Cultural | 67 | 67 | 42 | 22 | 16 | 3.69 |
| | d) Literary | 62 | 62 | 52 | 16 | 22 | 3.59 |
| 9 | Inter-University Sports Meet | 78 | 60 | 43 | 20 | 13 | 3.79 |

Note: *Weighted Average Score (WAS) computed using the scores 5=Fully Satisfied (FS); 4=Somewhat Satisfied (SWS); 3=Neither Satisfied nor Dissatisfied (NSD); 2=Somewhat Dissatisfied (SWD); 1=Fully Dissatisfied (FD);

Source: Data processed from Students' questionnaires

**Table-4.32: Teachers' perception about efficacy of various curricular and co-curricular activities**

| SN | Activities | Teachers perception | | | | | WAS* |
|---|---|---|---|---|---|---|---|
| | | E* | VG | G | M | P | |
| 1 | Usefulness of RAWE | 19 | 22 | 28 | 7 | 4 | 3.56 |
| 2 | Usefulness of Experiential Learning | 20 | 23 | 25 | 11 | 1 | 3.63 |
| 3 | State Tour | 23 | 26 | 27 | 3 | 1 | 3.84 |
| 4 | All India Tour | 25 | 25 | 26 | 2 | 2 | 3.86 |
| 5 | Youth Festival | 23 | 32 | 22 | 3 | 0 | 3.94 |
| 6 | Sports Activities | 23 | 32 | 20 | 5 | 0 | 3.91 |
| 7 | Cultural Activities | 23 | 29 | 25 | 3 | 0 | 3.90 |
| 8 | Literary Activities | 21 | 27 | 25 | 7 | 0 | 3.78 |

Note: * Weighted Average Score (WAS) calculated from the responses of the teachers weighted by scores, 5=Excellent (E); 4=Very Good (VG); 3=Good (G); 2=Moderate (M) and 1=Poor (P)

Source: Data processed from Teachers' questionnaires

**Table-4.33: Students' perception about the teachers and teaching/learning environment**

| SN | Particulars | Students' perception | | | | | WAS* |
|---|---|---|---|---|---|---|---|
| | | FS* | SWS | NSD | SWD | FD | |
| 1. | Adequacy of no. of teachers in each subject/course | 75 | 82 | 25 | 17 | 15 | 3.86 |
| 2. | Quality of teaching | 52 | 113 | 24 | 15 | 10 | 3.85 |
| 3. | Knowledge updation of faculty in respective field | 56 | 85 | 38 | 19 | 16 | 3.68 |
| 4. | Practical knowledge of teachers | 61 | 79 | 38 | 20 | 16 | 3.70 |
| 5. | Practical exposure given to students | 39 | 79 | 53 | 23 | 20 | 3.44 |
| 6. | Use of AV aids and Multi-media in teaching | 75 | 77 | 32 | 15 | 15 | 3.85 |
| 7. | Complete coverage of syllabus | 78 | 75 | 27 | 24 | 10 | 3.87 |
| 8. | Punctuality of teachers in taking class | 90 | 76 | 20 | 24 | 4 | 4.05 |
| 9. | Interaction between students and teacher in the class | 64 | 77 | 39 | 16 | 18 | 3.71 |
| 10. | Approachability and friendliness of teachers | 76 | 80 | 28 | 20 | 10 | 3.90 |
| 11. | Punctuality in conduct of examinations | 116 | 59 | 20 | 10 | 9 | 4.23 |
| 12. | Evaluation/examination system | 77 | 68 | 26 | 17 | 26 | 3.71 |

Note: *Weighted average score (WAS) computed using the scores, 5=Fully Satisfied (FS); 4=Somewhat Satisfied (SWS); 3=Neither Satisfied nor Dissatisfied (NSD); 2=Somewhat Dissatisfied (SWD); 1=Fully Dissatisfied (FD);

Source: Data processed from Students' questionnaires

**Table-4.34: General profile of teacher respondents**

| Sl.No. | Particulars | Assistant Professor | | Associate Professor | | Professor | | Total | |
|---|---|---|---|---|---|---|---|---|---|
| | | No | % | No | % | No | % | No | % |
| **A)** | **College** | | | | | | | | |
| 1) | College of Agriculture, Hassan | 9 | 19.57 | 6 | 37.50 | 5 | 27.78 | 20 | 25.00 |
| 2) | College of Agriculture, Mandya | 14 | 30.43 | 5 | 31.25 | 6 | 33.33 | 25 | 31.25 |
| 3) | College of Sericulture, Chintamani | 14 | 30.43 | 1 | 6.25 | 4 | 22.22 | 19 | 23.75 |
| 4) | Gandhi Krishi Vignana Kendra, Bangaluru | 9 | 19.57 | 4 | 25.00 | 3 | 16.67 | 16 | 20.00 |
| | **Grand Total** | **46** | **100.00** | **16** | **100.00** | **18** | **100.00** | **80** | **100.00** |
| **B)** | **Qualification** | | | | | | | | |
| 1) | Master of Science | 13 | 28.26 | 9 | 56.25 | | 0.00 | 22 | 27.50 |
| 2) | Doctor of Philosophy | 27 | 58.70 | 5 | 31.25 | 16 | 88.89 | 48 | 60.00 |
| 3) | Post Doctorate | 6 | 13.04 | 2 | 12.50 | 2 | 11.11 | 10 | 12.50 |
| | **Grand Total** | **46** | **100.00** | **16** | **100.00** | **18** | **100.00** | **80** | **100.00** |
| **C)** | **Gender** | | | | | | | | |
| 1) | Female | 16 | 34.78 | 2 | 12.50 | 2 | 11.11 | 20 | 25.00 |
| 2) | Male | 30 | 65.22 | 14 | 87.50 | 16 | 88.89 | 60 | 75.00 |
| | **Grand Total** | **46** | **100.00** | **16** | **100.00** | **18** | **100.00** | **80** | **100.00** |
| **D)** | **Religion** | | | | | | | | |
| 1) | Hindu | 45 | 97.83 | 16 | 100.00 | 16 | 88.89 | 77 | 96.25 |
| 2) | Muslim | 1 | 2.17 | | 0.00 | 2 | 11.11 | 3 | 3.75 |
| | **Grand Total** | **46** | **100.00** | **16** | **100.00** | **18** | **100.00** | **80** | **100.00** |
| **E)** | **Caste** | | | | | | | | |
| 1) | General Category | 15 | 32.61 | 9 | 56.25 | 10 | 55.56 | 34 | 42.50 |
| 2) | Other backward classes | 17 | 36.96 | 1 | 6.25 | 5 | 27.78 | 23 | 28.75 |
| 3) | Scheduled Caste | 7 | 15.22 | 5 | 31.25 | 1 | 5.56 | 13 | 16.25 |
| 4) | Scheduled Tribe | 7 | 15.22 | 1 | 6.25 | 2 | 11.11 | 10 | 12.50 |
| | **Grand Total** | **46** | **100.00** | **16** | **100.00** | **18** | **100.00** | **80** | **100.00** |

Source: Data processed from Teachers' questionnaires.
Note: No= number; %= percentage

**Table-4.35: Teaching experience and workload of sample teachers**

| Cadre | Experience (Completed years) | | Teaching at UG level | | Teaching at MSc / PhD level | |
|---|---|---|---|---|---|---|
| | In present university | Career in total | No. of courses handled | Contact hours per week | No. of courses handled | Contact hours per week |
| Assistant Professor | 1.39 | 1.89 | 3.93 | 10.26 | 1.37 | 3.50 |
| Associate Professor | 3.94 | 5.13 | 4.44 | 9.50 | 1.25 | 2.63 |
| Professor | 3.39 | 5.00 | 3.61 | 13.17 | 2.28 | 6.39 |

Source: Data processed from Teachers' questionnaires
Note: No= number

**Table-4.36: Research projects and extension activities handled by sample teachers**

| Cadre | As Principal Investigator | | As Co-Principal Investigator | | As leader / Coordinator | | As Co-leader / Co-Coordinator | |
|---|---|---|---|---|---|---|---|---|
| | Univ. Funded | Ext. Funded | Univ. Funded | Ext. Funded | Univ. Funded | Ext. Funded | Univ. Funded | Ext. Funded |
| Assistant Professor | 0.30 | 0.41 | 0.52 | 0.35 | 0.63 | 0.02 | 0.52 | 0.02 |
| Associate Professor | 0.19 | 0.19 | 0.44 | 0.13 | 0.31 | 0.00 | 0.00 | 0.38 |
| Professor | 0.39 | 0.44 | 0.50 | 0.56 | 0.83 | 0.39 | 0.33 | 0.11 |

Source: Data processed from Teachers' questionnaires
Note: Univ. Funded=University Funded; Ext. Funded=Externally Funded.

**Table-4.37: Satisfaction level of teachers with respect to HRD opportunities**

| SN | Particulars | Satisfaction level of teachers | | | | | |
|---|---|---|---|---|---|---|---|
| | | FS | SWS | NSD | SWD | FD | WAS* |
| 1 | **Seminars / Conferences / Symposia** | | | | | | |
| | a) Permission & Support for organization of the event | 37 | 32 | 8 | 2 | 1 | 4.28 |
| | b) Permission & Support to participate within University | 42 | 30 | 7 | 1 | 0 | 4.41 |
| | c) Permission & Support to participate within India | 34 | 36 | 5 | 3 | 2 | 4.21 |
| | d) Permission & Support to participate in events abroad | 23 | 26 | 14 | 9 | 8 | 3.59 |
| 2 | **Workshops** | | | | | | |
| | a) Permission & Support for organization of the event | 43 | 30 | 6 | 1 | 0 | 4.44 |
| | b) Permission & Support to participate within University | 39 | 35 | 4 | 2 | 0 | 4.39 |
| | c) Permission & Support to participate within India | 31 | 38 | 7 | 3 | 1 | 4.19 |
| | d) Permission & Support to participate in events abroad | 13 | 39 | 14 | 8 | 6 | 3.56 |
| 3 | **Trainings** | | | | | | |
| | a) Permission & Support for organization of the event | 49 | 23 | 6 | 2 | 0 | 4.49 |
| | b) Permission & Support to participate within University | 49 | 21 | 7 | 3 | 0 | 4.45 |
| | c) Permission & Support to participate within India | 40 | 27 | 7 | 5 | 1 | 4.25 |
| | d) Permission & Support to participate in events abroad | 21 | 34 | 12 | 7 | 6 | 3.71 |
| 4 | **Consultancies** | | | | | | |
| | a) Received by you from other experts | 21 | 44 | 12 | 2 | 1 | 4.03 |
| | b) Provided by you to clients | 23 | 46 | 7 | 3 | 1 | 4.09 |
| | c) Resource generation from providing consultancies | 19 | 33 | 18 | 8 | 2 | 3.74 |

Note: *Score calculated from the responses of the teachers weighted by the scores, 5=Fully Satisfied (FS); 4=Somewhat Satisfied (SWS); 3=Neither Satisfied nor Dissatisfied (NSD); 2=Somewhat Dissatisfied (SWD); 1=Fully Dissatisfied (FD);

Source: Data processed from Teachers' questionnaires

**Table-4.38: Teachers' perception about students' quality, behaviour and activities**

| SN | Attribute | Teachers' perception | | | | | WAS* |
|---|---|---|---|---|---|---|---|
| | | E* | VG | G | M | P | |
| 1 | Time allocation for curricular and co-curricular activities | 15 | 24 | 29 | 10 | 2 | 3.50 |
| 2 | Time spent for different curricular and co-curricular activities | 13 | 21 | 32 | 12 | 2 | 3.39 |
| 3 | Quality of students in the college | 10 | 18 | 29 | 19 | 4 | 3.60 |
| 4 | Level of interest in learning | 16 | 28 | 25 | 10 | 1 | 3.58 |
| 5 | Level of interest in research | 13 | 32 | 24 | 10 | 1 | 3.34 |
| 6 | Students behaviour/ response in the class | 11 | 26 | 23 | 19 | 1 | 3.60 |

Note: *Weighted Average Score (WAS) calculated from the responses of the teachers weighted by scores 5=Excellent (E); 4=Very Good (VG); 3=Good (G); 2=Moderate (M) and 1=Poor (P)

Source: Data processed from Teachers' questionnaires

**Table-4.39: Perception of students' about the college infrastructure**

| SN | Particulars | Students' perception | | | | | WAS* |
|---|---|---|---|---|---|---|---|
| | | FS* | SWS | NSD | SWD | FD | |
| **a)** | **CURRICULAR:** | | | | | | |
| 1. | Classrooms (space, light, aeration, chairs/benches, AV aids) | 123 | 59 | 8 | 10 | 14 | 4.25 |
| 2. | Laboratories (Space, number & quality of equipments) | 52 | 84 | 27 | 17 | 34 | 3.48 |
| 3. | Conference/Seminar Hall (space & equipped) | 81 | 78 | 23 | 11 | 21 | 3.87 |
| 4. | Accessibility to computers and accessories | 67 | 73 | 32 | 22 | 20 | 3.68 |
| 5. | Accessibility to Internet/Email | 75 | 65 | 29 | 18 | 27 | 3.67 |
| 6. | Accessibility to photocopying facility | 59 | 69 | 40 | 17 | 29 | 3.52 |
| 7. | Vehicles for field visits (Adequacy and quality) | 29 | 56 | 37 | 34 | 58 | 2.83 |
| 8. | Library (availability of books, journals, news papers, etc.) | 134 | 52 | 14 | 9 | 5 | 4.41 |
| **b)** | **SUPPORTING AMENITIES:** | | | | | | |
| 1. | Hostel accommodation | 60 | 78 | 37 | 21 | 18 | 3.66 |
| 2. | Mess/Canteen/Food facilities | 33 | 75 | 37 | 35 | 34 | 3.18 |
| 3. | Outdoor sports facility | 62 | 84 | 38 | 20 | 10 | 3.79 |
| 4. | Indoor sports facility | 49 | 73 | 44 | 20 | 28 | 3.44 |
| 5. | Cultural room+ instruments | 28 | 63 | 68 | 28 | 27 | 3.17 |
| 6. | Gymnasium hall | 26 | 45 | 44 | 50 | 49 | 2.76 |
| 7. | Auditorium | 96 | 49 | 25 | 19 | 25 | 3.80 |
| 8. | Medical service (Clinic) | 57 | 74 | 39 | 27 | 17 | 3.59 |
| 9. | Medical Shop | 37 | 49 | 28 | 34 | 66 | 2.80 |
| 10. | Bank | 118 | 44 | 19 | 12 | 21 | 4.06 |
| 11. | Post Office | 126 | 43 | 18 | 11 | 16 | 4.18 |
| 12. | Grocery shop | 66 | 50 | 33 | 21 | 44 | 3.34 |
| 13. | Swimming pool | 10 | 8 | 12 | 20 | 164 | 1.50 |

Note: *Weighted average score (WAS) computed using the scores, 5=Fully Satisfied (FS); 4=Somewhat Satisfied (SWS); 3=Neither Satisfied nor Dissatisfied (NSD); 2=Somewhat Dissatisfied (SWD); 1=Fully Dissatisfied (FD);

Source: Data processed from Students' questionnaires

**Table-4.40: Satisfaction level of sample teachers with respect to physical facilities and staff**

| SN | Particulars | Satisfaction level | | | | | WAS* |
|---|---|---|---|---|---|---|---|
| | | FS* | SWS | NSD | SWD | FD | |
| 1 | Office work space and ambience | 34 | 32 | 7 | 6 | 1 | 4.15 |
| 2 | Office furniture (adequacy and quality) | 32 | 38 | 6 | 2 | 2 | 4.20 |
| 3 | Class rooms (Sufficiency and quality) | 32 | 32 | 9 | 7 | 0 | 4.11 |
| 4 | Laboratories (Space and Equipments) | 20 | 31 | 17 | 10 | 2 | 3.71 |
| 5 | Conference Hall | 26 | 28 | 10 | 7 | 9 | 3.69 |
| 6 | Computer & accessories in your office/accessible | 31 | 40 | 7 | 1 | 1 | 4.24 |
| 7 | Photocopying facility (easy & timely accessibility) | 24 | 36 | 15 | 2 | 3 | 3.95 |
| 8 | Internet (easy & timely accessibility) | 25 | 31 | 15 | 5 | 4 | 3.85 |
| 9 | Presentation facilities (LCD Projector & Screen) | 33 | 33 | 12 | 2 | 0 | 4.21 |
| 11 | Lectern & Sound System | 16 | 29 | 27 | 3 | 5 | 3.60 |
| 12 | Documentation facility (Camera, Video, etc.) | 22 | 35 | 14 | 5 | 4 | 3.83 |
| 13 | Vehicle/POL for field visits | 20 | 28 | 17 | 8 | 7 | 3.58 |
| 14 | Technical Staff (adequacy & quality) | 17 | 32 | 17 | 12 | 2 | 3.63 |
| 15 | Supporting Staff (adequacy & quality) | 12 | 31 | 16 | 18 | 3 | 3.39 |
| 16 | Computer stationery (toner, CD, paper, etc.) | 30 | 31 | 16 | 3 | 0 | 4.10 |
| 17 | Office stationery (writing papers, gum, pencil, etc) | 38 | 33 | 7 | 1 | 1 | 4.33 |
| 18 | Others (specify) | 1 | 4 | 0 | 0 | 0 | 4.20 |

Note: * Weighted Average Score (WAS) computed from the responses of the teachers weighted by the scores, 5=Fully Satisfied (FS), 4=Somewhat Satisfied (SWS), 3=Neither Satisfied nor Dissatisfied (NSD), 2=Somewhat Dissatisfied (SWD) and 1=Fully Dissatisfied (FD).

