AWARENESS AND PERCEPTION OF INTEGRATED FARMING SYSTEM BY SC/ST FARMERS

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 Extension Education

By

MD YOUNUS

DEPARTMENT OF AGRICULTURAL EXTENSION EDUCATION
COLLEGE OF AGRICULTURE, DHARWAD
UNIVERSITY OF AGRICULTURAL SCIENCES,
DHARWAD – 580 005

SEPTEMBER – 2013

ADVISORY COMMITTEE

DHARWAD

SEPTEMBER, 2013

(N. MANJULA)
MAJOR ADVISOR

Approved by:

Chairman: _____
(N. MANJULA)

Members: **1.** _____
(SYED SADAQHAT)

2. _____
(S. DEVENDRAPPA)

3. _____
(A. D. NAIK)

4._____
(RENUKA SALUNKE)

CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF PLATES

LIST OF APPENDICE

INTRODUCTION

India with 2.2 per cent of global geographical area supports more than 15 per cent of the total world population, 60 per cent of population depends on agriculture. It also supports nearly 15 per cent of the total livestock population of the world. One third of the gross national product comes from agricultural sector alone. Though there has been an increase in food production from 51 million tonns in 1950 to 250 million tonns in 2012, but nearly 40 per cent of the Indian rural population still lives below the poverty line who cannot afford two square meals a day. Nearly 84 per cent of farm families belong to small and marginal categories. The per capita availability of land has declined from 0.36ha and is projected to touch 0.2 ha by the turn of the century.

Agriculture throughout the world is still single most important human activity. Despite all the advances of high technology, it is still the only source of food, fiber and other products, whose synthetic substitutes are often not good as the natural products or most costly to produce. Hence, it is imperative to develop strategies and agricultural technologies that enable adequate employment, income generation and livelihood improvement. The crop and cropping system based on perspective of farming which need to make way for Integrated Farming Systems based farming in a holistic manner for the sound management of available resources by farmers (Jha, 2003). Under the gradual shrinking of land holding, it is necessary to integrate land based enterprises like dairy, fishery, poultry, sheep and goat rearing, duckery, apiary, forestry, field and horticultural crops, etc. within the bio-physical and socio-economic environment of the farmers to make farming more profitable and dependable.

The integration of farm enterprises has been suggested as the means for economic development of farmers. Having achieved some success in rising crop production through various technological and institutional changes, the country is now said to be poised for white and blue revolutions involving substantial increase in livestock and fish output. In view of the population exposure shrinking recourses there is scope of increasing additional income through crop production, hence diversification is considered essential not only for livelihood improvement but also for meeting the demands of milk products, meat, fish, eggs etc. which generally show rising trends with increasing levels of per capita income.

Conventional agriculture is known to cause soil and pasture degradation because it involves intensive tillage, in particular if practiced in areas of marginal productivity. Technologies and management schemes that can enhance productivity need to be promoted. At the same time, ways need to be found to preserve the natural resource base. Within this framework, an integrated crop-livestock farming system represents a key solution for enhancing livestock production and safeguarding the environment through prudent and efficient resource recycling.

Indian agriculture is characterized by mixed farming involving a system of combining crop production with one or more of the livestock enterprises like rearing of cattle, sheep, goat, pigs and poultry as well as fishery, bee-keeping, sericulture, *etc*. Although in India farming is not commercialized to a large extent, it remains that farmer has to make decisions regarding his business of farming, with a view to attain maximum income. The income may not be maximization of net profit in the usual sense, but it can be assumed that the farmer would like to maximize farm income by which he can maintain himself and his family. The decision of enterprise mix on a farm will be conditioned by overall welfare of the family. In describing Farming Systems and their characteristics, we start therefore with the assumption that they did not come about by chance and that there is always a reason why farming in a specific case is carried out in one way rather than another.

Definitions of Integrated Farming Systems (IFS)

Itnal *et al.* (1999) stated that, Integrated farming system is a resource management strategy to achieve economic and sustained agricultural production to meet diverse requirement of the farm household while preserving the resource base and maintaining high environmental quality.

OR

Integration of two or more appropriate combination of enterprises like crop, dairy, piggery, fishery, poultry, bee keeping etc.,for each farm according to the availability of resources to sustain and satisfy the necessities of the farmer.

Concept of Integrated Farming Systems

IFS seems to be answer to the problems of increasing food production, increasing net farm income, improving nutritional status promoting natural resource management sustainable use of land, water and soil.

Farming system is a complex interrelated nature of soils, plants, animals, implements, power, labour, capital and other inputs controlled in part by farming family and influenced by social forces that operate at many levels.

General Objectives of IFS are

1. To identify existing farming systems in specific areas and access their relative viability.
2. Formulate farming system model involving main and allied for different farming system.
3. To maintain sustainable production system without damaging resources/environment.
4. To rise over all profitability of farm house hold by complementing main/allied enterprises with other.
5. Analysis of existing farming system in terms of resource use efficiency, production and productivity income, employment and sustainability across different agro-climatic zones.
6. Development and evaluation of synergic effects and their actions associated with different farming system.
7. Imparting training and capacity building of various stake holders on integrated farming system.
8. Evaluation and identification of farming system through participatory approach that ensure thresh hold level of income for the livelihood security.

Specific objectives of Integrated Farming System

1. To encourage farmers to take up improvement in all the crops grown by them by demonstrating new agricultural technologies
2. To assist farmers in introducing other subsidiary enterprise like dairy, poultry, fisheries, sericulture, piggery etc
3. To educate farmers to make them account conscious
4. To help farmers improve their standard of living by working with them over a period of time
5. To develop integrated farming system units as centers of agricultural development in the local areas.

Components of IFS

- Agriculture, Horticulture, Fodder production, Kitchen gardening, Sericulture, Forestry, Vermiculture, Mushroom cultivation, Azolla farming, Dairy, Piggery, Poultry, Goat rearing, Sheep rearing, Fish farming and duck rearing.

The different Integrated Farming Systems are

- Crop –livestock-forest farming systems
- Crop-fish –poultry farming systems
- Crop- livestock-poultry-fish farming systems
- Crop –sericulture –dairy
- Crop –goat rearing –poultry –forest

Advantages of Integrated Farming System

- Higher food production to equate the demand of the exploding population of our nation
- Increased farm income through proper residue recycling and allied components
- Sustainable soil fertility and productivity through organic waste recycling

- Integration of allied activities will result in the availability of nutritious food enriched with protein, carbohydrate, fat, minerals and vitamins
- Integrated farming will help in environmental protection through effective recycling of waste from animal activities like piggery, poultry and pigeon rearing
- Reduced production cost of components through input recycling from the byproducts of allied enterprises
- Regular stable income through the products like egg, milk, mushroom, vegetables, honey and silkworm cocoons from the linked activities in integrated farming
- Inclusion of biogas & agro forestry in integrated farming system will solve the prognosticated energy crisis
- Cultivation of fodder crops as intercropping and as border cropping will result in the availability of adequate nutritious fodder for animal components like milch cow, goat / sheep, pig and rabbit
- Firewood and construction wood requirements could be met from the agro- forestry system without affecting the natural forest
- Avoidance of soil loss through erosion by agro-forestry and proper cultivation of each part of land by integrated farming

Keeping the concept, features, objectives, advantages, and limitations of Integrated Farming Systems in mind, the present study is designed to identify and compare the different integrated farming systems practiced by Irrigated and Dry land farmers and to suggest a most suitable model of Integrated Farming System with the following objectives.

The specific objectives of the study

1. To ascertain the extent of awareness of integrated farming system by SC/ST farmers
2. To study the socio-psychological and economic characteristics of SC/ST farmers
3. To document different components of integrated farming system adopted by SC/ST farmers
4. To study the perception of SC/ST farmers about integrated farming system
5. To study the constraints faced and suggestions given by SC/ST farmers about integrated farming system

Scope of the study

The present study provide an insight into the economic viability accrued and employment generated among different categories of farmers under irrigated and dry land farming situations. This study also serve as guide line for the local extension workers to intensify their educational effort in promoting different successful combination of enterprise to generate additional income and to minimize the risk in monocropping and to generate increased employment opportunities to the family labors as well as to the farm labours of the area. The understanding of the profile of the farmers who are opting for different combination of enterprises would make the work of extension workers easy and effective to promote the integrated farming systems among different category of farmers in both irrigated and dry land situations.

Limitation of the study

As the study formed a part of the master degree programme of the researcher the concept used in the study could not be explored in depth due to limitation of time and other resources at the disposal of researcher. Due to these limitations, the investigator has restricted the study to limited combinations of integrated farming systems, research area and the sample size. Generalization made based on the findings of the study may have limited application in the non study areas. Again the investigation based on the expressed opinions of respondents i.e. recall and as such, personal and prejudice cannot be overruled in an ex-post-facto research design, even though every care has taken in the preparation of the questionnaire and in collecting data.

REVIEW OF LITERATURE

A brief review of literature is an integral part of any investigation as it not only gives an idea on the work done in the past, but also provides the basis for interpretation and discussion of the findings. In the light of the objectives of the study, the relevant literatures are reviewed and presented under the following sub headings.