Source: Data processed from Teachers' questionnaires.

**Table-4.41: Availability and accessibility of amenities to the teachers in the campus**

| SN | Amenity | Available | | | | | | Accessing / Availing | | | | | | Satisfaction level | | | | | WAS# |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Yes | | No | | Total | | Yes | | No | | Total | | FS | SWS | NSD | SWD | FD | |
| | | No | % | No | % | No | % | No | % | No | % | No | % | | | | | | |
| 1 | Staff quarters | 66 | 82.50 | 14 | 17.50 | 80 | 100 | 27 | 40.91 | 39 | 59.09 | 66 | 100 | 20 | 25 | 11 | 7 | 3 | 3.79 |
| 2 | Medical service (Clinic) | 77 | 96.25 | 3 | 3.75 | 80 | 100 | 61 | 79.22 | 16 | 20.78 | 77 | 100 | 35 | 32 | 7 | 3 | - | 4.29 |
| 3 | Medical Shop | 26 | 32.50 | 54 | 67.50 | 80 | 100 | 25 | 96.15 | 1 | 3.85 | 26 | 100 | 7 | 8 | 10 | - | 1 | 3.77 |
| 4 | Bank | 61 | 76.25 | 19 | 23.75 | 80 | 100 | 56 | 91.80 | 5 | 8.20 | 61 | 100 | 41 | 17 | 2 | 1 | - | 4.61 |
| 5 | Post Office | 55 | 68.75 | 25 | 31.25 | 80 | 100 | 53 | 96.36 | 2 | 3.64 | 55 | 100 | 37 | 17 | 1 | - | - | 4.65 |
| 6 | Canteen/Cafeteria | 55 | 68.75 | 25 | 31.25 | 80 | 100 | 53 | 96.36 | 2 | 3.64 | 55 | 100 | 11 | 7 | 8 | 3 | 51 | 2.05 |
| 7 | Grocery shop | 13 | 16.25 | 67 | 83.75 | 80 | 100 | 5 | 38.46 | 8 | 61.54 | 13 | 100 | 5 | 3 | - | 4 | 1 | 3.54 |
| 8 | Outdoor sports facility | 73 | 91.25 | 7 | 8.75 | 80 | 100 | 40 | 54.79 | 33 | 45.21 | 73 | 100 | 35 | 28 | 7 | 1 | 2 | 4.27 |
| 9 | Indoor sports facility | 35 | 43.75 | 45 | 56.25 | 80 | 100 | 21 | 60.00 | 14 | 40.00 | 35 | 100 | 21 | 11 | 2 | - | 1 | 4.46 |
| 10 | Cultural room+ instruments | 36 | 45.00 | 44 | 55.00 | 80 | 100 | 11 | 30.56 | 25 | 69.44 | 36 | 100 | 16 | 11 | 5 | 2 | 2 | 4.03 |
| 11 | Gymnasium hall | 43 | 53.75 | 37 | 46.25 | 80 | 100 | 10 | 23.26 | 33 | 76.74 | 43 | 100 | 20 | 15 | 2 | 4 | 2 | 4.09 |
| 12 | Auditorium | 33 | 41.25 | 47 | 58.75 | 80 | 100 | 26 | 78.79 | 7 | 21.21 | 33 | 100 | 23 | 6 | 2 | 1 | 1 | 4.48 |
| 13 | Swimming pool | 1 | 1.25 | 79 | 98.75 | 80 | 100 | 1 | 100.00 | - | - | 1 | 100 | 0 | 1 | - | - | - | 4.00 |

Note: No=Number; %= Per cent, * Weighted Average Score (WAS) computed from the responses of the teachers weighted by the scores, 5=Fully Satisfied (FS), 4=Somewhat Satisfied (SWS), 3=Neither Satisfied nor Dissatisfied (NSD), 2=Somewhat Dissatisfied (SWD) and 1=Fully Dissatisfied (FD).

Source: Data processed from Teachers' questionnaires.

**Table-4.42: Students' perception about the college administration**

| SN | Particulars | Perception of the students about the college administration | | | | | |
|---|---|---|---|---|---|---|---|
| | | FS* | SWS | NSD | SWD | FD | WAS* |
| 1. | College administration (Supportive/encouraging) | 61 | 82 | 26 | 27 | 18 | 3.66 |
| 2. | Fund availability for students' academic activities | 25 | 72 | 51 | 29 | 37 | 3.09 |
| 3. | Fund availability for students' co-curricular activities | 26 | 74 | 47 | 36 | 31 | 3.13 |
| 4. | Functioning of Placement Cell/Campus recruitments | 22 | 59 | 40 | 42 | 51 | 2.81 |
| 5. | Safety & security of students in the campus | 57 | 91 | 32 | 16 | 18 | 3.71 |
| 6. | Functioning of Students' Association | 33 | 54 | 43 | 21 | 63 | 2.87 |
| 7. | Functioning of Alumni Association | 32 | 68 | 54 | 25 | 35 | 3.17 |
| 8. | Present fee structure | 25 | 49 | 54 | 26 | 60 | 2.78 |
| 9. | Present students' admission procedure | 46 | 85 | 36 | 17 | 30 | 3.47 |
| 10. | Treatment of students (gender, racial, regional discrimination, etc.) | 69 | 58 | 25 | 16 | 46 | 3.41 |

Note: *Weighted Average Score (WAS) calculated from the responses of the students weighted by scores 5=Fully Satisfied (FS); 4=Somewhat Satisfied (SWS); 3=Neither Satisfied nor Dissatisfied (NSD); 2=Somewhat Dissatisfied (SWD); 1=Fully Dissatisfied (FD).

Source: Data processed from Students' questionnaires

**Table-4.43: Teachers' perception about university/college administration/programmes**

| SN | Perception | Teachers' perception | | | | | |
|---|---|---|---|---|---|---|---|
| | | SA* | A | NAD | D | SD | WAS* |
| 1 | Sufficient funds are available for teaching activities | 182 | 307 | 66 | 48 | 8 | 3.99 |
| 2 | Sufficient funds are available for research activities | 136 | 241 | 118 | 86 | 30 | 3.60 |
| 3 | Sufficient funds are available for extension activities | 123 | 259 | 138 | 70 | 21 | 3.64 |
| 4 | Sufficient funds are available for students' activities | 150 | 277 | 125 | 51 | 8 | 3.83 |
| 5 | University administration is supportive/encouraging | 178 | 315 | 86 | 21 | 11 | 4.03 |
| 6 | College administration is supportive/encouraging | 207 | 311 | 71 | 13 | 9 | 4.14 |
| 7 | Colleagues in the dept/section are supportive | 248 | 306 | 40 | 14 | 3 | 4.28 |
| 8 | Supporting staff in the dept/section are supportive | 197 | 307 | 73 | 26 | 8 | 4.08 |
| 9 | Placement Cell is functioning effectively | 156 | 275 | 124 | 47 | 9 | 3.85 |
| 8 | Safety & security in college and campus is good | 213 | 284 | 69 | 36 | 9 | 4.07 |
| 9 | Teachers' Association is functioning effectively | 129 | 237 | 137 | 65 | 43 | 3.56 |
| 10 | Students' Association is functioning effectively | 120 | 231 | 147 | 74 | 39 | 3.52 |
| 11 | Alumni Association is functioning effectively | 111 | 226 | 164 | 62 | 48 | 3.47 |
| 12 | Good job prospects for our graduates/postgraduates | 138 | 309 | 112 | 37 | 15 | 3.85 |
| 13 | Present curriculum matches job requirements | 121 | 319 | 129 | 30 | 12 | 3.83 |
| 14 | Present curriculum loaded with more theory than practical's | 85 | 235 | 181 | 94 | 16 | 3.46 |
| 15 | Curriculum not focused on imparting problem solving skills | 71 | 225 | 174 | 117 | 24 | 3.33 |
| 16 | Present fee structure is appropriate | 115 | 341 | 114 | 26 | 15 | 3.84 |
| 17 | Present students' admission procedure is appropriate | 157 | 334 | 79 | 30 | 11 | 3.98 |
| 18 | Staff recruitment procedure is appropriate and periodical | 87 | 260 | 131 | 74 | 59 | 3.40 |

Note: *Weighted average score (WAS) computed using the scores, 5=Strongly Agree (SA); 4=Agree (A); 3=Neither Agree nor Disagree (NAD); 2=Disagree (D); 1=Strongly Disagree (SD)

Source: Data processed from Teachers' questionnaires

**Table-4.44: Students' perception about the course on graduation**

| SN | Particulars | Perception of the students about the course on graduation | | | | | |
|---|---|---|---|---|---|---|---|
| | | SA* | A | NAD | SWD | FD | WAS* |
| 1. | There are good prospects of getting a job after graduation | 38 | 83 | 43 | 23 | 27 | 3.38 |
| 2. | I would recommend this course for others | 53 | 91 | 34 | 19 | 17 | 3.67 |
| 3. | I regret joining this course | 14 | 29 | 39 | 57 | 75 | 2.30 |
| 4. | I consider this course at par with other professional degrees | 71 | 85 | 35 | 13 | 10 | 3.91 |
| 5. | General public considers this course at par with other professional degrees | 49 | 79 | 41 | 31 | 14 | 3.55 |
| 6. | I am feeling proud to have completed this course | 104 | 68 | 21 | 8 | 13 | 4.13 |
| 7. | I am satisfied with the knowledge I have gained from the course to start my own farming/business | 64 | 80 | 45 | 17 | 8 | 3.82 |

Note: *Weighted average score (WAS) computed using the scores, 5=Strongly Agree (SA); 4=Agree (A); 3=Neither Agree nor Disagree (NAD); 2=Disagree (D); 1=Strongly Disagree (SD)

Source: Data processed from Students' questionnaires

# 5. DISCUSSION

In this chapter, the data collected from different sources were analysed and were interpreted. The findings of the study are discussed as per the set of objectives, under the following headings.

1. Growth in supply of and demand for agricultural graduates, postgraduates and doctorates, and gaps therein;

2. Quality of agricultural graduates, postgraduates and doctorates produced by UAS, Bengaluru versus requirements of employers;

3. Relationship between profile characteristics, choice of courses and career preferences of agricultural graduates, postgraduates and doctorates; and

4. Areas/issues which need immediate attention of the policy makers/other stake holders and strategies to make agriculture education more effective.

## 5.1 Growth in supply of and demand for agricultural graduates, postgraduates and doctorates, and gaps therein

### 5.1.1 College wise intake of students at Bachelor, Master and Doctoral levels (Constituent and Affiliated Colleges)

The pattern of present intake of students at various degree levels from University of Agricultural Sciences, Bengaluru (Table 4.1), clearly reveals the distribution of students among the different campuses of UASB. Due to increased demand for graduates from agriculture and allied sciences, the students were choosing agricultural degree programmes for their higher studies. Similarly, sericulture, food technology, and marketing and cooperation courses were also popular among students.

### 5.1.2 Discipline-wise and college wise intake of students for PG and PhD courses (Constituent and Affiliated Colleges)

Intake of students at PG and PhD levels in various subject shows increased students' preference for wide variety of courses for higher studies, who wanted to have in-depth knowledge about the particular subject (Table 4.2). At under-graduate level a large number of

courses have been offered which enables the students to learn little about everything and also the courses at graduate level were not particularly practical oriented. Subjects like, Genetics and Plant Breeding, Agronomy, Soil Science and Agricultural Chemistry, Agricultural Entomology, Economics, Extension and Plant Pathology were some of the most demanded courses preferred by the students to take higher education and also these subjects had more intake compared to other subjects like Apiculture, Sericulture, Plant Biochemistry, Environmental Science and Food Science and Nutrition.

### 5.1.3 Intake and compound annual growth rate (CAGR) of graduates

There was a significant positive growth in the intake of students at all the degree levels (Table 4.3). This may be because of increased demand for agricultural graduates over the years, which might have led the universities to increase the intake. In case of male students for PG programmes there was a negative growth in the intake, may be due to increased job consciousness among male graduates to go for employment seeking rather than opting for higher education. This was on par with the findings of a study conducted by Sashidar and Reddy (2013), who concluded that India would supply more master degree graduates in veterinary sciences discipline than required. It could be seen that there was a sudden increase in the intake of students (2007-08, 817 students) since UAS, Bengaluru had started offering four undergraduate courses in College of Agriculture, Hassan (3 UG programmes) and one UG programme in College of Agriculture, Chintamani. Due to increased demand from the public and abundant facilities available in the University, B.Sc.(Agri), B.Sc.(Agri-Bio-Tech) and B.Tech.(Food Science) courses were started from 2007-08. From 2011-12 the intake of students had shown decreasing scenario, since the University of Agricultural and Horticultural Sciences (UAHS), Shivamogga got separated from UAS, Bengaluru thus leading distribution of the colleges between these two Universities. Thus, the overall intake in the erstwhile UASB being same, the distribution of colleges led to decline in the intake of UASB during that period.

### 5.1.4 Out-turn and compound annual growth rate (CAGR) of graduates

There was a positive growth in out-turn of graduates at all the degree levels (Table 4.4). From the year 2011-12 out-turn of graduates from the University was started increasing since four undergraduate courses were started in College of Agriculture, Hassan (3 UG programmes) and College of Agriculture, Chintamani (one UG course). Over the years the intake for PG and doctoral degree programmes have increased which in turn lead to increase

in out-turn of the agricultural graduates. Since increased demand from public for agricultural degree programmes leads to increased intake which in turn resulted into growth in the outturn of graduates too. This result was in accordance with a study conducted by Pratley (2011) who studied the market for agriculture professionals in Australia and revealed that there was a sizeable job market in agriculture and more than 4000 jobs per year were consistently being advertised seeking agricultural professionals. Conversely the number of graduates being supplied by Australian universities continues to decline significantly and was less than 20 per cent of the number needed to satisfy the job market.

### 5.1.5 Forecast of out-turn of graduates at different levels up to 2029-30

Table 4.5 depicts the forecast of out-turn of graduates at different levels up to 2029-30. From the table it is clear that the number of graduates coming out of the university is expected to increase. This result holds well with the results of Ramarao *et al.* (2014) who assessed the supply and demand of professional manpower in Indian agriculture, and suggested that the demand-supply gap in agricultural professionals would cumulate to about 2 lakhs by 2020, which would need additional annual supply of 10,000 each of diploma holders and graduates.

### 5.1.6 Supply Demand Gap of agricultural graduates up to 2029-30

The negative supply demand gap shows that the number of graduates coming out of the university were more than the required (Table 4.6). Results showed that the supply demand gap was increasing at an increasing rate over the years from 2005-06 to 2029-30 except in some of the years gap was comparatively low. These findings were also on par with the findings of Balagopal *et al*. (2012) who assessed the technical manpower requirements in agriculture sector in India which concluded that the demand for agriculture sector manpower of degree holders in India would exceed the supply during the forecasting period (2010-2030) and hence a demand-supply gap exists. On the other hand, the results were similar to the findings of Hinchliff (1993) forecasted manpower and analysed the labour market with respect to the demand for technical agricultural school graduates in Egypt which found that supply of graduates from agriculture schools was seen to be far greater than likely demand.

## 5.2 Quality of agricultural graduates, postgraduates and doctorates produced by UAS, Bengaluru versus requirements of employers

### 5.2.1 Students behavioural attributes during graduation

Student behavioural attributes during their graduation, given by teacher respondents is shown in Table 4.7. It reveals that majority of the respondents were fully satisfied with student's attendance in the class, behaviour in examination hall, submission of practical records and assignments. Many of the sample teachers were somewhat satisfied with the behaviour of students in the classroom, co-curricular activities, quality of students, seminars and presentations given by students and language level. The findings were in line with Preeti (2015), where 79 per cent of the teacher respondents were fully satisfied with student's attendance in the class and 63 per cent of them were somewhat satisfied with quality of seminars given and language level (60 %). This might be because of increased demand for agricultural graduates leading to increase in the intake capacity of students by farm universities. But still many of the students belong to rural area; therefore the language level was not up to the satisfaction level of the respondent teachers.

### 5.2.2 Quality/employability skill parameters of respondents

Results depicts that students were moderate to good at acquiring skills due to their degree programme (Table 4.8). This may be due to continuous efforts made by the university to develop overall personality of its students and teaching faculty by way of providing them sufficient facilities and amenities in the form of physical as well as manual. Students' quality attributes were really good and they were in the line of requirements of employer categories. Similar results were found in the study of Robinson and Garton (2008) where graduates perceived that all 67 employability skill items were moderately important to entry-level positions in the workplace. So, graduates believed that it is important to be able to solve problems, work independently, deal with stress, stay positive, and listen.

### 5.2.3 Improvement in students' quality attributes due to degree programme

The improvement in student quality attributes due to degree programme was depicted in Table 4.9. Results show that the agricultural degree programme had improved the quality attributes of the student respondents. Since Agricultural Degree programmes were having the diversified courses which lead the students to learn variety of interesting things. These courses in turn help in acquiring the skills (includes both technical/professional along with

soft skills). The results were found to be similar with Shelton *et al,* (2006) where most of the respondents felt their professionally related skills (e.g. communication, leadership, problem solving, etc.) were enhanced by their graduate school experience. Students who completed a thesis, reported significantly higher levels of skill development in writing, analytical methods, and research competency, compared to non-thesis students.

### 5.2.4 Important selection criteria for recruiting the graduates

For recruitment of agricultural graduates sample teachers had given selection criteria and were presented in Table 4.10. From the teacher respondents point of view academic qualifications, interpersonal and communication skills and passion / knowledge of industry / drive / commitment / attitude towards work were very important from an employer to recruit the graduates. In the modern era with fast growing population and technology needs skilled professional human resource to meet the employer needs in terms of academic qualifications, technical skills, inter personal and communication skills. Working with team, thinking critically, and possessing interpersonal skills to be the most important employability skill-set desired by employers (Robinson and Garton, 2008).

### 5.2.5 Expectations of the students from their respective universities

Expectations like campus placement, coaching for competitive exams, helping in mobilization of credit and business incubation from their universities were shown in Table 4.11. At the graduate level it was difficult to get financial support for the graduates to start a business in the agricultural field and also the agricultural degree at B.Sc. level imparts education which meets the partial needs to start an agri-entrepreneurship. Student respondents feel difficult to find jobs immediately after the completion of their degree so they expect their universities to have university industry linkages so that campus placement will help them to fetch jobs. Employment in service sectors will be through competitive examinations so sample students expect their institution should provide coaching for these examinations. Many of the respondents expect help in start-up / business incubation from their university since lack of practical knowledge hinders the graduates to take up own enterprises. Some of them feel that university should help in mobilizing funds for starting their business because to get financial support from external sources soon after the graduation. These results were in the line with the findings of Chamela Bai (2016), where the constraint “Less practical knowledge about entrepreneurship” was perceived as the most severe constraint at the top priority by the male agriculture graduates, whereas the constraint “Problems in getting the required capital”

was perceived as the first most severe constraint by the female agriculture graduates to start their own enterprise.

### 5.2.6 Mode of getting jobs by the sample alumni respondents

Majority of the sample alumni were employed through direct interview shows that the graduates produced from university were well qualified highly skilled to meet the needs of the employers (Fig. 3). Some of the graduates were get into jobs by way of clearing competitive examinations it shows that agricultural course curriculum is very much useful for clearing competitive exams conducted by both Central and State governments, since it covers diversified courses. 15 per cent of the alumni were employed through campus interview which was carried out by the private companies, financial institutions with the affiliation of university recruitment/ placement cell.

### 5.2.7 Time taken to acquire first job after graduation by the alumni respondents

Majority of the sample alumni were employed immediately after the completion of their degree programmes (Table 4.12). This may be because of skilled and good quality graduates coming out of universities meeting the employer needs. Since there is high demand for agricultural graduates in all most all fields like Teaching, Research and extension in agriculture and allied sciences. In the aspiration of good jobs and waiting for results of competitive exams MSc and PhD respondents (only one in both cases) were employed after one year of their graduation.

### 5.2.8 Students' willingness to start their own enterprise after graduation

Majority of the sample students were not willing to start their own enterprise the reasons may be lack of practical exposure, limited financial sources, family background and support from family members. On the contrary some of the respondents want to start their own enterprise this might be because of interest in having their own business (Table 4.13). The results were in similar with the findings of Chamela Bai (2016), where majority of the male and female agriculture graduates had "Favourable" attitude agriculture entrepreneurship. The attitude of both male and female agriculture graduates was the most favourable towards the statement "Agricultural entrepreneurship creates positive attitude towards starting an agri-clinic or agri-business centre at village level", whereas both of their attitude was least favourable towards the statement "I have very low future aspirations in agricultural field".

### 5.2.9 Self-employment of graduates by type of unit and period of employment

Self-employment among alumni respondents and their period of employment was as shown in Table 4.14. Results shows that majority of them were practicing farming this may be because of agricultural courses were giving wide exposure to the students with practical knowledge and experience of real life situations. These results were similar with the findings of Gowda *et al.* (2012) where 35 per cent of the agricultural students strongly agreed that agricultural degree programme was very much useful for them to do farming in scientific way on the learning by doing principle. The students will get knowledge and learn skills while studying in agricultural degree programme.

### 5.2.10 Perception of student respondents about the present course curriculum

Since majority of the student respondents felt that there should be more practical visits and present course curriculum covers more theory than the practical session (Table 4.15). Practical exposure to the students can improve their applicability of theoretical knowledge in real life situations. Respondents were also opined that the course curriculum meets the job requirements of government, private and self- entrepreneurship. This may be because of agriculture and its related degree programmes containing wide range of subjects. Agricultural graduates were qualified enough to meet the job requirements of private, government as well as to start their own business. Agriculture is more suited for students from rural areas as agriculture is a way of life for the rural people and students from rural areas, who join agriculture, have a pre-practical exposure in agriculture practice and hence it will help them to learn more practically and excel in their field. Just completing agriculture and its related practical classes, village visits, study tours were conducted to provide an opportunity to students to become closer to the real life situation (Gowda *et al.*, 2012).

### 5.2.11 Requirement of employers in terms of the course curriculum of the universities as felt by the alumni respondents

Requirement of employers in terms of the course curriculum of the universities as felt by the alumni respondents were given in Table 4.16. Managerial skills, more technical knowledge and more practical work were preferred most by the alumni for the additions to the present course curriculum. These additions suggested by alumni shows that there was huge demand for trained agricultural human resource in every sector. And there is a supply gap of well qualified and skilled graduates to meet the requirements employers. Actual employment

depends on the skill-set of the graduates coming out of the agriculture university education system. Skill-set represents skill and knowledge in respect of both professional/technical skills and soft skills (managerial, behavioural and communication). If the possessed skill-set does not match the expectations of the employer, a fraction of the employment may be lost to the persons from other competing disciplines, such as management or science graduates. The skill gap, through reduced job opportunity, aggravates existing unemployment problem, and increased unemployment in turn distracts students from opting for these courses affecting supply of quality-trained human resource (Nanda *et al.*, 2005).

## 5.3 Relationship between profile characteristics, choice of courses and career preferences of agricultural graduates, postgraduates and doctorates

### 5.3.1 Profile of sample student respondents

Female participation in higher education is more than 40 per cent (Table 4.17). More female students were opting for higher education shows that parents were supporting their daughters to take up higher education knowing the importance of education to lead quality life. Since majority of the sample respondents were belonging to rural area. As agriculture is a way of life for the rural people and students from rural areas, who join agriculture, have a pre-practical exposure in agricultural practices and hence it will help them to learn more practically and excel in their field (Gowda *et al.*, 2012) and most of the parents from the rural background prefer their children's to go for agriculture as it will be useful to them for their farming work and further development of farm. Majority of the respondents were belonging to low income family groups and nuclear families. The results were on par with Preeti (2015) where the findings revealed than 35 per cent of the family had an annual income of one to five lakh rupees and out of 214 sample respondents 77 per cent of the respondents belonged to nuclear type of family followed by joint type of family (23 %).

### 5.3.2 General profile of alumni graduates

Majority of the alumni respondents were post graduates and doctorates (Table 4.18). This shows that higher education was the important career option selected by alumni in the aspiration of better job opportunities. Around 88 per cent of the alumni were belonging to rural area. Since most of the parents were from rural background prefer their children to take up agricultural courses as it will be useful to them for their farming work and further

development of the farm. Majority of the alumni respondent's father's were either secondary or tenth completed and encouraged their children to go for higher studies. All most all parents were farmers and wanted their children to take up agriculture education and in turn help them to develop their farm. The results were on par with findings of Preeti (2015) where 37 per cent of the respondents parents were completed SSLC, more than 60 per cent of them were farming and more than 84 per cent of the respondents mother's were housewives.

### 5.3.3 Selection of course based on choice or chance at UG, PG and PhD levels

Selection of agricultural courses from student respondents at various degree levels and alumni is shown in Fig. 4. More than 60 per cent of both student and alumni respondents' were selected degree programme by their own choice. This is because the Agricultural degree programmes exposes students to Sociology, Computer awareness, Psychology, Economics, Food Science and Technology, Statistics, Constitution of India along with core subjects of Agriculture which makes a pathway to the students and open up for wide variety jobs for graduates of agricultural and allied sciences. Academic, Research and development, Financial Institutions, private Industries, Central and State Government, Service, Administration and Input industries provide huge employment opportunities to the agricultural graduates. To prepare for competitive examinations and shape their personality and the degree programme is also considered cheapest among all other professional degree programmes which fetch more employment opportunities (Gowda *et al.*, 2012). Also results were in the line with Preeti (2015), where more than 80 per cent of the respondents were selected degree programme by choice. This might be because of the students' interest to go for higher education in the aspiration of getting good jobs in the fields of academic, research and development and extension activities.

### 5.3.4 Distribution of alumni graduates based on the selection of degree programmes by choice

Majority of the alumni respondents have joined degree programme since it has wide career options (Table 4.19). It may be because the agricultural courses open up for wide variety jobs for graduates of agricultural and allied sciences. Academic, Research and development, Financial Institutions, private Industries, Central and State Government, Service, Administration and Input industries provide huge employment opportunities to the agricultural graduates.

### 5.3.5 Distribution of alumni graduates based on the opinions about agriculture/allied disciplines which have better job opportunities

Distribution of alumni graduates based on the opinions about agriculture/allied disciplines which have better job opportunities has been shown in Table 4.20. Majority of the respondents opined that agriculture degree programmes have better employment opportunities in comparison with other degree programmes. Since 36 per cent of alumni respondents have taken up agricultural degree programme because of good job opportunities. Agricultural degree programme covers wide variety of courses. The sample alumni were employed in various sectors and have an idea about jobs for agricultural graduates.

### 5.3.6 Present specialisation of sample student respondents

Majority of the respondents were from agriculture disciplines. This may be because of more employment opportunities for graduates from agricultural sciences (Table 4.21). At Master's level students can have in-depth knowledge about particular subject. Skilled professional human resources were having demand over all the sectors.

### 5.3.7 Specialisation of the sample respondents at their graduate level

More than 65 per cent of the respondents were graduated in agriculture discipline this may be due to vast career options for agricultural graduates, interest in the course, useful competitive examinations and also to help their parents in farming (Table 4.22).

### 5.3.8 Source of motivation for higher studies

Majority of the sample students have joined courses by their own decision (Fig. 5). This might be because of growing demand for agricultural courses that persuaded the respondents to take agricultural degree programme themselves least motivated from news papers radio and television. Similar findings were found from Preeti (2015). Where the 69 per cent of respondents have taken up their graduate degree programme by own motivation followed by M.Sc. and doctoral respondents (76 % and 80 % respectively). The higher level of education of the parents would still motivate their children for the upward occupational mobility. Similar findings were found from Rahim and Nataraju (2011).

### 5.3.9 Career preferences of the sample student respondents

Higher education is the most preferred career option for students followed by jobs in service sector (Table 4.23). These findings go in line with the findings of Preeti (2015) where 75 per cent of respondents had an aim to go for higher education whereas 25 per cent did not aim for higher education.

### 5.3.10 Career preferences of the sample student respondents within service sector

Both students' and parents' want to be employed in ICAR (ARS), State and Central government (Table 4.24). This might be because most of the parents want their children to have job security and better life than theirs. Most of the parents wish to see their children in white-collared jobs. These findings were par with the findings of Preeti (2015), Where 27 per cent of the respondents preferred jobs under State Agricultural Universities and 17 per cent in Central Civil Services (IAS).

### 5.3.11 Career preferences of the sample student respondents at different degree levels

Higher education was the most preferred career option by majority of the student respondents (Table 4.25). Agriculture education at the under-graduate level did not adequately prepare students to be employable as professionals. Therefore, most of them tried to go for post-graduation. Social service and Service sector were next most preferred careers from student respondents. A secured job with good salary attracts the students towards service sector.