2.1 Concepts of integrated farming systems.

2.2 Extent of awareness of integrated farming system by SC/ST farmers.

2.3 Socio-psychological and economical characteristics of SC/ST farmers practicing integrated farming system.

2.4 Documentation of different components of integrated farming system adopted by SC/ST farmers.

2.5 Perception of SC/ST farmers about integrated farming system.

2.6 Constraints faced by SC/ST farmers and suggestions given to overcome the constraints.

2.1 Concepts of integrated farming systems

Hosmani (1999) stated that, farming system takes into account the interactions between the sub systems within a whole farm setting and thus designed to address farmers and society needs and goals. The whole farm is viewed as a system encompassing interacting subsystems. No potential enterprise is considered in isolation. It looks at the farm family household as a system of natural and human components.

Itnal *et al.* (1999) stated that, “farming system” is a resource management strategy to achieve economic and sustained agricultural production to meet diverse requirements of the farm household while preserving the resource base and maintaining high environmental quality.

Rangasamy (1999) viewed that, the concept of farming systems has got more relevance in the present day farming to reap better harvests in the long by maintaining a productive resource base on a holistic approach. The IFS approach introduces a change in the farming techniques for maximum of production in the cropping pattern and takes care of optimal utilization of resources. The farm wastes are better recycled for productive purposes. A judicious mix of agricultural enterprises like dairying, poultry, mushroom, piggery, fishery etc. suited to the local agro-climatic situations and socio-economic status of farmer would bring in prosperity in the farming.

Behera *et al.* (2001) defined integrated farming systems as one of the potential approaches, which focuses on judicious combinations of any one or more of the such enterprises and effective recycling of the residues wastes for the better management of the available resources with small and marginal farmers for the generation of the more income and employment to the farming labourer during off season.

Nagaraja and Yellappa (2002) reported that farming demonstration is an innovative and unique approach to promote integrated land use and animal management technologies as well as resource management capabilities among the farmers, more particularly small and marginal farmers of rural population.

Chinmay and Singh (2003) opined that the integration of two or more enterprises like crop, livestock, fishery, poultry ,bee-keeping etc. for each farm according to the availability of resources to sustain and satisfy as many necessities of the owner as possible and the systems thus developed will be termed as integrated farming systems.

Radhamani *et al.* (2003) explained that the integrated farming systems approach introduces a change in the farming techniques for maximum productivity in farming by optimal utilization of resources. Judicious mix of agricultural crops and other enterprises suited to the given agro climatic condition and socio-economic status of the farmer would improve the prosperity in the dry land farming.

Ramana Rao (2005) explained that mixed farming system of farming on a particular farm which includes crop production, raising lives stock, poultry, fisheries, bee keeping etc. to sustain and satisfy as many needs of the farmers as possible.

Behern and Yates (2008) viewed that in order to make farming profitable and improve resource use efficiency at the farm level, the synergy among components of farming systems should be exploited. In the process of technology generation, transfer and other developmental efforts at the farm level (contrary to the discipline and commodity-based approaches which have a tendency to be piece meal and in isolation), it is desirable to place a whole-farm scenario before the farmers to enhance their farm income, thereby motivating them towards more efficient and sustainable farming.

Sivamuruga (2008) reported that integration of cropping with components like dairy, biogas and mushroom or fish resulted in higher productivity, economic returns and employment generation than the cultivation of crops alone.

Sanjeev Kumar Singh and Shivani Dey (2011) reported that integrated farming system is the integration of different agriculturally related enterprises with crop activity as base, provide ways to recycle the products and by-products of one component as input to another linked component and reduce the cost of production.

2.2 Extent of awareness of integrated farming system by farmers

Mehta *et al*. (1989) conducted a study in Konkan region of Maharashtra and reported that majority of the farmers had medium level of knowledge about farm practices of mango crop, majority of the farmers had knowledge of grafting technique (87.00%), recommended size of pit for mango cultivation (77.00%), maturity indices 10 of mango fruits (87.00%), reasons behind harvesting of mature fruits along with their stalks (63.50%) and the reasons behind the removal of loranthus weed from tree (85.50%).

Ratnakar (1990) in a study in Khammam district of Andhra Pradesh reported that majority (56.90%) of the beneficiaries had medium level of knowledge with respect to mango cultivation, where as majority (81.20%) of the non- beneficiaries had low level of knowledge about mango cultivation.

Ratnakar and Reddy (1991) conducted a study in Khammam district of Andhra Pradesh among tribal farmers and reported that majority (56.90%) of the beneficiaries had medium level of knowledge on mango cultivation and only few (29.10%) beneficiaries had high level of knowledge about mango cultivation. Among the non beneficiaries, 87.20 per cent of the farmers had low level of knowledge regarding mango cultivation.

Srinivasareddy (1995) conducted a study in Kolar district of Karnataka and reported that 46.00 per cent of the respondents had medium level of knowledge about recommended cultivation practices of mango followed by high (37.00%) and low (17.00%) levels of knowledge, respectively.

Saravan kumar (1996) conducted a study on management of mango gardens by farmers in Dharmapuri district of Tamil Nadu state and reported that 64.17 per cent of mango growers had medium level of knowledge, 30.00 per cent had low level of knowledge and only 5.83 per cent of mango growers had high level of knowledge.

Kumar (1998) in his study on knowledge level of banana growers in Channapatna and Doddaballapur taluks of Bangalore Rural district revealed that 45.00 per cent of banana growers had medium knowledge level followed by lesser percentage under low (26.00%) and high (29.00%) knowledge levels, respectively.

Angadi (1999) in his study on pomegranate growers in Bagalkot district of Karnataka reported that, 63.75 per cent of pomegranate growers had medium level of knowledge, while 30.63 and 5.62 per cent of pomegranate growers belonged to low and high knowledge levels, respectively.

Kadam (1999) in his study on knowledge, cultivation practices followed and marketing behavior of sweet orange growers in Nanded district reported that, 68.13 per cent of the respondents had medium level knowledge, whereas 20.00 per cent and 11.87 per cent of sweet orange growers belonged to high and low knowledge level categories, respectively.

Clothe and Borkar (2000) in their study on constraints faced by farmers in adoption of bio-fertilizers found that more than half (58.67%) of the respondents had medium level of knowledge followed by high (22.67%) and low (18.66%) knowledge levels on bio-fertilizers.

Kalaskar *et al*. (2001) in their study on factors influencing knowledge of cotton growers about integrated pest management practices in cotton revealed that majority of the respondents (67.25%) were moderately aware about different IPM practices in cotton and quite a few (16.97%) respondents had high level of knowledge about IPM practices.

Raghavendra Naik (2007) in his study on management practices of pineapple growers in Karnataka reported that 43.14 per cent of pineapple growers belonged to medium level of knowledge. Whereas 33.14 and 23.74 per cent of the respondents belonged to low and high knowledge category, respectively.

Rajashekhar (2009) in his study on an analysis of technological gap in papaya cultivation in Bidar and Gulbarga districts of north Karnataka reported that 47.50 per cent of papaya growers belonged to medium knowledge level category, followed by high knowledge level (28.33%) and low knowledge level category (24.17%). A very high percentage of the papaya growers had correct knowledge about the cultivation practices like harvesting time (97.50%), planting time (96.67%) and soil type (95.83%), followed by practices like variety (93.33%), pit size (91.67%), irrigation in red soil (90.00%) and irrigation in black soil (87.50%). Majority of respondents had correct knowledge about practices like pests and diseases (83.33%) filling material (83.33%) and spacing (48.33%). Knowledge level was very low in case of recommended practices such as fertilizer applications (29.17%).

2.2.1 Relationship between awareness of integrated farming system farmers and independent variables

Ismal *et al*. (2002) reported that educational background and agricultural knowledge of DT-FFS and FT-FFS farmers were significantly correlated with their IPM skills. Cosmopolitan outlook, extension contact and innovativeness of DT-FFS farmers and farm size and income of FT-FFS were also significantly related with their IPM skills.

Sudheendra and Hirevenkanagoudar (2005) found that in joint management programmes in North Karnataka, extension contact, employment generation had a significant and positive association with knowledge at one per cent level. Age, education, farm size, family income and level of aspiration through had a positive association with the knowledge level their significance was not established.

Bharathamma *et al*. (2006) revealed that education, land holding, income of the family, social participation, mass media participation, training undergone were highly significant with empowerment of rural women. Whereas age, marital status, family size, caste, family size and material possession were non-significant but positively related with empowerment of rural women in Gadag district of North Karnataka.

Moulasab *et al*. (2006) showed that education, management orientation, risk orientation, scientific orientation, achievement motivation, extension contact, extension participation, and mass media participation were highly significance with knowledge.

2.3 Socio-psychological and economic characteristics of SC/ST farmers practicing integrated farming systems

2.3.1 Age

Malathesh (2004) conducted study on “An Analysis of selected farming system in eastern dry zone in Karnataka state”. The result revealed that in case of crop + dairy farming system, 30 per cent of respondents belong to young age group, whereas 40.0 per cent and 30.00 per cent of respondent belong to middle age and old age groups, respectively.

Vani (2005) conducted a study on Farming system approach socio-psychological and economic dimensions of farming system approach in Chitradurga district. The result indicated that farmers adopting agriculture + dairy + poultry farming system belong to middle age (61.54%), young (23.08%) and old age (15.38%).

The research carried out by Mangala (2008) on “Impact of Integrated Farming system on Socio-economic status of BAIF beneficiary Farmers.” Reported that majority of the respondents practicing IFS (51.43%) were belonged to middle age group, while 27.14 per cent were old age group and 21.43 per cent were of young age group.