### 5.3.12 Career preferences of the sample student respondents within service sector

Majority of the respondents preferred for ICAR and Government of India service sector followed by banking as represented in Table 4.26. The reason for this preferences may be respondents wants to become Class-I officer in Government of India, bank manager and Agricultural Field Officer. By joining agricultural degree programme it becomes easy for the students to clear off the competitive exams than other degree programme people as they already exposed to various subjects and also they find huge opportunities in Teaching, Research and extension after joining to agriculture. These findings were similar with the findings of Preeti (2015) where 31.18 per cent of the respondents preferred jobs in Government of India followed by State Agricultural Universities and Private Organization (27 % and 3 % respectively).

### 5.3.13 Employment prospects of alumni respondents by employed sectors (from first job to the latest job)

Alumni respondents were well distributed based on the employed sectors in which they were working since from the first job were shown in Fig.6. Majority of the respondents were employed in Research and Development sector and Financial Institutions where recruitment is carried out through competitive examinations since agricultural degree programmes were covering variety of courses helping the agricultural graduate in clearing these exams.

### 5.3.14 Employed sectors and nature of employment of alumni respondents (from first job to the latest job)

Majority of the respondents were working on regular basis (Table 4.28). Jobs like Agricultural Research Scientist, Research Associate, Agricultural Officer and Bank Manager were on regular basis and 100 per cent regular employment can be seen in case of sample alumni working in Central Government since IAS, IFS and IES officers were working under Government of India.

### 5.3.15 Expected monthly salary of sample student respondents

Doctoral students expectations for monthly salary is seen to be highest among all other degree levels since doctorates have eligibility to become Assistant Professor, Associate Professor and Professor, Subject Matter Specialists so the respondents of Ph.D. level have high salary expectations (Fig. 9). High salary expectations from graduate students indicates that they were having interest in working with private companies, financial institutions which offer high salary and heavily work oriented

### 5.3.16 Distribution of alumni respondents based on annual salary received

Majority of the sample alumni respondents were found to have annual salary around 3 to 5 lakh rupees (Table 4.29). The sectors like research and development, and financial institutions offer high salaried jobs to the graduates with full time employment.

### 5.3.17 Constraints faced by the students for choosing their career options

Income of the parents and family background has major role in planning the career by students because parent with low income and poor family background hinders the students to

take up higher education as their career (Table 4.30). For career planning, socio-political participation of parents, OGPA and medium of instruction were not so bothered constraints. Many of the graduates coming from rural background, Kannada medium and low OGPA have acquired good jobs and leading quality life.

## 5.4 Areas/issues which need immediate attention of the policy makers/ other stake holders and strategies to make agriculture education more effective

### 5.4.1 Students' perception about the present course curriculum

Majority of the students satisfied with the present course curriculum with RAWE programme, experimental learning, field visits, State and All India tour, university and college level sports meet and youth festival were useful for overall development of the students (Table 4.31). This may be because that the students get exposure during the visit and tour programme to see and learn about various agricultural practices carried out across India and Karnataka, which in turn results increase in the current knowledge level of the students. Many of the respondents have given low scores for inter-university and college level youth festival may be because of unavailability of literary materials, cultural instruments and lack of coaching facilities. These results were in line with findings of Preeti (2015) where more than 66 per cent of the respondents were satisfied with the all India tour programme, experimental learning and state tour programmes conducted by the University of Agricultural Sciences Dharwad. Present course curriculum is useful for the graduates to mould themselves into good quality skilful professional human resource to meet the requirements of various employer categories.

### 5.4.2 Teachers' perception about efficacy of various curricular and co-curricular activities

From the teacher respondents perception the various curricular and co-curricular activities were really useful for increment of knowledge of students. Participation of students in various curricular and co-curricular activities is really good (Table 4.32). Practical classes, village visits, study tours were conducted to provide an opportunity to students to become closer to the real life situation Gowda *et al.* (2012). This statement was agreed by majority (73 %) of respondents. This was mainly because agriculture is a practical and skill oriented course, village visits, tours etc. will help the students to understand the village dynamics

clearly and become perfect in their professional field. Sports, cultural and literary activities were helpful in overall development of the students' personality and developing his team work experience, communication and leadership skills.

### 5.4.3 Students' perception about the teachers and teaching/learning environment

Most of the student respondents agree that practical knowledge of teachers and exposure of practical knowledge to the students by the teachers, coverage of syllabus by teachers is really helping students to complete their course objectives (Table 4.33). These results go in line with Gowda *et al*. (2012) where 54 per cent of the sample students opined that teachers were highly qualified, specialized, experienced and skill oriented. Majority of teachers were doctorate holders having experience of working in other scientific and research and extension departments. About 51 per cent of students agreed to the statement that the teachers in the college encourage the healthy competition among the students by which students can improve their academic performance and help them to achieve their goals. Teachers in the college keep the students informed about the updated knowledge of the subjects and this was agreed by 48 per cent of the students.

### 5.4.4 General profile of sample teachers by cadre and gender

Appreciable female participation in teaching, research and extension activities as Professors, Associate Professors and Assistant Professors were to the tune of 25 per cent (Table 4.34). Female teaching faculty were further inspiration for female students to take up higher studies in their respective areas of interest.

### 5.4.5 Teaching experience and workload of sample teachers

Results from the table revealed that more number of courses will be offered and handled by faculty at UG level (Table 4.35) as it will be the stepping stone of the graduate programme and wide variety of courses been covered. As we move towards post graduation the number of courses is reduced. And we get into depth of a particular subject therefore the number of courses offered will be brought down at PG and Ph.D. level. Contact hours per week varied proportionately according to the courses handled by the faculty.

### 5.4.6 Research projects and extension activities handled by sample teachers

Many projects have been handled by the faculty both universities funded and funds given from external sources (Table 4.36). Since the quality conductance of research had done

by the faculty of various disciplines funds from respective university and also external sources like ICAR, NABARD, Government, research institutes, various companies and international companies were given for conducting research activities.

### 5.4.7 Time allocation for teaching, research, extension and corporate/administration activities by teachers

Sample respondents were somewhat satisfied with actual allocation of time for teaching. Many of them were neither satisfied nor dissatisfied with present allocated time for research, extension and corporate/administration activities (Table 4.37). As the teaching is the main profession of all the teacher respondents, all most all of them have spent their majority of time in conducting classes along with their research and extension activities. The reason for this satisfaction may be due to the allocation of heavy corporate/administration activities to the respondents by their respective universities. These findings were similar with the results found in study of Preeti (2015), where time equivalent spent for Teaching by all the faculty was about 42 per cent, for Research 27 per cent , for Extension activities was about 16 %, and Administrative activities was about 15 per cent . But the desirable Percent full time equivalent allocation to be spent for teaching was 47 percent full time equivalent, Research 28 percent full time equivalent, Extension activities 8 percent full time equivalent followed administrative activities 10 percent full time equivalent.

### 5.4.8 Satisfaction level of teachers with respect to HRD opportunities

Majority of the sample teacher respondents were somewhat satisfied with the permission and support provided by university to participate within university and within India (Table 4.37). This may be because conduct of HRD activities within the campus does not require much of the funds from the university and respondents were satisfied. But with respect to participation outside the campus, proper allocation of budget has to be done from the university. The findings were in line with results of Preeti (2015), where HRD opportunities where in about 67 of teacher respondents were fully satisfied with permission to participate within varsity, followed within India 59, support for organization 53, 32 of them were somewhat satisfied with permission to participate in foreign

### 5.4.9 Teachers' perception about students' quality, behaviour and activities

Teacher respondents felt that good time allocation had given for different curricular and co-curricular activities, which give rise to overall development of personality of a student.

Students in the college were well qualified to use both soft and technical skills. Behaviour of the students within and outside the class is really very good (Table 4.38). Degree programmes in Agricultural Sciences were considered to be cheapest among other professional degree programmes and highly specialized in nature and doing agriculture and its related degree programmes is boon to the students. The results were in line with the findings of Preeti (2015) where more than 65 per cent of the respondent teachers were fully satisfied with the student's attendance in the class, students' strength and behaviour in the class.

### 5.4.10 Perception of students' about the college infrastructure

Sample respondents satisfied with the facilities such as classrooms, library, and conference / seminar hall were well equipped computers and other accessories, internet/mail, sufficiently available and accessed by students (Table 4.39). These findings were in line with study conducted by Gowda *et al.* (2012) where more than 70 per cent of students were comfortable in understanding the courses. 42 per cent agreed that hostel environment was conducive for their study. This might be because that the universities have taken care about sitting arrangements but the facilities for indoor and outdoor were not sufficient for all the students. Also these findings were similar with the findings of Preeti (2015) where more than 50 per cent of the student respondents were somewhat satisfied with medical shop (51.67 %) and grocery shop (57.14 %) available in the Campus.

Since the demand for agricultural degree programmes have been increased in the recent days, if the area of the classrooms remains the same which may lead to noisiness in the class. Laboratories facilities and vehicle facilities for field visits have not been sufficient for the student's strength may be because the university has not been made proper allocation of the budget for the development of laboratory facilities. Since the agricultural universities were located far from the town area the facilities like canteen/food facilities, medical services, medical shop, post office, bank and grocery shop have to be provided by the universities to meet the requirements of the students, teaching and non-teaching faculty.

### 5.4.11 Satisfaction level of sample teachers with respect to physical facilities and staff

The respondent teachers were somewhat satisfied with the physical facilities made available to them (Table 4.40). It may be due to university had been taken care of all the amenities made available to their teaching and non-teaching staff by allocating sufficient funds. Audio visual aids were very important to conduct lectures. Spacious classrooms and

well equipped laboratories can be encouraging teachers to share the knowledge. Institutions already taken care to develop the staff by giving them appropriate training to use these audio visual aids and modern technologies.

### 5.4.12 Availability and accessibility of amenities to the teachers in the campus

Majority of the respondents were somewhat satisfied with the amenities provided by university (4.41). Some of the amenities like grocery shop, canteen/cafeteria were to be improved since the farm universities were located far away from living area so universities should provide funds to develop amenities which were basic needs of the staff.

### 5.4.13 Students' perception about the college administration

Majority of the students were somewhat satisfied with college administration which is supportive and encouraging whereas the teachers' behaviour towards all students is unbiased (Table 4.42). Teachers in the college encourage the healthy competition among the students by which students can improve their academic performance and help them to achieve their goals. Teachers were unbiased towards students. These findings found to be in similar with findings of Gowda *et al*. (2012).

### 5.4.14 Teachers' perception about university/college administration/programmes

The respondents agreed that the funds, facilities, staff provided by the university to its teaching faculty were sufficient to meet the requirements. Majority of the respondents believe that the present course curriculum is not focused on problem solving and covers more theory than the practical's (Table 4.43). To overcome these issues the present curriculum should be modified in such a way that students should be exposed more to the real life situations so that they can learn the practicality of farmer's field conditions.

### 5.4.15 Students' perception about the course on graduation

Majority of the students were proud to join the agricultural degree courses and they do not regret for joining the courses (Table 4.44). These results were similar to the findings of Gowda *et al*. (2012) where joining to Agriculture and its related degree programme is boon to the students; this was agreed by 50 per cent of students. As students of agriculture were exposed to wide range of subjects this was agreed and strongly agreed by 44 per cent and 41 per cent of student, respectively.

# 6. SUMMARY AND POLICY IMPLICATIONS

Human resources are of critical importance for the growth of knowledge and technology, value addition and improvement of competitiveness in an economy through the process of continuous improvement. The amount and quality of trained technical and professional human resources in agriculture are critical factors, both in agricultural development (such as achieving self sufficiency in food grain production and targeted growth) and, more generally, Human Resource Development. The sectors are to be serviced by manpower with higher skills to ensure technology generation, its transfer and more importantly its application at the grass root level. This "human capital" is relatively scarce because training takes years and is costly. Manpower with diverse skills is needed today required by a wide ranging and fast expanding food processing private industries, corporate bodies, NGOs, administration, academic, government, and financial institutions and other organizations in unorganized sector. Increased demand for agricultural graduates necessitates having a systematic view about their availability in all the areas of concern.

Agricultural education programs in colleges and universities have expanded their focus beyond the preparation of teachers to encompass more diverse educational opportunities designed to meet the needs of a broader base of students. The professional graduates coming out of the agricultural education system in the country constitutes the supply where as the demand stems from various employment avenues. However, investing in technical and professional education has a high multiplier effect when trained personnel are properly employed as extension agents, trainers, researchers, programme managers, policy makers and in the other private sectors.

The forecasts of technical manpower demand and supply will not only provide insight into the right quantity and quality of the human capital required to maintain the desired growth of a sector but also help in planning educational curricula commensurate with the requirements of the employment market needs. Enhancing quality of human resource is a pre-requisite for implementing and upgrading research programmes, developing technologies, evolving institutional arrangements to face challenges and harness opportunities.

## 6.1 Objectives

1. To estimate the growth in the supply of and demand for agricultural graduates, postgraduates and doctorates in the study area, and gaps therein;

2. To assess the quality of agricultural graduates, postgraduates and doctorates produced by UAS, Bengaluru versus requirements of employers in terms of extent and diversity of skills required;

3. To analyze the relationship between profile characteristics, choices of courses and career preferences of agricultural graduates, postgraduates and doctorates;

4. To identify the areas/issues which need immediate attention of the policy makers and other stake holders and suggest strategies to make agriculture education more effective.

## 6.2 Methodology

The study depends on both primary and secondary data. First objective was based on secondary data and the remaining three objectives are dependent on primary data. For achieving the first objective, the secondary data pertaining to the intake, passed-out, placement of students was collected from the university Registrar's office, ICAR website, reports published by National Academy of Agricultural Research Management (NAARM), Institute of Applied Manpower Research (IAMR) and UASB websites. To achieve the other three objectives, primary data was obtained from University of Agricultural Sciences, Bengaluru, which was purposively selected owing to the considerations of cost, time and convenience of the researcher. From the selected University, a sample of 344 respondents including 214 students, 80 teachers and 50 alumni were chosen. The sample students and teachers were chosen using stratified proportionate random sampling technique while sample alumni were selected using snow ball sampling technique. The sample of students comprised of students studying in the final semester of graduation, post-graduation and doctorate degrees across different faculties, while the sample of teachers comprised of Assistant Professors, Associate Professors and Professors across different disciplines and faculties. The sample alumni were working in different sectors of employment, namely, Research and Development, Academic, Financial Institutions, Private Industries, Input Industries, Service sector (Central and State governments).

## 6.3 Significant findings of the study

The major findings of the study are summarized below:

- There was a positive growth in the intake of graduates at all the three degree levels (5.36 %), with the highest being observed in case of female students at bachelor degree (10.36 %), followed by doctoral degree (8.35 %) and masters degree (6.33 %). Gender-wise speaking, the growth was relatively higher for female than male in case of both masters and doctoral degree levels, while in bachelor degree, it was reverse.

- There was a positive growth in the case of out-turn of graduates at all the three degree levels (3.36 %). Degree-wise, it was highest at doctoral level (5.19 %), followed by bachelor (4.21 %) and master degree (1.38 %). Gender-wise, out-turn of female graduates was relatively much higher for female than male, irrespective of degree level. Amongst female graduates, the growth was highest in the case of doctoral level (15.79 %), followed by bachelor (17.75 %) and master degree (8.12 %).

- The number of graduates coming out from the university is forecasted at 951 for the year 2019-20, 1075 for the year 2024-25 and 1198 for 2029-30. There was negative supply-demand gap (as measured by demand minus supply) for all the degree levels. In the year 2005-06 gap of graduates was about (-) 562, which increased to (-) 744 in 2015-16, (-) 863 in 2024-25 and (-) 969 in 2029-30.

- At undergraduate level, agriculture faculty was the most preferred by the students. Genetics and Plant Breeding, Agronomy, Soil Science and Agricultural Chemistry, Agricultural Entomology, Plant Pathology, Agricultural Microbiology, Crop Physiology, Agricultural Economics and Agricultural Extension were some of the most demanded subjects preferred by the students to take up higher education.

- A majority of the students who sought admission in the University belonged to rural area (58 %), had an annual income less than rupees two lakhs (70 %), and belonged to nuclear type of family (83 %). Further, a huge majority of the students got admitted “by choice” to doctoral degree programme (97 %) as well as to master’s degree (94 %) and bachelor’s degree (67 %). Similar was the situation in

the case of alumni, except that some of them (12 %) got entry into the degree programme by force.

- "More employment opportunities in the sector" was the major reason for choosing this academic career by 37 per cent of the students, followed by "interest in the subject" and "importance of professional degree" (30 % and 17 % respectively).

- In general, student respondents were satisfied with curricular activities, including RAWE programme (WAS=4.28), Experiential Learning (WAS=4.09) and field visits (WAS=3.73), and extracurricular activities including sports meet at university and college level (WAS=3.79 and WAS=3.99, respectively).

- Teacher respondents were fully satisfied with students' attendance in the class and behaviour in examination hall followed by, submission of practical records and assignments. Students' language level, quality of seminars (PG level) and presentations (UG level) were a great matter of concern felt by sample teachers.

- Quality/employability skills acquired by the students improved due to their degree programme, such as, ready to take risk to achieve goals, decision making skills (18.53 % and 14.02 % improvement, respectively). Sincerity, punctuality, knowledge about the subjects as well as current affairs were yet to be improved and hence needed a greater attention (-5.26, -1.62, -2.29 and -3.40 respectively).

- Among the expectations of the students from their University, in addition to high academic standards, a majority (41.32 %) of the students expected campus placement from their university, followed by coaching for competitive examinations (29.20 %) and help in start-up/business incubation (18.46 %).

- About 48 per cent of the student respondents were willing to start their own enterprise, while the remaining expressed their inability to become self-entrepreneur owing to the inadequacy of practical knowledge imparted during their course of study.

- In terms of choosing a career after graduation, nearly 41 per cent of the student respondents preferred to go for higher education, followed by social service (16.67 %), service sector (15 %) and business (14.17 %). Social service included working

in/for an NGO, political activity, socio-religious activity, etc. Farming was resorted to by only 12 per cent of the graduates.

- Within service sector, Scientist in the Agricultural Research Service (ARS) of the Indian Council of Agricultural Research (ICAR) was the most preferred career option for about 25 per cent of the student respondents, followed by jobs in Government of India, nationalised banks and State Government (16.34 %, 13.73 % and 13.07 %, respectively).

- For recruitment of graduates, academic qualification was the top most criterion for selection (Garrett Score=70.18), followed by interpersonal and communication skills, knowledge of the industry, drive/commitment/attitude and work experience.

- Nearly 64 per cent of the graduates were employed by way of direct interview by the employers and as high as 90 per cent of them were employed within three months of their completion of degree programme.

- Student respondents opined that the then course curriculum did not completely match the requirements of jobs in both government and self-entrepreneurship (WAS=3.98 and WAS=3.85, respectively), but also had lot of repetition/overlapping (WAS=4.29) and devoid of adequate field visits (WAS=3.79).

- As far as alumni were concerned, around 47.67 per cent were working in research and development sector, followed by financial institutions (15 %), input industries (13 %) and private industries (9 %). Around 65 per cent of the respondent alumni were working on regular basis, while the remaining were on contractual and temporary basis (26.74 % and 8.14 %, respectively).

- Income of the parents and family background of the parents (meaning hailing from rural or urban area) were the two major factors influencing the choice of career after graduation by the respondent students as indicated by the Garrett Scores 34.27 and 27.90, respectively. Socio-political participation of parents, Overall Grade Point Average (OGPA) and medium of study at XII standard level were not found to come in the way of career planning.

- Associate Professors have had an average of 5.13 years of teaching experience in their entire professional career, followed by Professors (5.00 years) and Assistant Professors (1.89 years). At UG level, the workload of Associate Professors (on an average 4.44 courses and 9.50 contact hours/week) was more than Assistant Professors (3.93 courses, 10.26 contact hours/week) and Professors (3.61 courses, 13.17 contact hours/week). At PG level, the workload was highest for Professors (2.28 courses, with 6.39 contact hours/week), followed by Assistant professors (1.37 courses and 3.50 hours/week) and Associate Professors (1.25 courses and 2.63 hours/week).

- Nearly 65 per cent of time was actually allocated by teachers for teaching whereas desirable time as expressed by them was 57 per cent of the total time available. Similarly, the respondents desired less time allocation (4.56 %) for corporate/administrative activities than the actual time allocated (8.89 %). On the contrary, the teacher respondents actually spent less time in research and extension activities (13 %, and 8.91 %, respectively) than the desired level (15.58 %, and 10.73 %, respectively).

- A majority of the teacher respondents were fully satisfied with the permission and support given by the University for organization of the event, participation within the University and participation within India in the case of seminars, workshops and trainings. However, they were somewhat satisfied with respect to participation in such events organised abroad. In the case of consultancy activity, the respondents were somewhat satisfied.

- Sample student respondents were fully satisfied with the physical facilities, namely, classrooms, library, conference/seminar hall, computers and accessories, and internet/email. However, the facilities were not up to their satisfaction in terms of adequacy of vehicles for field visits, accessibility of photocopying facility, amenities like gymnasium hall, medical shop and grocery shop.

- Student respondents were somewhat satisfied with the safety and security system available for students in the campus (WAS=3.71), and opined that there was encouraging/supporting administration in the college (WAS=3.66). However, they were not that happy with the functioning of placement cell/campus recruitments

(WAS=2.81), present fee structure (WAS=2.78) and also functioning of students and alumni association (WAS=2.87 and WAS=3.17 respectively) in the university.

## 6.4 Policy implications

Based on the findings of the study, the following policy recommendations are suggested.

- Supply of agricultural graduates at all the levels (UG, PG and PhD) increased over the years which exceeded demand for them. Hence, to fill this gap, supply could be limited by reducing/sustaining the intake of students on the one hand and quality of graduates could be enhanced on the other. In this context, establishment of new agricultural colleges may be restrained, of even if established, the overall intake of students in the state may not be increased.

- Short term job oriented courses may be introduced by the Universities which are crop-specific, technology-specific and agro-industries-specific to address the local problems. This would not only increase the self-employability among the graduates but also help the industries as well as farming community to increase the production and productivity.

- The recruitment in the State Government has not been regular. State Government may take appropriate measures to overcome unemployment of agricultural graduates by recruiting the graduates in a phased manner. In the mean time, agricultural graduates may be recruited on contract/temporary basis till regular appointments are done.

- Graduates may be encouraged to take-up self-entrepreneurship with the help of university-industry linkages. To have skilled graduates there is a need for world class laboratories in the University, which can be established with the help of industry linkages. Students can conduct research in these laboratories and get exposed to such state-of-the-art facilities and develop their professional skills, and in turn, can start their own business.

- Majority of the students and alumni opined that the course curriculum was loaded with more theoretical classes than practical's. Hence, the course curriculum may be revised to include more practical courses and "learning-by-doing" techniques, so that the professional knowledge of the agricultural graduates would be enhanced. Courses should be moulded in such a way that students excel in practicality of the subjects.

- Limiting the classroom lectures, teaching strategies have to be modified by using other methods such as group discussions, paper presentations which are very helpful to develop communication skills of agricultural graduates.

- University may appropriately monitor the student skills both in terms of professional and soft skills which are very essential in this modern era to compete with the employment system.

- The repetition/overlapping of courses at UG level may be overcome by replacing such courses by new courses, namely, computer related courses, engineering mathematics, applied statistics and development of soft skills, etc.

- Existing teachers have to be trained enough to be competent to teach the students with modern equipments and new concepts. For this, they may be provided with ample opportunities with funding to participate in national and international conferences, seminars, symposia, workshops and trainings on the niche/modern areas of science.

- One of the most desired jobs among the agriculture professionals is to work in ICAR as Scientist. So, University may arrange for coaching the students by the University faculty for Agricultural Research Service Examination.

- University may have to allocate adequate funds to develop physical facilities, wherever lacking/poor, viz., gymnasium hall, medical shop and vehicles for field visits, among others.

# 7. REFERENCES


Acker, D. G., 1999, Improving the quality of higher education in agriculture globally in the 21st Century: Constraints and opportunities. *J. Int. Agric. Ext. Edu.*, p. 47-53.

Adebo, G. M. and Sekumade, A. B., 2013, Determinants of career choice of agricultural profession among the students of the faculty of agricultural sciences in Ekiti State University, Nigeria. *J. Agric. Ext. & Rural development.,* 5(11): 249-255.

Adedokun, A. O. and Balschweid, A. M., 2008, Investigating community factors as predictor of rural 11th Grade agricultural science students' choice of careers in agriculture. *J. Agric. Edu*., 49(4): 1-10.

Agrawal, R., Nanda, S. K., Rao, D. R. and Rao, B. V. L. N., 2013, Integrated approach to human resource forecasting: An exercise in agricultural sector. *Agric. Econ. Res. Rev*., 26(2): 173-184.

Ashokrao, B. A., 2006, Manpower planning in agriculture for Vidarbha Region of Maharashtra, *Ph. D. Thesis*, Marathwada Agric. Univ. Parbhani (India).

Balagopal, G. M., Mahanty, B. and Ramarao, D., 2012, Assessment of technical manpower requirements in agriculture sector in India. *Proc. Int. Conf. Syst. Dynamic. Society*, MIT, USA, p.1-13.

Birkenbolz, R. J. and Schumacher, L. G., 1994, Leadership skills of college of agriculture graduates. *J. Agric. Edu.*, 35(4): 1-8.

Bridgstock, R., 2009, The graduate attributes we've overlooked: enhancing graduate employability through career management skills. *Higher education & research & development.* 28(1): 31-44.

Bunch, C. J., Robinson, S. J. and Edwards, C. M., 2012, Measuring the relationship between agriculture teachers' self-efficacy, outcome, expectation, interest, and their use of interactive whiteboards. *J. Agric. Edu.*, 53(1): 67-80.

Cartmell, D. D. and Garton, B. L., 2004, An assessment of agricultural education graduates' preparation for careers in teaching and industry. *Proc. Nation. Conf. Agric. Edu. Res.* University of Missouri, p. 530-542.

Chamela Bai., 2016, Attitude of agricultural graduates of S.K.N College of Agriculture, Jobner towards agriculture entrepreneurship. *M.Sc. Thesis,* S. K. N. Jobner (India).

Croom, D. B., 2003, Teacher burnout in agricultural extension. *J. Agric. Edu.*, 44(2): 1-13.

DAFF, 2005, Agricultural education and training access barriers report, Department of Agriculture, Forestry and Fishries, Republic of South Africa. p. 20-30.

Dhakre, D. S., 2014, Aspiration of agriculture students towards agriculture enterprise in West Bengal: A case study. *Ind. Res. J. Ext. Edu*., 14 (1): 64-67.

Esters, T. C. and Bowen, E. B., 2004, Factors influencing enrolment in an urban agricultural education program. *J. Career & Technical Edu*., 21(1): 1-13.

Gill, E. B., Russell, M. and Rayfield, J., 2012, An exploration of graduate student satisfaction with advising in departments of agricultural education, leadership, communications, and extension. *J. Agric. Edu.*, 53(1): 5-17.

Gowda, G. V., Jayaramaiah, R., Doddamani, A. and Thimme Gowda, M. N., 2012, Attitude of agricultural students towards agricultural education and their perceived organizational climate. *Mysore J. Agric. Sci.*, 46(3): 647-652.

Hegde, N. G., 2005, Entrepreneurs experience in agriculture. Paper Presented In: VII Agric. Sci. Cong. at College of Agriculture, Pune, February 16-18. p. 2-7.

Hinchliffe, K., 1993, Manpower forecasting and rapid labour market analyses: The demand for technical school graduates in Egypt. *The vocational aspect of education*., 45(3): 239-250.

IAMR, 2011, Assessment of future human capital requirements in agriculture and allied sectors. Institute of Applied Manpower Research (IAMR), New Delhi. p. 370.

ICAR, 2012, Draft Document of the National Agricultural Education Project, Education Division, Indian Council of Agricultural Research (ICAR), New Delhi, p.2-7.

Jeevankumar, A., 2013, A study on the agricultural experiential learning programme (AELP) at Agricultural College, Bapatla. *M.Sc. Thesis*, Acharya N. G. Ranga Agric. Univ. Hyderabad (India).

Jonaki, B. and Prasenjit, P., 2015, Higher education in India: Recent issues and trends. *Res. J. Edu. Sci.,* 4(1): 10-16.

Kitchel, T., Smith, R. A., Henry, A. L., Robinson, S. J., Lawver, G. R., Park, T. D. and Schell, A., 2012, Teacher job satisfaction and burnout viewed through social comparisons. *J. Agric.Edu.,* 53(1): 31-44.

Makwana, A. K., 2013, Agricultural education in India: Challenges and prospects. *J. Agric. Edu.,* 2(3): 90-94.

Manathunga, C., Pitt. R. and Critchley, C., 2009, Graduate attribute development and employment outcomes: Tracking PhD graduates. *Assessment & Evaluation in Higher Education.,* 34(1): 91-103.

Marrison, L. D., 1994, The Effect of agricultural students' learning styles on academic achievement and their perceptions of two methods of instruction. *J. Agric. Edu., 3*5(1): 1-5.

McGhee, M. B. and Cheek, J. G., 1990, Assessment of the preparation and career patterns of agricultural education graduates, 1975-1985. *J. Agric. Edu.*, p. 17-22.

Murray, K., Flowers, J., Croom, B. and Wilson, B., 2011, The agricultural teacher's struggle for balance between career and family. *J. Agric. Edu.,* 52(2): 107–117.

Nanda, S. K., Ramarao, D. and Vizayakumar, K., 2005, Human resource development for agricultural sector in India: A dynamic analysis. *Proc. Int. Conf. Syst. Dynamic. Society*, MIT, USA, p. 210.

Pathak, T. and Rahman, A., 2013, A study on the career preferences of undergraduate students in relation to their sex, rural-urban inhabitation and level of media exposure. *Int. J. Humanities and Soc. Sci.,* 2(1): 1-5.

Pratley, J., 2012, Professional agriculture - a case of supply and demand, Occasional paper no. 12.01., University of Sydney, Australia.

Preeti, S., 2015, Economics of agricultural education in Karnataka: A case study of UAS, Dharwad. *M.Sc. Thesis*, Univ. Agric. Sci. Dharwad (India).

Rahim, M. and Nataraju, S. M., 2011, Factors influencing occupational aspirations of students studying at UAS, Banglore. *Mysore J. Agric. Sci.*, 45(3): 638-641.

Ramarao, D., Agarwal, R., Nanda, S. K., Aswathi, I. C., Joshi, G. P., Battacharya, S. and Indrakumar, D., 2011, Assessment of future human capital requirements in agriculture and allied sectors. NAIP project Report, National Academy of Agricultural Research Management, Hyderabad, India. p. 410.