Chitra (2010) conducted a study on “Knowledge and adoption of improved practices in selected farming systems of Mandya district”. The results indicated that little more than half (56.70%) of the respondent belonged to middle age group followed by 23.30 per cent belonging to old age group and 20.0 per cent belonging to young age group, who were practicing both paddy + sugarcane + dairy and ragi + dairy.

2.3.2 Education

Malathesh (2004) conducted study on "An Analysis of selected farming system in eastern dry zone in Karnataka state." The results revealed that in case of crop + dairy farming systems 46.60 per cent of the respondents belonged to the low level of education, 30.07 per cent and 23.33 per cent of the respondents belonged to middle and high level of education groups respectively.

Moulasab (2004) in his study on mango growers in North Karnataka indicated that, more than 23.00 per cent of the respondents were educated up to primary school followed by higher secondary school (19.16%) and 14.16 per cent of the respondents were illiterates.

Vani (2005) in her study on Farming system approach: socio-psychological and economic dimensions of farming system approach in chitradurga district of karnataka revealed that the farmers adopting agriculture + dairy + poultry belong to middle level of education (46.15%) than low (30.77%) and high (23.08%) educated groups.

Mangala (2008) reported in her study on "Impact of integrated farming system on Socio-economic status of BAIF beneficiary farmers," observed that (34.30%) of the IFS beneficiaries were illiterates, followed by primary school (17.86%), can read only (15.70%), can read and write (11.43%), middle school (10.70%), high school (9.30%) and PUC (0.71%) level of education.

Pottappa (2008) in his study on "Knowledge and adoption of potato growers in Chikkaballapur district," reported that majority (56.60%) of the respondents belonged to low education category followed by 18.33 per cent with higher education category whereas, 25.00 per cent with medium education category.

Chitra (2010) conducted study on "Knowledge and adoption of improved practices in selected farming systems of Mandya district," results indicated that 30 per cent of the respondents were educated up to high school. Whereas, 26.6 per cent of respondent were illiterates. Nearly one-fourth (23.4%) and 20 per cent of respondents were educated up to primary to middle school and college, respectively in Paddy + Sugarcane + Dairy farming system.

Ugwumba (2010) conducted a study on "Integrated Farming System and its Effect on Farm Cash Income in Awka South Agricultural Zone of Anambra State". The results reported that farmers who were educated, had more years of experience and can combine many viable enterprises tend to be more efficient in production and consequently will realize more income.

2.3.3 Family size

Malathesh (2004) conducted study on "Analysis of selected farming system in eastern dry zone in Karnataka district". The result reveled that in case of crop + dairy farming system, majority of the respondents (53.33%) had big family, 20.00 per cent and 26.66 per cent of the respondent had medium and small family respectively.

Chandrani Saha (2008) in her study on "Sustainability of farming systems and livelihood security among rural households in Tripura", reported that majority (66.64%) of the respondents had medium family size, followed by large (24.16%) and small (9.16%) family.

Pottappa (2008) in his study on "Knowledge and adoption of potato growers in Chikkaballapur district" indicated that majority (69.16%) of the respondents had belonged to big family, where as 30.84 per cent of the respondents had small family.

Vishvanath Hiremath *et al.* (2009) in his study on "Knowledge and adoption behavior of vegetable growers with respect to eco-friendly technologies", showed that less than half (40.30%) of the farmers had medium family followed by big (35.40%) and small (24.30%) families.

Chitra (2010) conducted study on "Knowledge and adoption of improved practices in selected farming systems of Mandya district", indicated that in case of paddy + sugarcane + dairy system of farming fifty per cent of the respondents had medium family followed by 26.6 per cent and 23.4 per cent with big and small families.

Lavanya (2010) in her study on "Assessment of Farming Systems Efficiency in Theni District of Tamil Nadu", reported that 45.00 per cent the respondents had big family followed by 33.30 per cent medium family and 21.70 per cent had small family.

2.3.4 Land holding

Malathesh (2004) conducted study on "Analysis of selected farming system in eastern dry zone in Karnataka state". The results revealed that in case of crop + dairy farming system of production, 26.66 per cent of the respondents were under small land holding, followed by 40.01 per cent medium size of land holding and 33.33 per cent with large land holdings.

Vani (2005) in her study indicated that farmers adopted agriculture + poultry + dairy were medium (46.15%) and big (53.85%) farmers.

Dolli (2006) in his study on Sustainability of natural resources management in watershed development project", revealed that, majority of respondents had large landholding (7.85 acres).

Mangala (2008) conducted a study on "Impact of integrated farming system on Socio-economic status of BAIF beneficiary Farmers". The results highlighted that 50.72 per cent of the beneficiaries were small farmers, followed by marginal farmers (25.72%), medium farmers (22.14%) and large farmers (1.42%).

Chitra (2010) conducted study on "Knowledge and adoption of improved practices in selected farming systems of Mandya district". The results indicated that almost an equal per cent (43.4% and 40%) of the respondents belonged to small and marginal size of land holding category, whereas, 16.60 per cent were having large size of land holdings in farming system of paddy + sugar cane + dairy.

2.3.5 Farming experience

Sakharkar (1995) in his study on soybean reported that, majority of the respondents (67.00%) were cultivating soybean from the last five to eight years, 15.00 per cent had 4 years and 18.00 per cent of the respondents had more than 8 years of experience in cultivation of soybean.

Lakshminarayan (1997) reported that, about 34.00 per cent of the farmers had low farming experience, while 32.50 per cent and 33.50 per cent of farmers had medium and more experience, respectively

Sawant (1999) conducted a study on effectiveness of "Different mode of presentation of information on mushroom cultivation in Maharashtra on farmers" and reported that, 78 per cent of the respondents belonged to the group which had farming experience between three to fifteen years.

Jadhav (2000) reported that, 61.68 per cent had medium farming experience, while 19.66 per cent of each of them was noticed in low and high farming experiences, respectively. The average farming experience of the respondents was 32 years.

Natikar (2001) in his study found that, majority of the respondents had medium farming experience (48.00%) followed by high (45.00%) and low (7.00%) farming experiences, respectively.

Vinay Kumar (2005) in his study reported that, 53.33 per cent of the respondents belonged to low experience category followed by medium (45.00%) and high (1.67%) farming experience categories respectively.

Thiranjangowda (2005) observed that, 40.62 per cent of the respondents belonged to high experience category while, 35.93 per cent and 23.45 per of the respondents belonged to medium and low experience category respectively.

2.3.6 Annual income

Chandregowda and Jayaramaiah (1990) in a study on "Impact of watershed development programme on socio-economic status, land productivity and income on small and marginal farmers", revealed that, average annual gross income increased in case of small farmers (Rs 11,970) and marginal farmers (Rs3,420) after their participation in watershed development programme.

Rama Mohan Rao (1996) while studying the impact of watershed development in Chinnateur watershed of Kurnool district in Andhra Pradesh revealed that, the increase in income was higher in case of small and medium farmers compared to marginal and large farmers.

Pushpa and Netaji Seetharaman (1999) carried out study on "Impact on income and employment of farmers in various integrated farming system". The results revealed that in case of crop + dairy + poultry + sericulture, the income was Rs.33, 162, followed by crop + dairy + sericulture (Rs. 32,762), and crop + sericulture (Rs.29, 892). The percentage increase of additional net income

ranged from Rs.24.90 in case of crop + dairy system to as high as 81.76 per cent in case of crop + dairy + poultry + sericulture systems.

Arun Kumar (1998) in his case study on Kuthangere micro watershed in Karnataka found that, the total income of watershed farmers was Rs 27,411.25 compared to that of the non-watershed farmers Rs 17,227.79.

Nirmala (2003) in her study on "Impact of watershed development programme on socio economic dimensions of beneficiaries", revealed that, the household income generated from the watershed area was Rs 30655.56, which is relatively higher than that, of non-watershed area Rs 23171.47.

Murugan and Kathiresan (2005) conducted a study on Income and economic efficiency under low land integrated farming systems. The results revealed that rice integrated with fish and poultry produced the highest per day returns of Rs.2137 and Rs.3544 and net returns of Rs.155 920 and Rs.228 090 in the Samba and Navarai crops, respectively, when compared to the rice and rabbit in the first and rice alone in the second cropping season.

Ninga Reddy (2005) in the study on "Knowledge, extent of participation and benefits derived by participant farmers of the watershed development programme", reported that, majority of the respondents belonged to income group of Rs 11,001 to Rs 22,000 per annum (60%) followed by Rs 22,001 to 33,000 (20%) and Rs 11,00 to Rs 33,000 (10%), respectively.

Chandra Charan (2005) in his study on profile of Sujala watershed project beneficiary farmers revealed that, 18 per cent of the respondent families had annual income above Rs 33,000, 48 per cent of respondent families had annual income between Rs 11,001 to Rs 22, 000.

Dasaratharamaiah *et al.* (2006) reported that, 10.0 per cent of beneficiaries had income between Rs.7, 201 and above, 20.67 per cent had income between Rs. 4,801 to 7,200 and 31.33 per cent had income Rs. 3,601 to 4,800 and 38.00 per cent had income below Rs.3, 600 per annum after the implementation of DWCRA. The study also reported that, there are no beneficiaries without any income.

Ram Suresh and Hubba Lal Singh (2008) in their study on "Income and employment generation in mixed farming systems in Gonda district of Andhra Pradesh", reported that the overall average net income obtained from crops of paddy, wheat and sugarcane was Rs.5516, Rs.6614 and Rs.24142 per hectare respectively and family labour income generation from these crops were Rs.7098, Rs.8012 and Rs.24142 per hectare per year. In case of cow milk production, the average net income was Rs.1559 and family labour income was Rs.4758 per hectare.

2.3.7 Organizational participation

Srinivas Reddy (1995) in his study reported that, more than half number of the mango growers (57.00%) had medium level of social-participation followed by low (33.00 %)and high (10.00 %) levels of social participation respectively.

Thangavel *et al.* (1996) found that, 38 per cent of the respondents in dry and nearly 24 per cent in wet area showed medium level of organizational participation, 34 and 42 per cent of the respondents found in high level of organizational participation in both area and rest had low-level of organizational participation respectively.

Saravanakumar (1996) in his study revealed that, 79.17 per cent and 78.33 per cent of the mango growers were members of co-operative milk society and district co-operative bank respectively. While, only 9.17 per cent of the mango growers were members of youth club and farmers discussion group.

Saikrishna (1998) conducted a study in Raichur district on Andhra migrant farmers reported that, six per cent of the respondents were members of milk cooperative society and 1.33 per cent of farmers were office bearers. Only 3.3 per cent of farmers were members of Village Panchayat and none of them were its office bearer. Two per cent of migrant farmers were members of youth club and cooperative bank.

Meeran *et al.* (1999) found that, 78 per cent of the respondents were found to have low-level of organizational participation. Agricultural credit societies, local shrimp farmers association and caste association were some of important organizations in which the respondents participated.

Siddappa (1999) found that, 6.87 per cent and 6.25 per cent of the pomegranate growers were members of fruits growers association and youth club, respectively. Only 4.37 per cent and 3.75 per cent of the respondents were the members of taluk panchayat and grampanchayat, respectively.

2.3.8 Extension participation

Vani (2005) in her study on farming systems indicated that in case of agriculture + dairy + poultry, 46.15 per cent of the respondents had low level of extension participation, followed by 38.46 per cent with medium level of extension participation and 15.38 per cent had high level of extension participation.

Mangala (2008) conducted a study on "Impact of integrated farming system on Socio-economic status of BAIF beneficiary Farmers", reported that 27.14 per cent of respondents participated in demonstrations organized by BAIF. About 15.00 per cent of the respondents participated occasionally, followed by 12.14 per cent of them participated regularly and 72.86 per cent of them never participated.

Chitra (2010) conducted study on "Knowledge and adoption of improved practices in selected farming systems of Mandya district". The results indicated that in case of ragi + tomato + coconut + agro forestry, 43.40 per cent of the respondents had high level of extension participation followed by 36.60 per cent with low level of extension participation and 20.00 per cent of them had medium level of extension participation.

Lavanya (2010) in her study on "Assessment of Farming Systems Efficiency in Theni District of Tamil Nadu", revealed that majority (58.30%) of the farmers had medium level of extension participation, whereas 26.70 per cent and 15.00 per cent had high and low levels of extension participation respectively.

2.3.9 Extension contact

Gattu (2001) revealed that majority (80.83%) of respondents had medium extension contact followed by high (11.67%) and low (7.50%) extension contacts respectively.

Jahagirdar and Sundaraswamy (2002) reported that majority (60.00%) of respondents had medium extension contact followed by low (28.00%) and high (12.00%) extension contacts.

Raju (2002) asserted that nearly two thirds (63.33%) of the respondents had medium extension contact followed by high (19.17%) and low extension contact (17.50%) contacts.

Subrahmanyam (2002) revealed that 46.66 per cent of the trained farmers had medium level of extension contact followed by high (33.34%) and low (20.00%) contacts.

Sivasubramaniam (2003) observed that majority (60.84%) of the respondents had medium level of extension contact followed by low (30.83%) and high (8.33%) contacts.

Kishorbabu (2004) found that 46.67 per cent of vegetable growers had medium extension contact followed by low (42.22%) and high (11.11%) contacts.

Sajithkumar (2004) found that 50.00 per cent of the respondents had medium extension contact followed by those with low (28.67%) and high (21.33%) contacts.

Gopinath (2005) revealed that 46.00 per cent of the respondents had medium extension contact followed by those with low (32.67%) and high (21.33%) contacts.

Ravishankar (2005) reported that majority (51.67%) of the respondents had medium extension contact, followed by high (34.44%) and low (13.89%) contacts.

Aghazia (2008) found that 61.48 per cent of onion farmers had low extension contact followed by medium (29.64%) and high level of extension contacts (8.68%).

Madhushekar (2009) inferred that 45.63 per cent had low extension contact, followed by medium extension contact (42.50%) and high extension contact (11.87%).

2.3.10 Mass media exposure

Gupta (1999) reported that, cent per cent the respondents possessed radio, while 86.60 per cent of them possessed television sets. Seventy two per cent of them were regular listeners of agricultural programmes and 64.67 per cent listened to other programmes. While 48 per cent and 41 per cent of them were occasionally viewing agricultural and general programmes, respectively on television.

Dhamodaran and Vasanthkumar (2001) observed that more than fifty per cent (53.33%) of the respondents had medium level of mass media exposure followed by 40.00 per cent of the respondents with low mass media exposure and only 6.67 per cent of them had high level of mass media exposure.

Vedamurthy (2002) in his study on arecanut growers of Shimoga district of Karnataka state observed that, nearly fifty per cent of respondents (48.00%) were medium mass media users, followed by 37.00 per cent were high and 27.33 per cent were low mass media users respectively.

Shashidhara (2003) in his study reported that, 41.11 per cent of the respondents belonged to medium level of mass media participation, followed by low level (35.56%) of mass media participation, whereas 23.33 per cent of respondents were having high level of mass media participation.

Venkataramalu (2003) indicated that, 22.50 and 74.17 per cent of the respondents possessed radio and television, respectively. Ten and 4.17 per cent of the respondents regularly listened to news and entertainment from radio. Whereas, 55.83 and 26 per cent of the respondents were regular viewing news and advertisement from television respectively. Further it was reported that, 41.67 and 28.33 per cent of the respondents regularly read news paper and success stories in farm magazines, respectively.

Sunil Kumar (2004) revealed that, 59.17 per cent of the respondents were occasionally listening to agricultural programmes in radio, whereas 30.00 per cent of them viewed agricultural programmes in television occasionally and 70.83 and 85.00 per cent of the respondents never used to read news papers and farm magazines, respectively.

Moulasab (2004) conducted study on mango growers of North Karnataka and found that, 74.17 per cent of the respondents were subscribers of television followed by 32.50 and 6.67 per cent of the respondents possessing farm magazines and news papers, respectively. It was found that 43.33 per cent of the respondents were occasional viewers of television.

Vani (2005) reported that farmers practicing agriculture, dairy and poultry were belonged to medium category of mass media participation (61.84%) followed by low (15.38%) and high (23.08%) levels of mass media participation.

Mangala (2008) reported in her study on Impact of integrated farming system on Socio-economic status that, 47.80 per cent of the respondents participated in training programmes organized by BAIF. About 27.14 per cent of the respondents participated regularly in training programmes, while 20.72 per cent of respondents participated occasionally and 52.14 per cent of them never participated.

Chitra (2010) indicated that a little more than two fifth (43.40%) of the respondents belonged to medium category of mass media participation, 36.70 per cent belonged to high category and the remaining (20.00%) belonged to low mass media exposure category with respect to paddy + sugarcane + dairy. farming system practicing farmers.

2.3.11 Utility of income generated

Premakumar and Rahul Kumar (1992) found in their study on DWCRA that on an average additional monthly income of Rs. 280, Rs. 395 and Rs. 280 had accrued to the participants of tailoring, dairy and mat weaving trades, respectively. They also found that low income and low level of employment were observed in tailoring and mat weaving trades. But more number of days of employment and more income was observed in dairy trade.

Hommes (1997) examined self-help groups in Vietnam and found duck breeding, cattle and goat breeding or fruit crops rising as the common enterprises undertaken by self help groups. The profit so generated was recycled into the group funds for building sanitation stations.

Hemalatha Prasad and Om Prakash (1997) reported that the type of income generating activities taken up by the women were chick rearing and egg selling, vegetable growing and selling, mahua collection and selling in the off season, fish selling, bread and egg selling, tailoring, bamboo basket making, kirani shop, manihari (ladies make up items like bangles comb mirror etc.) petty business, goat rearing etc.

Snehalatha and Reddy (1998) revealed that the income generating activities taken up by the women were dairying, forest nursery, sericulture, vegetable cultivation and petty business which were carried out as a group activity.

2.4 Documentation of different components of integrated farming system adopted by farmers

Jayanthi *et al.* (1998) carried out a study on Economic efficiency of component linkage in lowland integrated farming system. The results indicated that crop + pigeon + fish + mushroom integration was economically superior, with the highest net return (Rs 90 252/ha/yr), per day return, and benefit cost ratio (2.44).

Jayanth *et al*. (2003) reported that integrated farming system experiments comprising enterprises like crop, fishery, poultry, pigeon and goat recorded highest level of employment of 575 man-days ha^{-1} $year^{-1}$ with crop + fish + goat generation.

Chinmay and Singh (2003) opined that the integration of two or more enterprises like crop, livestock, fishery, poultry ,bee-keeping etc. for each farm according to the availability of resources to sustain and satisfy as many necessities of the owner as possible and the systems thus developed will be termed as integrated farming systems

Malathesh (2004) reported that in case of crop + dairy farming systems, it was found that land holding, social participation, livestock possession were found positively significant with economic performance, where as cropping intensity and scientific orientation were found negatively significant relationship with economic performance

Ramana Rao (2005) explained that mixed farming system of farming on a particular farm which includes crop production, raising lives stock, poultry, fisheries, bee keeping etc. to sustain and satisfy as many needs of the farmers as possible.