Ramarao, D., Agarwal, R., Rao, B. V. L. N., Nanda, S. K. and Joshi, G. P., 2014, Agri-manpower forecasting and educational planning. *J. Agric. Edu. & Ext.*, 20(4): 397-412.

Ramarao, D., Murulidhar, U. and Kalla, J. C., 1997, Planning agricultural education in India. *European J. Agric. Edu. & Ext.*, 4(1): 67-80.

Robinson, J. S. and Garton, B. L., 2008, An assessment of the employability skills needed by graduates in the College of Agriculture, Food and Natural Resources at the University of Missouri. *J. Agric. Edu.*, 49(4): 95-108.

Sanyang, S., Samba, L., Kuiseu, J., Ennin, S. A., Jobe, L., Diarraa, L. and Bantaba, P., 2013, Employment and performance of agricultural graduates: Who are we training for? *Social study.*, 3(5): 341-353.

Sasidhar, P.V.K. and Reddy, P., 2013, A quantitative analysis of the supply and demand of veterinary manpower in India: Implications for policy decisions. *Rev. Sci. Tech. Off. Int. Epiz.*, 32(3): 639-644.

Shelton, M. D., Ahern, J. J. and Piirto, D. D., 2006, Perceptions of agriculture and natural resources M. S. graduates regarding programme quality. *NACTA J*., p. 45-50.

Varma, A., 2014, Agricultural education in India: Imaging possibilities to meet challenges in the changing world, lecture. *Nation. Agric. Edu. Day Lecture.* IARI, New Delhi, November. p. 1-11.

*Appendix-1*

**UNIVERSITY OF AGRICULTURAL SCIENCES, DHARWAD**

*Research Project on*

# Supply-Demand Analysis of Professional Agricultural Human Resource in Karnataka

## Survey Schedule for Students

Schedule No: _____

University: _____

College: _____ Degree Programme pursuing: BSc / MSc / PhD

## A] General Information about the Student:

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **1.** | Gender | M / F | **2.** | Date of birth | dd / mm / yyyy | **3.** | Hail from | Rural Area / Urban Area |
| **4.** | Religion | Hindu/Muslim/Christian/Other(Specify) | | | | **5.** | Caste category | SC / ST / OBC /Gen |
| **6.** | Are you differently-abled person? | Yes / No | | | | **7.** | Marital status | Married / Unmarried |
| **8.** | Mother tongue | | | | **9.** | Other languages known | Eng/Hindi/ | |
| **10.** | Family size | M: W: C: | | | **11.** | No.of earning members in the family | M: W: | |
| **12.** | Family type | Nuclear / Joint | | | **13.** | Parents' present residence | Rural / Urban | |
| **14.** | Annual family income(Rs) | <2 Lakhs / 2-5 Lakhs / 5-10 Lakhs / >10 Lakhs | | | | | | |
| **15.** | Medium of instruction: | (a) At X | Eng/Hindi/State | | | (b) At XII | Eng/Hindi/State | |
| **16.** | Father's | (a) Education | P/S/X/XII/G/PG/PGD/PhD | | | (b) Occupation | | |
| **17.** | Mother's | (a) Education | P/S/X/XII/G/PG/PGD/PhD | | | (b) Occupation | | |

M = Men, W = Women C= Children

## B] Educational background:

| SN | Level | Subject/Discipline/ Faculty/Branch | Year of Completion | Awarding University/ Institution | % of marks/ CGPA |
|---|---|---|---|---|---|
| 1. | X | | | | |
| 2. | XII/Dip. | | | | |
| 3. | B.Sc. | | | | |
| 4. | M.Sc. | | | | |
| 5. | PG Dip. | | | | |
| 5. | Ph.D. | | | | |
| 6. | Other | | | | |

## C] Reason for joining the degree programme(s):

Joined degree programme by Choice (1) or Chance (2)? UG: _____, PG: _____, PhD:_____

If by choice, state the reason(s): ***(Tick in the relevant columns)***

| SN | Reason | BSc | MSc | PhD |
|---|---|---|---|---|
| 1. | To gain practical knowledge about agriculture to enable me to practice progressive agriculture | | | |
| 2. | Job prospects are much better in agriculture career | | | |
| 3. | Best available option | | | |
| 4. | Since I did not get any job with my previous qualification | | | |
| 5. | Good course for preparing for Civil Service Examinations | | | |
| 6. | Any other (Specify): | | | |
| 7. | | | | |
| 8. | | | | |

## D] Source of motivation/guidance for higher study: ***(Round the applicable ones)***

| **SN** | **Degree** | **Source@** |
|---|---|---|
| 1. | BSc | O / F / M / Sib / R / T / Fd / NMB / Rd / TV / Others(Specify): |
| 2. | MSc | O / F / M / Sib / R / T / Fd / NMB / Rd / TV / Others(Specify): |
| 3. | PhD | O / F / M / Sib / R / T / Fd / NMB / Rd / TV / Others(Specify): |

@O=Own decision, F=Father, M=Mother, Sib=Sibling (Brother/Sister), R=Relative, T=School/College Teacher, Fd=Friend, NMB=News Paper/Magazines/Books, Rd=Radio, TV=Television.

## E] Perception about the Course Curriculum: ***(Round the applicable ones)***

| SN | The present course curriculum | SA* | A | NAD | D | SD |
|---|---|---|---|---|---|---|
| 1. | Matches requirements of job in govt. sector | 1 | 2 | 3 | 4 | 5 |
| 2. | Matches requirements of job in private sector | 1 | 2 | 3 | 4 | 5 |
| 3. | Matches requirements of self-entrepreneurship | 1 | 2 | 3 | 4 | 5 |
| 4. | Is loaded with heavy course work (lot many credits) | 1 | 2 | 3 | 4 | 5 |
| 5. | Covers more of theory than practical sessions | 1 | 2 | 3 | 4 | 5 |
| 6. | Has lot of repetition / overlapping | 1 | 2 | 3 | 4 | 5 |
| 7. | Is more focused on providing information than imparting problem solving skills | 1 | 2 | 3 | 4 | 5 |
| 8. | Needs to include more of field visits | 1 | 2 | 3 | 4 | 5 |
| 9. | | 1 | 2 | 3 | 4 | 5 |
| 10. | | 1 | 2 | 3 | 4 | 5 |
| 11. | | 1 | 2 | 3 | 4 | 5 |
| 12. | | 1 | 2 | 3 | 4 | 5 |

* SA=Strongly Agree, A=Agree, NAD=Neither Agree nor Disagree, D=Disagree, SD=Strongly Disagree.

## F] Perception about the following components of the course curriculum:

| SN | Particulars | FS* | SWS | NSD | SWD | FD |
|---|---|---|---|---|---|---|
| 1. | RAWE programme | 1 | 2 | 3 | 4 | 5 |
| 2. | Experiential Learning | 1 | 2 | 3 | 4 | 5 |
| 3. | Field Visits (Farms/Industries/Institutions) | 1 | 2 | 3 | 4 | 5 |
| 4. | State tour | 1 | 2 | 3 | 4 | 5 |
| 5. | All India Tour | 1 | 2 | 3 | 4 | 5 |
| 6. | Inter-Collegiate Youth Festival | 1 | 2 | 3 | 4 | 5 |
| | a) Cultural | 1 | 2 | 3 | 4 | 5 |
| | b) Literary | 1 | 2 | 3 | 4 | 5 |
| 7. | Inter-Collegiate Sports Meet | 1 | 2 | 3 | 4 | 5 |
| 8. | Inter-University Youth Festival | 1 | 2 | 3 | 4 | 5 |
| | c) Cultural | 1 | 2 | 3 | 4 | 5 |
| | d) Literary | 1 | 2 | 3 | 4 | 5 |
| 9. | Inter-University Sports Meet | 1 | 2 | 3 | 4 | 5 |
| 10. | | 1 | 2 | 3 | 4 | 5 |
| 11. | | 1 | 2 | 3 | 4 | 5 |
| 12. | | 1 | 2 | 3 | 4 | 5 |

* FS=Fully Satisfied, SWS=Somewhat Satisfied, NSD=Neither Satisfied nor Dissatisfied, SWD=Somewhat Satisfied, FD=Fully Dissatisfied.

## G] Perception about teachers and learning/teaching environment:

| SN | Particulars | FS | SWS | NSD | SWD | FD |
|---|---|---|---|---|---|---|
| 1. | Adequacy of no. of teachers in each subject/course | 1 | 2 | 3 | 4 | 5 |
| 2. | Quality of teaching | 1 | 2 | 3 | 4 | 5 |
| 3. | Knowledge updation of faculty in respective field | 1 | 2 | 3 | 4 | 5 |
| 4. | Practical knowledge of teachers | 1 | 2 | 3 | 4 | 5 |
| 5. | Practical exposure given to students | 1 | 2 | 3 | 4 | 5 |
| 6. | Use of AV aids and Multi-media in teaching | 1 | 2 | 3 | 4 | 5 |
| 7. | Complete coverage of syllabus | 1 | 2 | 3 | 4 | 5 |
| 8. | Punctuality of teachers in taking class | 1 | 2 | 3 | 4 | 5 |
| 9. | Interaction between students and teacher in the class | 1 | 2 | 3 | 4 | 5 |
| 10. | Approachability and friendliness of teachers | 1 | 2 | 3 | 4 | 5 |
| 11. | Punctuality in conduct of examinations | 1 | 2 | 3 | 4 | 5 |
| 12. | Evaluation/examination system | 1 | 2 | 3 | 4 | 5 |
| 13. | | 1 | 2 | 3 | 4 | 5 |
| 14. | | 1 | 2 | 3 | 4 | 5 |
| 15. | | 1 | 2 | 3 | 4 | 5 |

* FS=Fully Satisfied, SWS=Somewhat Satisfied, NSD=Neither Satisfied nor Dissatisfied, SWD=Somewhat Satisfied, FD=Fully Dissatisfied.

## H] Perception about College Infrastructure:

| SN | Particulars | FS | SWS | NSD | SWD | FD |
|---|---|---|---|---|---|---|
| **a)** | **CURRICULAR:** | | | | | |
| 1. | Classrooms (space,light, aeration, chairs/benches, AV aids) | 1 | 2 | 3 | 4 | 5 |
| 2. | Laboratories (Space, number & quality of equipments) | 1 | 2 | 3 | 4 | 5 |
| 3. | Conference/Seminar Hall (space & equipped) | 1 | 2 | 3 | 4 | 5 |
| 4. | Accessibility to computers and accessories | 1 | 2 | 3 | 4 | 5 |
| 5. | Accessibility to Internet/Email | 1 | 2 | 3 | 4 | 5 |
| 6. | Accessibility to photocopying facility | 1 | 2 | 3 | 4 | 5 |
| 7. | Vehicles for field visits (Adequacy and quality) | 1 | 2 | 3 | 4 | 5 |
| 8. | Library (availability of books, journals, news papers, etc.) | 1 | 2 | 3 | 4 | 5 |
| 9. | | 1 | 2 | 3 | 4 | 5 |
| 10. | | 1 | 2 | 3 | 4 | 5 |
| **b)** | **SUPPORTING AMENITIES:** | | | | | |
| 1. | Hostel accommodation | 1 | 2 | 3 | 4 | 5 |
| 2. | Mess/Canteen/Food facilities | 1 | 2 | 3 | 4 | 5 |
| 3. | Outdoor sports facility | 1 | 2 | 3 | 4 | 5 |
| 4. | Indoor sports facility | 1 | 2 | 3 | 4 | 5 |
| 5. | Cultural room+ instruments | 1 | 2 | 3 | 4 | 5 |
| 6. | Gymnasium hall | 1 | 2 | 3 | 4 | 5 |
| 7. | Auditorium | 1 | 2 | 3 | 4 | 5 |
| 8. | Medical service (Clinic) | 1 | 2 | 3 | 4 | 5 |
| 9. | Medical Shop | 1 | 2 | 3 | 4 | 5 |
| 10. | Bank | 1 | 2 | 3 | 4 | 5 |
| 11. | Post Office | 1 | 2 | 3 | 4 | 5 |
| 12. | Grocery shop | 1 | 2 | 3 | 4 | 5 |
| 13. | Swimming pool | 1 | 2 | 3 | 4 | 5 |
| 14. | | 1 | 2 | 3 | 4 | 5 |
| 15. | | 1 | 2 | 3 | 4 | 5 |

## I] Perception about College Administration:

| SN | Particulars | FS | SWS | NSD | SWD | FD |
|---|---|---|---|---|---|---|
| 1. | College administration (Supportive/encouraging) | 1 | 2 | 3 | 4 | 5 |
| 2. | Fund availability for students' academic activities | 1 | 2 | 3 | 4 | 5 |
| 3. | Fund availability for students' co-curricular activities | 1 | 2 | 3 | 4 | 5 |
| 4. | Functioning of Placement Cell/Campus recruitments | 1 | 2 | 3 | 4 | 5 |
| 5. | Safety & security of students in the campus | 1 | 2 | 3 | 4 | 5 |
| 6. | Functioning of Students' Association | 1 | 2 | 3 | 4 | 5 |
| 7. | Functioning of Alumni Association | 1 | 2 | 3 | 4 | 5 |
| 8. | Present fee structure | 1 | 2 | 3 | 4 | 5 |
| 9. | Present students' admission procedure | 1 | 2 | 3 | 4 | 5 |
| 10. | Treatment of students (gender, racial, regional discrimination, etc.) | 1 | 2 | 3 | 4 | 5 |
| 11. | | 1 | 2 | 3 | 4 | 5 |

* FS=Fully Satisfied, SWS=Somewhat Satisfied, NSD=Neither Satisfied nor Dissatisfied, SWD=Somewhat Satisfied, FD=Fully Dissatisfied.