Ramrao *et al.* (2005) carried out study on Crop-livestock integrated farming system for augmenting socio-economic status of smallholder tribal of Chhattisgarh in central India. The results reported that 2 bullocks + 1 cow + 1 buffalo + 10 goats + 10 poultry + 10 ducks along with crop cultivation was the best with a net income of Rs 33076 per year against arable farming (crop farming) alone (7843 per year) with a cost returns of 1: 2.238.

Ramrao *et al*. (2005) reported that mixed farming (crop-livestock) module of 1.5 acre small scale holders resulted in employment generation of 571 man days, net income of Rs. 58456 per year against crop farming alone with employment generation of 385 man days and net returns of Rs. 18300 per year.

Vani (2005) reported that employment generation was high in case of agriculture + horticulture (62 man days) followed by agriculture + dairy + poultry (58 man days) and very low employment generation was found in case of agriculture + dairy (32 man days)

Sivamuruga (2008) reported that integration of cropping with components like dairy, biogas and mushroom or fish resulted in higher productivity, economic returns and employment generation than the cultivation of crops alone

Rathore and Bhatt (2008) conducted a study on productivity improvement in jhum fields through integrated farming system. The results highlighted that cultivation of rice, vegetable pea and beans along with dairy cattle (free grazing), having a system productivity of 105.0 t/ha of rice-equivalent yield. However, least system productivity was recorded with cultivation of rice, vegetable pea, beans, hybrid Napier, winter maize and soybean together with dairy cattle, with rice-equivalent yield of 56.6 t/ha. Except the piggery, all livestock components (dairy, poultry, duckery and fishery) recorded better economic viability (B: C ratio >1).

Channabasavanna *et al.* (2009) conducted a study on Development of profitable integrated farming system model for small and medium farmers of Tungabhadra project area of Karnataka. The result reported that farmers adopted crop, poultry, fish and goat increased their net return was Rs. 22,887 and benefit cost ratio was also higher (1.97).

Toor (2009) conducted study on Integrated farming systems for income and employment increasing possibilities on small farms in Punjab State. The result revealed that involving crops (rice, wheat, and Aloe Vera) and livestock (dairy animals, pigs, poultry, fish, rabbits and honey bees), proved more profitable than crops alone (rice-wheat system) in terms of net returns.

Chitra (2010) reported that in case of paddy + sugar cane + dairy farming system less than 50 per cent of farmers were facing problems like non availability of good quality seeds (50.0%), lack of good marketing system (43.3%), lack of improved breeds (40.0%), lack of training and guidance by extension personnel (33.3%) and lack of transportation facility(30.0%).

2.4.1 Relationship between adoption of integrated farming system farmers and independent variables

Ankulwar (2001) carried out a study in Latur district of Marathwada region of Maharashtra, reported that variables like education, annual income, land holding, social participation, socio-economic status, source information, risk orientation and economic motivation were found to be positively and significantly related with adoption of the recommended package of practices of sunflower growers. Whereas, age had established negative and significant relationship with adoption.

Shrivastav (2002) reported that, age had a positive and significant relationship with the adoption, whereas size of land holding showed negative relationship with the adoption level of chilly growers.

Bhagwat and Gohad (2003) found that education, land holding, farming experience, socio-economic status, social participation, extension contact, scientific orientation and risk preference were found positively significant with adoption of dry land cotton cultivation technologies. Age of the respondents was having non-significant relationship with adoption of dry land cotton cultivation technologies.

Gurprit Singh Dhillon and Kuldip Kumar (2004) found that age and risk orientation had significant and positive correlation with the level of adoption, while education was found to be negatively and significantly correlated to the extent of adoption.

Pottappa (2008) revealed that education, extension participation and mass media participation had significant relationships while extent of adoption level of potato farmers with the land holding, and annual income had highly relationship,

Ramesh and Santha govind (2008) observed that educational status, annual income, farm size, livestock possession, social participation, extension agency contact, mass media exposure and information source utilization showed positive and significant relationship with the extent of adoption of organic farming practices.

Varadaraju *et al.* (2009) found that age, socio-economic status, farm size, family size, farm power asset and social participation had non-significant relationship with the adoption level of improved tomato cultivation practices. A highly significant relationship was observed between adoption level and mass media participation and extension participation of tomato growers.

Vishvanath Hiremath *et al.* (2009) indicated that, education, innovative proneness, family income and extension contact had significant relationship with the overall adoption behavior of vegetable growers. However, other characteristics (age, farming experience, family size, family type, social participation and mass media participation) did not possess significant relationship with the adoption behavior of eco-friendly technologies of tomato and cabbage growers.

2.5 Perception of farmers about integrated farming system

Heimstra et al. (1972) considered perception as the process whereby sensory input organized into meaningful experience. Meaningful experience is attained by identifying and categorizing the sensory input into separate classes based on various attributes of the stimuli.

Mitchell (1973) reported that behavior was a function of one's perception and that changing perceptions would result in changing behavior .thus, perception is a determinant of performance

Anonymous (1978) interpreted perception as a dynamic process in which the physical characteristics and a stimulus and performance of an individual together determine what is perceived and how it is perceived.

Ratnakar and Reddy (1991) studied tribal farmer's perception about ITDA programme and observed that 75.00 per cent of beneficiaries and 40.00 per cent of non-beneficiaries of ITDA programme had moderate perception about ITDA programme, whereas 20.00 per cent and 60.00 per cent of beneficiaries and non-beneficiaries had low perception about ITDA programme, respectively.

Sinha et al. (1994) in their study on differential perception of concept of feedback by the field level extension personnel in training and visit system reported that 72.22 per cent of the agricultural officers correctly perceived the concept of feedback and 53.52 per cent of the village extension workers perceived it incorrectly.

Kubde and Wagdhre (1996) carried out a study on perception of extension personnel about functioning of training and visit system and revealed that majority (86.00%) of the extension personnel expressed as there was regularity in training, need based information given during training was adequate (95.35%) and use of audio visual aids during training were not sufficient (65.12%).

Goudar (1997) conducted a study on role perception of link workers under WYTEP and indicated that 55.00 per cent of the link workers had medium role perception, while 24.00 per cent and 21.00 per cent of link workers had low and high role perception, respectively.

Padmaiah and Ansari (1997) carried out a study on attributes influencing the perception about usefulness of watershed development programme and found that 56.00 per cent of the beneficiaries perceived the programme as useful and 22.00 per cent as highly useful followed by less useful (17.33%).

Hardikar (1998) in his study on usefulness of development programmes as perceived by women beneficiaries in Ratnagiri district of Maharashtra, indicated that 59.26 per cent of IRDP beneficiaries and 80.41 per cent of DWCRA beneficiaries perceived the developmental programmes as useful, while 22.22 per cent of IRDP and only 5.11 per cent of DWCRA beneficiaries perceived the development programmes as less useful. Development programmes were perceived to be more useful by 18.52 per cent and 14.43 per cent of IRDP and DWCRA beneficiaries, respectively.

Khare et al. (1998) reported that 52.44 per cent of the sarpanchs had medium role perception towards agricultural development followed by high (34.15%) and low (13.41%) role perception.

Vedwan and Rhoades (2001) examined how apple farmers in the western Himalayas of India perceive climatic change. This is done by comparing the locally idealized traditional weather cycle with climate change as perceived by the farmers of the region using snowfall and rainfall data to measure the accuracy of perceptions.

Deepak (2003) on perception of beneficiaries and non-beneficiaries towards WYTEP programme witnessed that 53.33 per cent of the beneficiaries belonged to high category of perception, whereas 46.67 per cent of beneficiaries and 40.00 per cent of non-beneficiaries had medium perception and those non-beneficiaries who fell under low perception category accounted for 60.00 per cent.

Sahana (2003) indicated that half of the respondents (50.00 %) had medium level of knowledge about functioning of Riatha sampark Kendra's, (RSKs) while about the one fourth of farmers (26.67 %) had high knowledge and remaining 23.3 per cent had low level of knowledge about the functioning of RSKs.

Sharma (2006) reported in their study on Functioning of Kisan Seva Kendras (KSks) in Udaipur District of Rajasthan indicated that majority of the respondents (61.66%) had medium level of knowledge, while 23.33 and 15.00 per cent had high and low levels of knowledge about functioning of KSK.

Kiran (2007) observed that majority of teachers (70.42%) perceived organizational climate as favourable as compared to researchers (39.58%) and extension workers (28.57%). Whereas, most favourable organizational climate perception was observed with 50 per cent of extension workers followed by 43.75 per cent of researchers and 13.26 per cent of teachers. Surprisingly less favourable perception was also noticed with more number of extension workers (21.42%) as compared to researchers (16.67%) and teachers (16.32%).

Chandra *et al.* (2009) in their study on appraisal of processes and procedures of NREGAS in Mayurbhanj and Balasore districts of Orissa found that majority of the beneficiaries perceived that NREGAS has generated employment and reduced migration.

Naidu *et al.* (2009) in his study on impact of NREGAS on living conditions of rural poor found that 89.00 per cent of the beneficiaries expressed satisfaction with the NREGAS which helped them in getting employment.

Navjyoti (2009) in her study on employment guarantee and women empowerment in rural India concluded that more than 50.00 per cent of the women beneficiaries felt as NREGAS had brought significant change in their villages and in their own lives, this is because the employment is provided within their village and community assets have been generated.

Sadek and Oktarani (2009) in his study on crisis and emergencies worldwide on food safety and environmental issues in recent decade. The results indicated that consumer's interest in organic food is influenced by their belief that organic food is better for health and the environment. This may provide a basis for worldwide education on the benefits of going organic.

Paumolee and Disha (2009) conducted a study on implementation of NREGS and revealed that 38.00 per cent of the beneficiaries expressed as the worksite facilities were provided regularly at the place of work and 60.00 per cent of the beneficiaries expressed as constructed assets were useful.

Deshmukh *et al.* (2010) carried out a study on perception of rural youth about Adarsh Gaon Yojana in Mulshi taluk of Pune and observed that most of the rural youth did not clearly perceive the importance of Kurhabandi, Charaibandhi and Nasabandhi principles of Adarsh Gaon Yojana. However, they had better perception about Nashabandhi and Shramadhan principles of Adarsh Gaon Yojana.

Narayanan and Sarvanan (2011) conducted a study on customers' perception towards general insurance products (livestock & crop insurance) with special reference to erode rural, Tamilnadu. They tried to expose the awareness among farmers towards crop and livestock insurance practices. It was found from the study that 71.70 per cent of the respondents had not taken insurance for their cattle and crop. Over one third (35.30%) of the respondents had insured for both cattle and crop. A little more than half (52.50%) of the respondents were not aware about the cattle and crop insurance. Nearly 30.00 per cent of the respondents were not willing to go for the insurance.

Jyothi (2012) conducted a study on perception of Bhagyalakshami scheme by rural women of Dharwad district and revealed that the perception level of beneficiaries and non-beneficiaries recorded was 89.62 and 73.95 per cent, respectively. The average perception of respondents about Bhagyalakshmi scheme was 81.79 per cent.

Rajvendra and Kinjulck (2012) conducted a study on perception of farmers towards Seed Village Programme in Madhya Pradesh, they revealed that, majority of the respondents (51.66%) had moderately favorable perception followed by 26.66 per cent with highly favorable perception, whereas, 21.66 per cent had unfavorable perception regarding utility of seed village programme conducted in Rewa block.

2.5.1 Relationship between perception of integrated farming system farmers and independent variables

Sudheendra (1986) found that, there was non-significant relation between age education, land holding, extension contact and mass media contact and perception of sunflower growers.

Nimbalkar and Pawar (1990) reported, non-significant relationship between perception and age education, annual income, and land holding, but there was significant relationship between perception and mass media participation.

Nagpal and Yadav (1991) reported that, annual income had non-signicant relationship with perception.

Ratnakar and Reddy (1991) reported that, mass media contact has non-significant association with perception among beneficiaries of ITDA programme.

Patel and Patel (1993) cited that, farm size had a non-significant relation with perception regarding lab to land programme.

Patil (1994) in his study on National Agriculture Extension Project as perceived by farmers and extension personal at department of agriculture in Karnataka, revealed that, the variables viz., farm size, extension contact and annual income of farmers in irrigated area had significant relation with perception of farmers. Whereas, age was non-significantly related with perception of farmers.

Arulraj and Ulagalandan (1995) in their study on sugarcane growers revealed that the independent variables viz, land holding and extension contact was significantly related to the perception of sugarcane growers, whereas the age, education and mass media contact was non-significantly correlated with perception of farmers.

Padmaiah (1995) conducted study in mahabubnagar district of Andhra Pradesh in watershed area revealed that, there was positive significant relation between perception of respondents with education and extension contact. Whereas, the independent variables viz., age, land holding, media contact and income was non-significantly related to perception of farmers in watershed area.

2.6 Constraints faced by farmers and suggestion to overcome the constraints

Vivekananda (1999) in his study has opined that agricultural development in the state is hindered by the problems such as weak input research, weak extension net work, regional imbalance, stagnation in the area under HYV's etc. and has suggested the measures for development of agricultural in the state.

Kella Lakshmana *et al*. (2002) suggested two field extension approaches for sustainability viz., integrated farming system and blending of indigenous farm technologies into modern technologies and opined that these two approaches have advantage as they are eco-friendly, economically feasible and the IFS gives more income per unit area by reducing the cost of production.

Krishnamurthy *et al*. (2004) identified the problems of rice growers in five district of Karnataka state. The major constraints faced by them were non availability of seeds and fertilizer (98.00%), non-availability of literature (93.00%), lack of knowledge (90.00%) and complex technology (87.00%).

Malathesh (2004) reported that the farmers practicing crop + sericulture farming systems experienced the constraints like cumbersome procedure to get credit from bank (91.66%), control of pests (88.33%) under crop production and sericulture enterprises respectively followed by lack of knowledge regarding pest and diseases of the field crops (86.33%), lack of technical guidance from extension personnel (85.00%), lack of knowledge/ difficulty to maintain temperature and humidity in the rearing house (78.33%), lack of technical guidance from extension personnel (75.00%) and high cost of plant protection chemical (73.0%).

Thejaswini *et al.* (2004) conducted a study on performance of farm women in agriculture and income generating activities in Mysore district of Karnataka and reported that majority of respondents indicated lack of training (85.00%), financial constraints (82.00%), poor quality of raw materials (81.00%), high cost of production (77.00%), lack of quality aspects (73.00%), marketing problems (65.00%) and lack of storage and ware housing facilities as major constraints to undertake income generating activities.

Nagesha (2005) reported that high incidence of pests and diseases followed by other problems such as high cost of fertilizers, chemicals and insecticides, high wages of labour, non-availability of skilled labour and lack of transportation and storage facilities were the major constraints faced by farmers.

Vani (2005) reported that a great majority of the farmers who were practicing agriculture expressed that lack of irrigation facilities (95%), erratic distribution of rainfall (94.16%), irregular supply of electricity (93.30%) and lack of soil testing facilities (90.80%) as the major constraints. Further, majority of them expressed that failure of rainfall at the critical stages of crop growth, non-availability of drought resistant varieties (85.00%) and high incidence of pests and diseases for the crops as important constraints.

Ganesh Prasad (2006) reported that the important production constraints faced by the turmeric growers were: rotting of seed rhizome (98.83%), lack of technical know-how (71.67%), high labour wage (63.33%), scarcity of labour (60.00%) and high cost of inputs (54.17%). Very few respondents cited the problem of non - availability of credit (10.83%) followed by delayed payment (26.67%) and non–remunerative prices (19.17%), respectively.

Chitra (2010) reported that in case of paddy + sugar cane + dairy farming system less than 50 per cent of farmers were facing problems like non availability of good quality seeds (50.0%), lack of good marketing system (43.3%), lack of improved breeds (40.0%), lack of training and guidance by extension personnel (33.3%) and lack of transportation facility(30.0%)

Pushpa (2010) reported that in dairy farming non-availability of planting material (95.83%), lack of knowledge on fodder crop cultivation (93.33%) and inadequate veterinary service (91.67%) were the major constraints. Fluctuations in the price of cocoons, lack of knowledge on identification of disease symptom, lack of training on silkworm reeling could be considered as the most important constraints in practicing Sericulture enterprise. Establishing model farms, high lighting the benefits of integrated farming system in one or two locations in each Panchayat union were the suggestions the sericulturists to overcome the problems.

METHODOLOGY

The study was conducted in Hubli, Kalghatagi and Kundagol taluks of Dharwad district of Karnataka state during 2012-13. The details of the methodology adopted for the present investigation is presented in this chapter under the following sub headings:

3.1 Locale of the study

3.2 Research design

3.3 Selections of villages and the respondents

3.4 Methods used for measurement of dependent variables

3.5 Methods used for measurement of independent variables

3.6 Document the profitable system of integrated farming system

3.7 Constraints faced by farmers practicing Integrated Farming Systems

3.8 Instruments used for data collection

3.9 Statistical tools employed for analysis of data

3.1 Locale of the study

The study was conducted in Hubli, Kalghatagi and Kundagol taluks of Dharwad district of Karnataka state during 2012-13. Dharwad district is situated in the north western part of Karnataka surrounded by six districts. The district consists of five taluks. Dharwad district is situated between 15°36' and 15°06' north latitude and between 74°57' and 74°54' east longitude. The district comes under northern dry zone as well as northern transitional zone (Fig. 1). Geographical area of Dharwad district is 4,260 square kms. The population of Dharwad district is 16, 04,253 comprising 8, 23,204 males and 7, 81,049 females. The literacy rate of male is 80.8 per cent and that of female is 61.9 per cent. The total literacy rate of the district is 71.6 per cent. The important crops grown in the area are cotton, jowar, maize, chilli, groundnut, sunflower, safflower, wheat and onion.

3.2 Research design

The research design adopted for this study was ex-post-facto technique, since the phenomenon has already occurred and is continuing. Ex-post-facto research is the most systematic empirical enquiry in which the researcher does not have control over independent variables as their manifestation has already occurred or they are inherent and not manipulatable. Thus, inference about relation among variables was made without direct intervention from concomitant variation of independent and dependent variables.

3.3 Selections of villages and the respondents

The study was conducted in Dharwad district of Karnataka. This district comprises of five taluks, of which three taluks namely Hubli, Kalghatagi and Kundgol were selected purposively, because in these taluks the IFS scheme for SC/ST was implemented. From these three taluks, five villages were selected for the study purposively. From all these five villages a total of 117 beneficiaries were selected for the study. Hence, the sample size of the study consists of 117 SC/ST beneficiary farmers.