## J] Perception about/Feeling on completion of the Course:

| SN | Particulars | SA* | A | NAD | D | SD |
|---|---|---|---|---|---|---|
| 1. | There are good prospects of getting a job after graduation | 1 | 2 | 3 | 4 | 5 |
| 2. | I would recommend this course for others | 1 | 2 | 3 | 4 | 5 |
| 3. | I regret joining this course | 1 | 2 | 3 | 4 | 5 |
| 4. | I consider this course at par with other professional degrees | 1 | 2 | 3 | 4 | 5 |
| 5. | General public considers this course at par with other professional degrees | 1 | 2 | 3 | 4 | 5 |
| 6. | I am feeling proud to have completed this course | 1 | 2 | 3 | 4 | 5 |
| 7. | I am satisfied with the knowledge I have gained from the course to start my own farming/business | 1 | 2 | 3 | 4 | 5 |
| 8. | | 1 | 2 | 3 | 4 | 5 |
| 9. | | 1 | 2 | 3 | 4 | 5 |
| 10. | | 1 | 2 | 3 | 4 | 5 |

* SA=Strongly Agree, A=Agree, NAD= Neither Agree nor Disagree, D=Disagree, SD=Strongly Disagree

## K] Employability skills acquired on completion of the Course:

| SN | I am / I | Ex* | VG | Good | Mod | Poor |
|---|---|---|---|---|---|---|
| 1 | Sincere | 1 | 2 | 3 | 4 | 5 |
| 2 | Hard working | 1 | 2 | 3 | 4 | 5 |
| 3 | Punctual | 1 | 2 | 3 | 4 | 5 |
| 4 | Committed to work | 1 | 2 | 3 | 4 | 5 |
| 5 | Innovative | 1 | 2 | 3 | 4 | 5 |
| 6 | Organized at my work | 1 | 2 | 3 | 4 | 5 |
| 7 | Good at time management | 1 | 2 | 3 | 4 | 5 |
| 8 | Confident in oral presentation | 1 | 2 | 3 | 4 | 5 |
| 9 | Confident in writing skills | 1 | 2 | 3 | 4 | 5 |
| 10 | Well informed about the subject | 1 | 2 | 3 | 4 | 5 |
| 11 | Well informed about the current affairs | 1 | 2 | 3 | 4 | 5 |
| 12 | Have stage courage | 1 | 2 | 3 | 4 | 5 |
| 13 | Get along well with co-students | 1 | 2 | 3 | 4 | 5 |
| 14 | Get along well with teachers | 1 | 2 | 3 | 4 | 5 |
| 15 | Have good presence of mind (alertness) | 1 | 2 | 3 | 4 | 5 |
| 16 | Have good decision making skill | 1 | 2 | 3 | 4 | 5 |
| 17 | Usually follow rules of the University/College | 1 | 2 | 3 | 4 | 5 |
| 18 | Ready to take risk to achieve my goal | 1 | 2 | 3 | 4 | 5 |
| 19 | Improved computer skills | 1 | 2 | 3 | 4 | 5 |
| 20 | Improved oral presentation skills | 1 | 2 | 3 | 4 | 5 |
| 21 | Improved written presentation skills | 1 | 2 | 3 | 4 | 5 |
| 22 | Improved leadership skills | 1 | 2 | 3 | 4 | 5 |
| 23 | Any other (specify): | 1 | 2 | 3 | 4 | 5 |
| 24 | | 1 | 2 | 3 | 4 | 5 |
| 25 | | 1 | 2 | 3 | 4 | 5 |

* Ex=Excellent, VG=Very Good, Mod=Moderate

## L] FUTURE PLANS: Your and your parents' aspirations

| SN | Career preference | Your wish | | Parents' wish | |
|---|---|---|---|---|---|
| | | Rank | Post aspiring | Rank | Post aspiring |
| 1 | Higher Education | | | | |
| 2 | Farming | | | | |
| 3 | Business | | | | |
| 4 | Service sector: Jobs in | | | | |
| | a. ICAR(ARS) | | | | |
| | b. SAU's (Scientist/Teacher) | | | | |
| | c. Government of India | | | | |
| | d. State Government | | | | |
| | e. Banking | | | | |
| | f. Central Civil Service (IAS,IPS,etc.) | | | | |
| | g. State Civil Service | | | | |
| | h. Private organization | | | | |
| | i. Others | | | | |
| 5 | Social service | | | | |
| 6 | Others (Specify) | | | | |

| | |
|---|---|
| Expected minimum monthly salary in first job | Rs. |
| Will you continue higher studies in the same University? | 1) Yes, 2) No, 3) Not applicable |
| Will you start your own business after some years? | 1) Yes, 2) No, 3) If yes, details: |
| What are your expectations from this University? | 1) Campus Placement,<br>2) Help to mobilize Credit/Finance,<br>3) Help in startup/business incubation<br>4) Coaching for competitive exams<br>5) Other(specify): |

## M] What are the factors/constraints hindering your career preference?

| SN | Particulars | Rank |
|---|---|---|
| 1 | Family type | |
| 2 | Family background | |
| 3 | Education of parents | |
| 4 | Occupation of parents | |
| 5 | Income of parents | |
| 6 | Mass media exposure in parents | |
| 7 | Socio-political participation of parents | |
| 8 | OGPA | |
| 9 | Medium of study at higher secondary level | |
| 10 | Medium of study at XII standard level | |
| 11 | Guidance/support from family, relatives & friends | |
| 13 | Career planning by me | |
| 14 | Others (specify): | |

***Appendix-2***

**UNIVERSITY OF AGRICULTURAL SCIENCES, DHARWAD**

*Research Project on*

# Supply-Demand Analysis of Professional Agricultural Human Resource in Karnataka

## Survey Schedule for Teachers

Schedule No: _____

University: _____

College: _____

## A] General Information about the Teacher:

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **1.** | Gender | M / F | **2.** | Date of birth | dd / mm / yyyy | **3.** | Religion | | | | |
| **4.** | Place of birth | | | | Tq. | | | Dt. | | | |
| **5.** | Caste category | SC / ST / OBC / Gen | **7.** | Qualification | M.Sc. / PG Diploma / PhD / Post-Doc | | | | | | |
| **6.** | Cadre | Assistant Professor / Associate Professor / Professor / Key Officer (DR/DE/Dean etc.) | | | | | | | | | |
| **7.** | Experience(Completed Years) | | (a) In the present University | | | (b) Career total | | | | | |
| **8.** | **Teaching workload handled during LAST ONE YEAR:** | | | | | | | | | | |
| | a) Teaching at UG Level | (i) | No. of courses handled | | (ii) | Contact hours per week | | | | | |
| | b) Teaching at MSc/PhD Level | (i) | No. of courses handled | | (ii) | Contact hours per week | | | | | |
| **9.** | **Number of research projects handled/executed during LAST ONE YEAR:** | | | | | | | | | | |
| | a) As Principal Investigator | (i) | University funded | | (ii) | Externally funded | | | | | |
| | b) As Co-Principal Investigator | (i) | University funded | | (ii) | Externally funded | | | | | |
| **10.** | **Number of extension/outreach activities (requiring not less than 10 Mondays of your time in a year) handled/executed during LAST ONE YEAR:** | | | | | | | | | | |
| | a) As Leader/Coordinator | (i) | University funded | | (ii) | Externally funded | | | | | |
| | b) As Co-Leader/Co-Coordinator | (i) | University funded | | (ii) | Externally funded | | | | | |

## B] Time Allocation for Teaching/Research/Extension/Admin Activities:

| SN | Particulars | Actual allocation of time (%) | **Are you satisfied w.r.t. actual allocation of your time?** | | | | | Desirable allocation of time (%) |
|---|---|---|---|---|---|---|---|---|
| | | | FS* | SWS | NSD | SWD | FD | |
| 1 | Teaching | | | | | | | |
| 2 | Research | | | | | | | |
| 3 | Extension | | | | | | | |
| 4 | Corporate / Admin | | | | | | | |

* FS=Fully Satisfied, SWS=Somewhat Satisfied, NSD=Neither Satisfied nor Dissatisfied, SWD=Somewhat Dissatisfied, FD=Fully Dissatisfied

## C] Satisfaction level w.r.t. the HRD opportunities:

| SN | Particulars | FS | SWS | NSD | SWD | FD |
|---|---|---|---|---|---|---|
| **1** | **Seminars / Conferences / Symposia** | | | | | |
| | a. Permission & Support for organization of the event | 1 | 2 | 3 | 4 | 5 |
| | b. Permission & Support to participate within University | 1 | 2 | 3 | 4 | 5 |
| | c. Permission & Support to participate within India | 1 | 2 | 3 | 4 | 5 |
| | d. Permission & Support to participate in events abroad | 1 | 2 | 3 | 4 | 5 |
| **2** | **Workshops** | | | | | |
| | a. Permission & Support for organization of the event | 1 | 2 | 3 | 4 | 5 |
| | b. Permission & Support to participate within University | 1 | 2 | 3 | 4 | 5 |
| | c. Permission & Support to participate within India | 1 | 2 | 3 | 4 | 5 |
| | d. Permission & Support to participate in events abroad | 1 | 2 | 3 | 4 | 5 |
| **3** | **Trainings** | | | | | |
| | a. Permission & Support for organization of the event | 1 | 2 | 3 | 4 | 5 |
| | b. Permission & Support to participate within University | 1 | 2 | 3 | 4 | 5 |
| | c. Permission & Support to participate within India | 1 | 2 | 3 | 4 | 5 |
| | d. Permission & Support to participate in events abroad | 1 | 2 | 3 | 4 | 5 |
| **4** | **Consultancies** | | | | | |
| | a. Received by you from other experts | 1 | 2 | 3 | 4 | 5 |
| | b. Provided by you to clients | 1 | 2 | 3 | 4 | 5 |
| | c. Resource generation from providing consultancies | 1 | 2 | 3 | 4 | 5 |

**D] Satisfaction level w.r.t. PHYSICAL FACILITIES & STAFF at Office:**

| SN | Particulars | FS | SWS | NSD | SWD | FD |
|---|---|---|---|---|---|---|
| 1 | Office work space and ambience | 1 | 2 | 3 | 4 | 5 |
| 2 | Office furniture (adequacy and quality) | 1 | 2 | 3 | 4 | 5 |
| 3 | Class rooms (Sufficiency and quality) | 1 | 2 | 3 | 4 | 5 |
| 4 | Laboratories (Space and Equipments) | 1 | 2 | 3 | 4 | 5 |
| 5 | Conference Hall | 1 | 2 | 3 | 4 | 5 |
| 6 | Computer & accessories in your office/accessible | 1 | 2 | 3 | 4 | 5 |
| 7 | Photocopying facility (easy & timely accessibility) | 1 | 2 | 3 | 4 | 5 |
| 8 | Internet (easy & timely accessibility) | 1 | 2 | 3 | 4 | 5 |
| 9 | Presentation facilities (LCD Projector & Screen) | 1 | 2 | 3 | 4 | 5 |
| 11 | Lectern & Sound System | 1 | 2 | 3 | 4 | 5 |
| 12 | Documentation facility (Camera, Video, etc.) | 1 | 2 | 3 | 4 | 5 |
| 13 | Vehicle/POL for field visits | 1 | 2 | 3 | 4 | 5 |
| 14 | Technical Staff (adequacy & quality) | 1 | 2 | 3 | 4 | 5 |
| 15 | Supporting Staff (adequacy & quality) | 1 | 2 | 3 | 4 | 5 |
| 16 | Computer stationery (toner, CD, paper, etc.) | 1 | 2 | 3 | 4 | 5 |
| 17 | Office stationery (writing papers, gum, pencil, etc) | 1 | 2 | 3 | 4 | 5 |
| 18 | Others (specify) | 1 | 2 | 3 | 4 | 5 |
| 19 | | 1 | 2 | 3 | 4 | 5 |
| 20 | | 1 | 2 | 3 | 4 | 5 |

* FS=Fully Satisfied, SWS=Somewhat Satisfied, NSD=Neither Satisfied nor Dissatisfied, SWD=Somewhat Dissatisfied, FD=Fully Dissatisfied.

**E] Rate the AMENITIES available/accessible to you on the campus:**

| SN | Particulars | Available? Yes/No | Availing | If yes, level of Satisfaction **(TICK)** | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | FS | SWS | NSD | SWD | FD |
| 1 | Staff quarters | Y / N | Y / N | 1 | 2 | 3 | 4 | 5 |
| 2 | Medical service (Clinic) | Y / N | Y / N | 1 | 2 | 3 | 4 | 5 |
| 3 | Medical Shop | Y / N | Y / N | 1 | 2 | 3 | 4 | 5 |
| 4 | Bank | Y / N | Y / N | 1 | 2 | 3 | 4 | 5 |
| 5 | Post Office | Y / N | Y / N | 1 | 2 | 3 | 4 | 5 |
| 6 | Canteen / Cafeteria | Y / N | Y / N | 1 | 2 | 3 | 4 | 5 |
| 7 | Grocery shop | Y / N | Y / N | 1 | 2 | 3 | 4 | 5 |
| 8 | Outdoor sports facility | Y / N | Y / N | 1 | 2 | 3 | 4 | 5 |
| 9 | Indoor sports facility | Y / N | Y / N | 1 | 2 | 3 | 4 | 5 |
| 10 | Cultural room+ instruments | Y / N | Y / N | 1 | 2 | 3 | 4 | 5 |
| 11 | Gymnasium hall | Y / N | Y / N | 1 | 2 | 3 | 4 | 5 |
| 12 | Auditorium | Y / N | Y / N | 1 | 2 | 3 | 4 | 5 |
| 13 | Swimming pool | Y / N | Y / N | 1 | 2 | 3 | 4 | 5 |
| 14 | Others (Specify): | Y / N | Y / N | 1 | 2 | 3 | 4 | 5 |
| 15 | | Y / N | Y / N | 1 | 2 | 3 | 4 | 5 |

## F] Rate the STUDENTS' BEHAVIOURAL ATTRIBUTES:

| SN | Particulars | FS | SWS | NSD | SWD | FD |
|---|---|---|---|---|---|---|
| 1 | Students response/interaction in the class | 1 | 2 | 3 | 4 | 5 |
| 2 | Students' attendance in the class | 1 | 2 | 3 | 4 | 5 |
| 3 | Quality of students (merit) | 1 | 2 | 3 | 4 | 5 |
| 4 | Class strength of students (intake) | 1 | 2 | 3 | 4 | 5 |
| 5 | Submission of practical records | 1 | 2 | 3 | 4 | 5 |
| 6 | Submission of assignments | 1 | 2 | 3 | 4 | 5 |
| 7 | Performance in exam | 1 | 2 | 3 | 4 | 5 |
| | a. Subject matter | 1 | 2 | 3 | 4 | 5 |
| | b. Language level | 1 | 2 | 3 | 4 | 5 |
| 8 | Quality of presentation in UG courses | 1 | 2 | 3 | 4 | 5 |
| 9 | Quality of PG seminars given | 1 | 2 | 3 | 4 | 5 |
| 10 | Students' interest in extension activities | 1 | 2 | 3 | 4 | 5 |
| 11 | Students' relationship with teachers (Cordial) | 1 | 2 | 3 | 4 | 5 |
| 12 | Students' behavior in the class | 1 | 2 | 3 | 4 | 5 |
| 13 | Students' behavior outside class/campus | 1 | 2 | 3 | 4 | 5 |
| 14 | Students' behavior in the exam hall | 1 | 2 | 3 | 4 | 5 |
| 15 | Students' behavior in co-curricular activities | 1 | 2 | 3 | 4 | 5 |
| 16 | Others(Specify) | 1 | 2 | 3 | 4 | 5 |
| 17 | | 1 | 2 | 3 | 4 | 5 |

* FS=Fully Satisfied, SWS=Somewhat Satisfied, NSD=Neither Satisfied nor Dissatisfied, SWD=Somewhat Dissatisfied, FD=Fully Dissatisfied.