District	Taluks	Villages	Respondents	Total respondents (117)
Dharwad	Kalagatagi	Kalasanakoppa	43	43
	Hubli	Kurudikere	33	33
	Kundagol	Jiglur	13	41
		Ravanakoppa	05	
		Mallali	23	

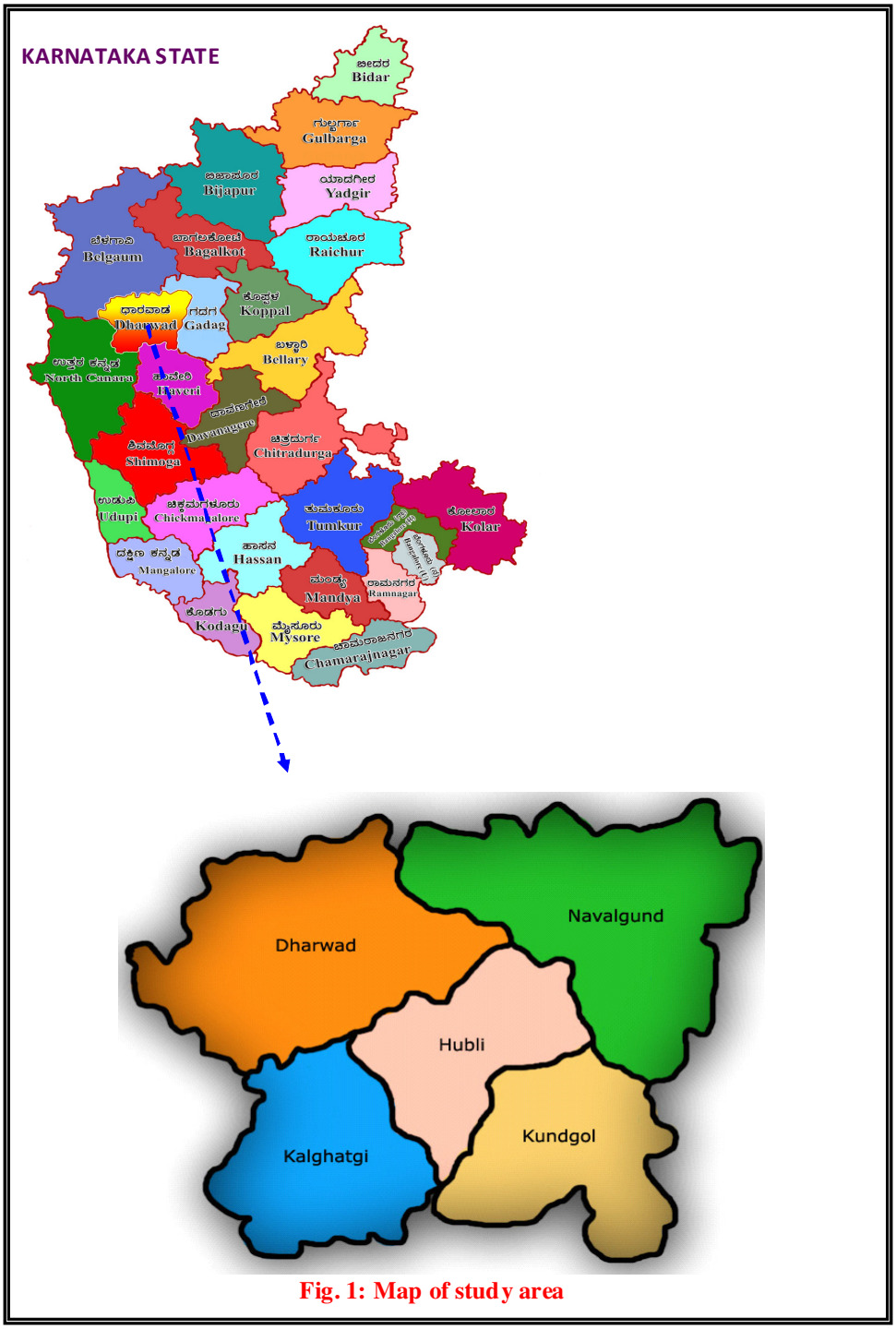


Fig. 1: Map of study area

Fig 1: Map of study area

3.4 Methods used for measurement of dependent variables

Dependent Variables used in the study

Variables	Measurement
1. Awareness of Integrated Farming System	Scale of Jyothi (2012)
2. Perception of usefulness	Teacher made test developed for the study

3.4.1. Awareness

Awareness is the first hand information about the existence of the agency/technology its activity or its process by an individual. To understand the extent to which the respondents aware of the information about the integrated farming system. Awareness was measured by the procedure suggested by Anasthari (1961) and adopted by Jyothi (2012) the same procedure with little modification to suite the IFS SC/ST farmers was developed for the present study. The dependent variable awareness of SC/ST farmers was measured by making use of appropriate information relating to IFS. For this a total of twenty possible awareness statements related to IFS was finally developed using available literature and expert guidance from concerned scientist/departments. The score of two was given for 'Aware,' response; one was given for 'Not aware' response. The individual score was obtained by summing up the scores for all the statements. The total possible score range was worked out. The maximum score an individual could get was 40 and minimum is 20 for awareness of SC/ST farmers on IFS. These scores were classified into three categories namely low, medium and high based on Mean and Standard deviation.

Items	Score
Aware	2
Not aware	1

3.4.2 Perception of usefulness

Perception is an activity through which an individual becomes aware of objects around him/her and of events taking place. Different individual may perceive the same situation differently due to differences in their experiences and cognitive styles. The expectations, needs and ways of thinking influence upon the individual's interpretation about the things he/she wants to perceive. The perceptions are organized and the individuals tend to structure their sensory experiences in ways which make sense to them.

The dependent variable 'perception' of farmers on the IFS was measured by making use of the appropriate instrument for data collection, which includes perception schedule developed for the study.

Schedule consists of statements related to IFS. For this all possible perception statements were developed by referring literature available and in consultation with concerned officials/scientists of departments. In these process finally 23 statements for perception of farmers on IFS, which include 'Strongly Agree/Agree/Disagree, statements. The score of two was given for 'Strongly agree' response, one was given for 'Agree' response and zero was given to 'Disagree' response. The individual score was obtained by summing up the scores for all the statements. The total possible score range was worked out. The maximum score of an individual could get was 46 and minimum is zero for perception of farmers on IFS. These scores were classified into three categories namely high, medium and low and it is equated to 'More useful', 'Useful and 'Less useful' for perception of farmers on usefulness of IFS based on Mean and Standard deviation.

Categories	Score
Less useful	(<Mean-0.425SD)
Useful	(Mean±0.425SD)
More useful	(>Mean + 0.425SD)

Plate 1: Interacting with farmers at Kurdikeric

Plate 2: Group photo with farmers at Kurdikeri

Plate 3: Interacting with farmers at Malali

3.5 Methods used for measurement of independent variables

Variables	Measurement
Age	Schedule developed for the study
Education	Scale of Jyoti (2012)
Family size	Scale of Sowjanya (2007).
Land holding	Scale of Mangala (2008)
Farming experience	Scale of Thiranjangowda (2005).
Annual income	Schedule developed for the study
Organization participation	Scale of Jyoti (2012).
Extension participation	Scale of Manjunath (2011)
Extension contact	Scale of Manjunath (2011)
Mass media exposure	Scale of Binkadakatti (2008).
Utility of income generated	Teacher made test developed for the study

3.5.1 Age

The respondents were categorized into young, middle and old and it is calculated for the purpose of analyzing the socio-economic characters. Categorization of age is done as follows.

Category	Criteria
Young	<36 years
Middle	36-50 years
Old	>50 years

3.5.2 Education

The respondents were asked to state their formal educational level. The procedure followed by Jyoti (2012) was used with slight modification. The respondents were categorized based on their education level attained as below.

Category	Score
Illiterate	0
Primary School	1
Middle School	2
High School	3
PUC	4
Graduation and above	5

3.5.3 Family size

Family was taken as a group of closely related persons living together in a single household with a common kitchen. Family size was measured as the absolute number of members in the household sharing the same economic unit. The family size of the respondents was in the range of 2-13. Based on the family size the respondents were classified as follows. The procedure was followed by Followed by Sowjanya (2007) was used in the present study.

Category	Score
Small size family	Up to 4 members
Medium size family	5-7 members
Large size family	> 7 members

3.5.4 Size of land holding

Land holding refers to the total land acquired by the respondent. The land holdings of the respondents were of different kinds namely wet, dry and garden. Hence, they were converted into standard acres, according to Karnataka land reforms Act 38 of 1996, (one acre of garden/wet land was equated to three acres of dry land.) The same conversion procedure was followed in the study to calculate the total land holding. The government of Karnataka 1992-93 has prescribed norms for the categorization of land holding and the procedure as followed by Mangala (2008) was made use...

Categories	Size of land	Score
Marginal farmers	up to 2.5 ac	1
Small farmers	2.51 ac to 5 ac	2
Medium farmers	5.01 ac to 10 ac	3
Large farmers	above10.01ac	4

3.5.5 Farming experience

This is a period from which the farmer is actually cultivating land with his own experience. The respondents were categorized based on the procedure followed by Thiranjangowda (2005).