## G] Rate the STUDENTS' QUALITY ATTRIBUTES:

| SN | Students/are | Ex* | VG | Good | Mod. | Poor |
|---|---|---|---|---|---|---|
| 1 | Sincere | 1 | 2 | 3 | 4 | 5 |
| 2 | Hard working | 1 | 2 | 3 | 4 | 5 |
| 3 | Punctual | 1 | 2 | 3 | 4 | 5 |
| 4 | Committed to work | 1 | 2 | 3 | 4 | 5 |
| 5 | Innovative | 1 | 2 | 3 | 4 | 5 |
| 6 | Organized in their work | 1 | 2 | 3 | 4 | 5 |
| 7 | Good at time management | 1 | 2 | 3 | 4 | 5 |
| 8 | Confident in oral presentation | 1 | 2 | 3 | 4 | 5 |
| 9 | Confident in writing skills | 1 | 2 | 3 | 4 | 5 |
| 10 | Well informed about the subject | 1 | 2 | 3 | 4 | 5 |
| 11 | Well informed about the current affairs | 1 | 2 | 3 | 4 | 5 |
| 12 | Have stage courage | 1 | 2 | 3 | 4 | 5 |
| 13 | Get along well with co-students | 1 | 2 | 3 | 4 | 5 |
| 14 | Get along well with teachers | 1 | 2 | 3 | 4 | 5 |
| 15 | Have good presence of mind (alert) | 1 | 2 | 3 | 4 | 5 |
| 16 | Have good decision making skill | 1 | 2 | 3 | 4 | 5 |
| 17 | Have good leadership quality | 1 | 2 | 3 | 4 | 5 |
| 18 | Usually follow rules of the University | 1 | 2 | 3 | 4 | 5 |
| 19 | Ready to take risk to achieve their goal | 1 | 2 | 3 | 4 | 5 |
| 20 | Any other (specify): | 1 | 2 | 3 | 4 | 5 |

* Ex=Excellent, VG=Very Good, Mod. = Moderate

## H] Perception about University/College Administration/Programmes:

| SN | Students/are | SA* | A | NAD | D | SD |
|---|---|---|---|---|---|---|
| 1 | Sufficient funds are available for teaching activities | 1 | 2 | 3 | 4 | 5 |
| 2 | Sufficient funds are available for research activities | 1 | 2 | 3 | 4 | 5 |
| 3 | Sufficient funds are available for extension activities | 1 | 2 | 3 | 4 | 5 |
| 4 | Sufficient funds are available for students' activities | 1 | 2 | 3 | 4 | 5 |
| 5 | University administration is supportive/encouraging | 1 | 2 | 3 | 4 | 5 |
| 6 | College administration is supportive/encouraging | 1 | 2 | 3 | 4 | 5 |
| 7 | Colleagues in the dept/section are supportive | 1 | 2 | 3 | 4 | 5 |
| 8 | Supporting staff in the dept/section are supportive | 1 | 2 | 3 | 4 | 5 |
| 9 | Placement Cell is functioning effectively | 1 | 2 | 3 | 4 | 5 |
| 8 | Safety & security in college and campus is good | 1 | 2 | 3 | 4 | 5 |
| 9 | Teachers' Association is functioning effectively | 1 | 2 | 3 | 4 | 5 |
| 10 | Students' Association is functioning effectively | 1 | 2 | 3 | 4 | 5 |
| 11 | Alumni Association is functioning effectively | 1 | 2 | 3 | 4 | 5 |
| 12 | Good job prospects for our graduates/postgraduates | 1 | 2 | 3 | 4 | 5 |
| 13 | Present curriculum matches job requirements | 1 | 2 | 3 | 4 | 5 |
| 14 | Present curriculum loaded with more theory than practicals | 1 | 2 | 3 | 4 | 5 |
| 15 | Curriculum not focused on imparting problem solving skills | 1 | 2 | 3 | 4 | 5 |
| 16 | Present fee structure is appropriate | 1 | 2 | 3 | 4 | 5 |
| 17 | Present students' admission procedure is appropriate | 1 | 2 | 3 | 4 | 5 |
| 18 | Staff recruitment procedure is appropriate and periodical | 1 | 2 | 3 | 4 | 5 |
| 19 | Any other (specify): | 1 | 2 | 3 | 4 | 5 |
| 20 | | 1 | 2 | 3 | 4 | 5 |

* SA=Strongly Agree, A=Agree, NAD=Neither Agree nor Disagree, D=Disagree, SD= Strongly Disagree.

## I] Efficacy of various activities/ events:

| SN | Efficacy of various Activities | Ex* | VG | Good | Mod. | Poor |
|---|---|---|---|---|---|---|
| 1 | Usefulness of RAWE | 1 | 2 | 3 | 4 | 5 |
| 2 | Usefulness of Experiential Learning | 1 | 2 | 3 | 4 | 5 |
| 3 | State Tour | 1 | 2 | 3 | 4 | 5 |
| 4 | All India Tour | 1 | 2 | 3 | 4 | 5 |
| 5 | Youth Festival | 1 | 2 | 3 | 4 | 5 |
| 6 | Sports Activities | 1 | 2 | 3 | 4 | 5 |
| 7 | Cultural Activities | 1 | 2 | 3 | 4 | 5 |
| 8 | Literary Activities | 1 | 2 | 3 | 4 | 5 |
| 9 | Time allocation for curricular and co-curricular activities | 1 | 2 | 3 | 4 | 5 |
| 10 | Time spent for different curricular and co-curricular activities | 1 | 2 | 3 | 4 | 5 |
| 11 | Adequacy of staff in the college | 1 | 2 | 3 | 4 | 5 |
| 12 | Quality of students in the college | 1 | 2 | 3 | 4 | 5 |
| 13 | Level of interest in learning | 1 | 2 | 3 | 4 | 5 |
| 14 | Level of interest in research | 1 | 2 | 3 | 4 | 5 |
| 15 | Students behavior/ response in the class | 1 | 2 | 3 | 4 | 5 |

* Ex=Excellent, VG=Very Good, Mod. = Moderate

## J] Rank the most important selection criteria for recruiting the graduates:

| SN | Employability Skills | Rank |
|---|---|---|
| 1 | Interpersonal and Communication Skills | |
| 2 | Academic Qualifications | |
| 3 | Work Experience | |
| 4 | Leadership Skills | |
| 5 | Passion/ Knowledge of Industry/ Drive/ Commitment/ Attitude | |
| 6 | Team Work Skills | |
| 7 | Critical Reasoning and Analytical Skills/ Problem Solving/ Technical Skills | |
| 8 | Emotional Intelligence (including self-awareness, strength of character, confidence, motivation) | |
| 9 | Activities (includes both intra and extracurricular) | |
| 10 | Cultural Alignment/ Values Fit | |

## K] Any other information you may like to add (which is not covered above):

……

……

……

……

……

***"Thanks for sparing your valuable time…"***

*Appendix-3*

**UNIVERSITY OF AGRICULTURAL SCIENCES, DHARWAD**

*Research Project on*

# Supply-Demand Analysis of Professional Agricultural Human Resource in Karnataka

## Survey Schedule for Alumni

Schedule No: _____

### A. General Information about the Alumnus:

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1. | Name | | | | | | |
| 2. | Gender | M / F | 3. | Date of birth | dd / mm / yyyy | 4. | Hail from | Rural Area / Urban Area |
| 5. | Religion | Hindu/Muslim/Christian/Other(Specify) | | | | 6. | Caste category | SC / ST / OBC /Gen |
| 7. | Marital status | Married / Unmarried | | 8. | Qualification | | BSc/MSc/PG Diploma/PhD/Post-Doc | |
| 9. | Father's | (a) Education | P/S/X/XII/G/PG/PGD/PhD* | | | (b) Occupation | | |
| 10. | Mother's | (a) Education | P/S/X/XII/G/PG/PGD/PhD* | | | (b) Occupation | | |

*P=Primary; S=Secondary; X=Tenth, XII=Twelfth, G=Graduate, PG=Postgraduate, PCG=PG Diploma, PhD=Doctorate

### B. Educational Record:

| SN | Level | Subject/Discipline/ Faculty/Branch | Year of Completion | Awarding University/ Institution | % of marks/ CGPA |
|---|---|---|---|---|---|
| 1. | X | | | | |
| 2. | XII/Dip. | | | | |
| 3. | B.Sc. | | | | |
| 4. | M.Sc. | | | | |
| 5. | PG Dip. | | | | |
| 6. | Ph.D. | | | | |

### C. Employment Record (from First Job to-date) (other than self-employment):

| Organization | Main activity of the organization | Designation | Period of employment | | Nature of employment* | Salary per annum (Rs) |
|---|---|---|---|---|---|---|
| | | | From | To | | |
| 1. | | | | | R / T / C / P | |
| 2. | | | | | R / T / C / P | |
| 3. | | | | | R / T / C / P | |
| 4. | | | | | R / T / C / P | |
| 5. | | | | | R / T / C / P | |

*R=Regular / T=Temporary / C=Contractual / P=Part-Time.

### D. Details of securing first employment:

| | | |
|---|---|---|
| 1. | How did you get the first employment? | Campus Interview / Competitive Examination / Direct Interview (Open Advertisement/Walk-in-Interview) / Other(Specify) |
| 2. | How much time did it take to get your first employment after completing your studies? | Immediately / After _____ Years & _____ Months |

## E. Details of Self-Employment (if any):

| | | |
|---|---|---|
| 1. | Type of Unit (Tick) | Farming/ Input Marketing/ Output Marketing/ Consultancy/ Other (Specify: ) |
| 2. | Details of the Unit | |
| 3. | Period of Self-Employment | From: To: |
| 4. | Reason(s) for choosing Self-Employment (Tick) | Own interest / Family business / Lack of salaried jobs / Better opportunities for growth / Other(Specify) |
| 5. | Problems faced if any | |

## F. Training / Skills acquired:

1. Did you acquire the skills during UG/PG/PhD required to perform the above jobs? Yes / No.
2. If no, did you receive any on-job training? Yes / No.
3. If yes, provide details:

| Sl.No. | Major subject area of training | Duration of training (months) | Skills acquired |
|---|---|---|---|
| | | | |
| | | | |

## G. Views on education received by you:

| | | | |
|---|---|---|---|
| 1. | How did you join the degree programme? | By Choice / By Chance / By Force | |
| 2. | If by Choice, why did you go in for a degree in Agricultural/ Allied Sciences? | □ Interest in the subject<br>□ Best degree as per my qualification<br>□ More employment opportunities in sector<br>□ It is a professional degree<br>□ Degree useful for competitive examinations<br>□ Other (Specify): | |
| 3 | Does your education at the agricultural university/institution adequately cater to the requirements of the employment market? | Fully adequate/ Partially adequate Not at all adequate | |
| 4 | If it is partially/not adequate, which of the following should be included in the course curriculum (Rank three only) | □ More advanced theoretical knowledge<br>□ More technical knowledge<br>□ More practical work<br>□ More interaction with industries<br>□ Managerial skills<br>□ Information technology<br>□ More courses on specific subject (specify)<br>□ Other(specify): | |
| 5 | Which courses in agriculture stream of education have better job prospects? | Agriculture/ Horticulture/ Veterinary/ Forestry/ Fisheries/ Dairy/ Home Science/ AgMaCo/ ABM/ Other(specify) | |

## H. Any other information you may like to add (which is not covered above):

_____

_____

_____

***Thanks for sparing your valuable time***

*Appendix-4*

**UNIVERSITY OF AGRICULTURAL SCIENCES, DHARWAD**

*Research Project on*

# Supply-Demand Analysis of Professional Agricultural Human Resource in Karnataka

## Survey Schedule for Registrar

Schedule No: _____

University: _____

## A] Contact Details of the University (Registrar):

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **1.** | Name of the Registrar | | | | | | | |
| **2.** | Postal address | | | | | | | |
| | | | | PIN | | State | | |
| **3.** | Telephone | | **4.** | Fax | | **5.** | Email | |

## B] Strength of faculty (as on 01/10/2016):

| SN | Cadre | Sanctioned | Presently working in | | | | |
|---|---|---|---|---|---|---|---|
| | | | Teaching | Research | Extension | Administration | Total |
| 1 | Assistant Professor | | | | | | |
| 2 | Associate Professor | | | | | | |
| 3 | Professor | | | | | | |
| 4 | Key Officers | | | | | | |

## C] Placement of graduates in various sectors by Placement Cell of University:

| Year | No. of graduates placed | | | | | |
|---|---|---|---|---|---|---|
| | Bachelors | | Masters | | Doctorates | |
| | Male | Female | Male | Female | Male | Female |
| 2005-06 | | | | | | |
| 2006-07 | | | | | | |
| 2007-08 | | | | | | |
| 2008-09 | | | | | | |
| 2009-10 | | | | | | |
| 2010-11 | | | | | | |
| 2011-12 | | | | | | |
| 2012-13 | | | | | | |
| 2013-14 | | | | | | |
| 2014-15 | | | | | | |
| 2015-16 | | | | | | |

## D] University's Intake of Students and Out-turn of Graduates in the last ten years:

| Year | In-take (by degree & gender) | | | | | | Out-turn (by degree & gender) | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Bachelors | | Masters | | Doctoral | | Bachelors | | Masters | | Doctoral | |
| | Male | Female | Male | Female | Male | Female | Male | Female | Male | Female | Male | Female |
| 2005-06 | | | | | | | | | | | | |
| 2006-07 | | | | | | | | | | | | |
| 2007-08 | | | | | | | | | | | | |
| 2008-09 | | | | | | | | | | | | |
| 2009-10 | | | | | | | | | | | | |
| 2010-11 | | | | | | | | | | | | |
| 2011-12 | | | | | | | | | | | | |
| 2012-13 | | | | | | | | | | | | |
| 2013-14 | | | | | | | | | | | | |
| 2014-15 | | | | | | | | | | | | |
| 2015-16 | | | | | | | | | | | | |

## E] PRESENT Intake of Students in the University (degree-wise and faculty/discipline wise):*

| Bachelor's Degree | | |
|---|---|---|
| **SN** | **Faculty** | **Intake** |
| 1) | Agriculture | |
| 2) | Horticulture | |
| 3) | Veterinary/Animal Husbandry | |
| 4) | Forestry | |
| 5) | Home Science | |
| 6) | Agricultural Engineering | |
| 7) | … | |

| Master's Degree | | |
|---|---|---|
| **SN** | **Discipline** | **Intake** |
| 1) | Agricultural Economics | |
| 2) | Agricultural Extension | |
| 3) | Agricultural Microbiology | |
| 4) | Agronomy | |
| 5) | Genetics & Plant Breeding | |
| 6) | Plant Pathology | |
| 7) | … | |

| Doctoral Degree | | |
|---|---|---|
| **SN** | **Discipline** | **Intake** |
| 1) | Agricultural Economics | |
| 2) | Agricultural Extension | |
| 3) | Agricultural Microbiology | |
| 4) | Agronomy | |
| 5) | Genetics & Plant Breeding | |
| 6) | Plant Pathology | |
| 7) | … | |

* Use additional sheets, since the number of faculties/disciplines could be more than the listed ones.

**Note: Please attach the list of Constituent and Affiliated Colleges of the University.**

# SUPPLY - DEMAND ANALYSIS OF PROFESSIONAL AGRICULTURAL HUMAN RESOURCE IN KARNATAKA

**SHRUTI S. KABBUR** **2017** **Dr. V. R. KIRESUR**
**Major Advisor**

## ABSTRACT

The present study was conducted to analyse the supply of and demand for professional agricultural human resource in Karnataka. University of Agricultural Sciences, Bengaluru was selected purposively. Primary data was collected for the academic year 2016-17 from a sample of 345 respondents including 214 students, 80 teachers, 50 alumni and one Registrar. The sample students and teachers were selected from all the five teaching campuses using stratified proportionate random sampling method, while the alumni were chosen by snowball sampling technique, and the Registrar of UASB was selected purposively. The supply of agricultural graduates was estimated and analysed using the data on enrolment, admissions, passed-out, and placements of graduates collected from University Registrar's office. For estimating demand for agricultural graduates, data was obtained from the Institute of Applied Manpower Research (IAMR) reports. The analytical tools used to process the data were compound annual growth rate, descriptive analysis and Garrett scoring technique. Weighted Average Score (WAS) was calculated for assessing the satisfaction/perception level of the students and teachers on various parameters.

There was a positive growth in the intake of students (5.36 %) and out-turn of graduates (3.36 %) at all the three degree levels during the study period. The number of graduates coming out from the university was forecasted from 2016-17 to 2029-30. There was negative supply-demand gap (demand minus supply) for all the degree levels. Majority of the students got admitted "by choice" to doctoral (97 %) as well as to master's (94 %) and bachelor's (67 %) degree programmes. Quality and employability skills acquired by the student respondents improved due to agricultural degree programme. The course curriculum did not completely match the requirements of jobs in both government and self-entrepreneurship, but on the other hand, had repetition/overlapping of some courses and inadequate field visits.