Category	Years
High	Above 28 years
Medium	15 – 28 years
Low	10 – 15 years
Very low	Up to 10 years

3.5.6. Annual income

Annual income generated in farming includes the income from agriculture, vegetable cultivation, dairy, poultry and vermicompost enterprises and expressed in rupees. The annual income earned by SC/ST farmers during the year 2010, 2011and 2012 were considered as income of SC/ST farmers for calculating their annual income.

3.5.7 Organizational participation

This refers to degree of participation of respondent in local organizations (SHGs, Gram panchayat, Cooperative societies, Taluk Panchayat, Zilla Panchayat etc.,) and their activities either as member or as office bearers. This variable was measured by using the procedure developed by Jyothi (2012) with slight modification to suite to the present study

Category	Score
Membership	1
Non Membership	0
Degree of participation	Score
Occasionally	1
Regularly	2
Degree of usefulness	Score
Most usefulness	2
Somewhat useful	1
Not useful	0

The composite score was arrived at by summing up the score obtained by respondent and they were classified into three categories by using mean and standard deviation as measure of check

Category	Criteria
Low (<)	(X-0.425SD)
Medium(±)	(X±0.425SD)
High (>)	(X + 0.425SD)

3.5.8. Extension participation

Extension participation is referred to the extent of participation of farmers in different extension activities during the preceding years of the investigation. The variable was quantified by using the procedure followed by Manjunath (2011). The frequency of extension participation was quantified on a three point continuum viz., regularly, occasionally and never with the scores of 2, 1 and 0, respectively. Further, the respondents were grouped in to three categories based on mean score and standard deviation as a measure of check.

Participated	Score
Regular	2
Occasional	1
Never	0

Category	Criteria
Low	Less than (mean – 0.425SD)
Medium	Between (mean ± 0.425SD)
High	More than (mean + o.425 SD)

3.5.9. Extension contact

It is operationalised as the awareness of the respondents about various extension agencies and their frequency of contact with them to acquire information or seek advice related to farming. This variable was quantified by adopting the procedure followed by Manjunath (2011)

Frequency of contact	Score
Contacted once in a week	3
Contacted once in fortnight	2
Whenever problem arise	1
Never contacted	0

The score for individual respondents, extension contact was the summation of the scores for all the extension personnel contacted by him. The higher score reveals higher contacts with extension personnel by the respondent. Then respondents were categorized into 3 categories *viz*., low, medium and high based on mean and standard deviation.

3.5.10 Mass media exposure

Mass media exposure referred to the degree to which the respondents utilized them in terms of listening to farm broadcast, viewing telecast, reading newspaper and magazine. In the present research, mass media participation of respondents was studied according to their possession and extent of utilization. Mass media possession was measured on a two point continuum such as, possessed/subscribed and not possessed/Not subscribed. Extent of utilization, however, was measured on a three point continuum i.e., regular, occasional and never. The scores of 2, 1 and 0 were assigned for regular, occasional and never, respectively.

The data has been presented in frequency and percentage. This procedure was adopted by Binkadakatti (2008).

3.5.11 Utility of income generated

This variable quantified by considering the annual expenditure of the IFS farmers from their income generated. The score of one was given for each item on which income was utilized and zero score was given for not utilized. Further respondents were group into three category viz, low (mean – 0.425SD) medium (mean ± 0.425SD) and high (mean + 0.425 SD) by considering mean and standard deviation as measure of check.

Category	Score
Yes	1
No	0

3.6 Document the profitability of integrated farming system adopted by SC/ST farmers

Schedule was developed to document the profitability of IFS adopted by SC/ST beneficiary. Different IFS under dry land and garden land were enlisted by consultation with the experts in the field of Agronomy, Horticulture, Dairy, Animal science, Sericulture, Entomology, Agro forestry and Agriculture Extension. The response were documented on a three point continuum by assigning score of two for most profitable, one for profitable and zero for least profitable.

Category	score
Most profitable	2
Profitable	1
Least Profitable	0

3.7 Constraints faced by farmers practicing Integrated Farming Systems

Constraints are the restrictions or problems faced by the farmers in the process of adoption of integrated farming system. It consists of production constraints, situational constraints, financial constraints, marketing constraints and organization constraints. Farmers were asked to indicate the constraints they faced which were noted down. The constraints were grouped and responses were pooled together. The scores were assigned based on the responses of the respondents.

3.8 Instruments used for data collection

Keeping the objectives of the study in view, a structured schedule was prepared with the help of experts in the field of Agricultural Extension, which included all the variables to study farmers profile (Appendix-I) and village profile (Appendix-II). Data collection was done by personal interview method with the help of a pretested interview schedule.

3.9 Statistical tools employed for analysis of data

Appropriate statistical tools were used for analyzing the data of investigation. The data collected from the respondents were scored, tabulated and analyzed using the following statistical tools and techniques.

3.9.1 Percentage

Percentage was used to make the simple comparison of different groups where ever needed.

3.9.2 Mean

Mean is the sum of the observed values of a set divided by the number of observations in the set is called a mean or an average. The calculated mean was used for grouping the respondents.

3.9.3 Standard Deviation

The positive square root of the variance is called standard deviation. It explains the average amount of variation on either side of the mean.

The mean and standard deviation were used to classify the farmers into three following categories.

Category	Criteria
Low	<(Mean – 0.425 SD)
Medium	(Mean ± 0.425 SD)
High	>(Mean + 0.425 SD)

3.9.4 Frequencies

A frequency distribution was used to quantify the different socio-psychological and economic characteristics of the farmers. It was also used in the response analysis of knowledge and adoption statements.

3.9.5 Correlation Test

Correlation test was used to calculate r-value, which facilitated to know the relationship between dependent and independent variables.

RESULTS

The results of the present investigation, in line with the objectives are presented under the following major headings.

4.1 Extent of awareness of integrated farming system by SC/ST farmers

4.2 Socio-psychological and economic characteristics of SC/ST farmers.

4.3 Document of different components of integrated farming system as adopted by SC/ST farmers.

4.4 Perception of SC/ST farmers about integrated farming system.

4.5 Constraints faced and suggestions given by SC/ST farmers about integrated farming system.

4.1 Extent of awareness of integrated farming system by SC/ST farmers

4.1.1 Overall awareness of farmers about IFS

It is clear from Table 1 that, 35.90 per cent of the respondents had high awareness followed by medium (32.48%) and low (31.62%) awareness about IFS, respectively. (Fig.1)

4.1.2 Awareness about individual components of integrated farming system by SC/ST farmers

Table 2 reveals the awareness of SC/ST farmers about individual components of IFS. A great majority of respondents had awareness about integrated farming system. IFS is an integrated crop and animal enterprises components (82.90%) followed by in IFS Agri + poultry/dairy/sheep rearing, will increase the additional income (75.21%), diversified farming ensures employment to family member round the year (73.50), IFS improves the standard of living of beneficiary (72.64%), production & productivity per unit area will increased through IFS (70.08%), adoption of IFS practice increases yield (68.37%), diversification of enterprises leads to sustainable income throughout the year, (68.37%), IFS makes recycling of farm waste in efficient way in rural area (68.37%), different combination of enterprises helps in maximizing the annual income (66.66%) and in IFS, Agri + Horti combination adds to more income (66.66%). Nearly fifty per cent of the respondents opined that, adoption of crop rotation like (cereals + legumes) will improve the soil health. (55.55%), a farm with several enterprises produces adequate proof a giant uncertainties in farm yield (52.13%), IFS is ecofriendly technology (47.00%), beneficiary are aware of insurance coverage in case of dairy enterprise (44.44%), helps in efficient management of pest and diseases (39.31%), provides knowledge regarding subsidy available (38.89%), IFS practice improves/updates the knowledge of the beneficiary (38.46%), IFS reduce the cost of cultivation (36.75%), IFS reduce the degradation Agro forestry system (34.18%) and IFS solve the energy crisis (26.49%) respectively.

It is also evident from Table 2 that a majority of respondents were not awareness about the fact that, IFS solve the energy crisis (73.50%). followed by IFS reduce the degradation of Agro forestry system (65.81%). Provides knowledge regarding subsidy available (64.10%), IFS reduce the cost of cultivation (63.24%), IFS practice improves/updates the knowledge & skills of the beneficiary (61.53%), helps in efficient management of pest and diseases (60.68%), beneficiary will be aware of insurance coverage in case of dairy enterprise (55.55%), IFS is ecofriendly & ecologically preferred technology (52.99%), a farm with several enterprises produces adequate proof against uncertainties in farm yield (47.86%), adoption of crop rotation like (cereals + legumes) will improve the soil health (44.44%), different combination of enterprises helps in maximizing the annual income (33.33%), In IFS, agri + Horti combination adds to more income (33.33%), adoption of IFS practice increases yield (31.62%), diversification of enterprises leads to sustainable income throughout the year (31.62%), IFS make recycling of farm waste in efficient way in rural area (31.62%), production and productivity per unit area will be increased, through IFS (29.91%), IFS improves the standard of living of beneficiary (27.35%), diversified farming ensures employment to family member round the year (26.49%), In IFS Agri + poultry/dairy/sheep rearing, will increase the additional income (24.78%) and IFS is an integrated crop and animal enterprises components (17.09%).

Table 1: Overall awareness of the SC/ST farmers about integrated farming system

n = 117

Category	Frequency	Percentage (%)
Low (<27.93)	37	31.62
Medium (27.93 to 34.57)	38	32.48
High (>34.57)	42	35.90
Mean	31.25	
SD	7.81	

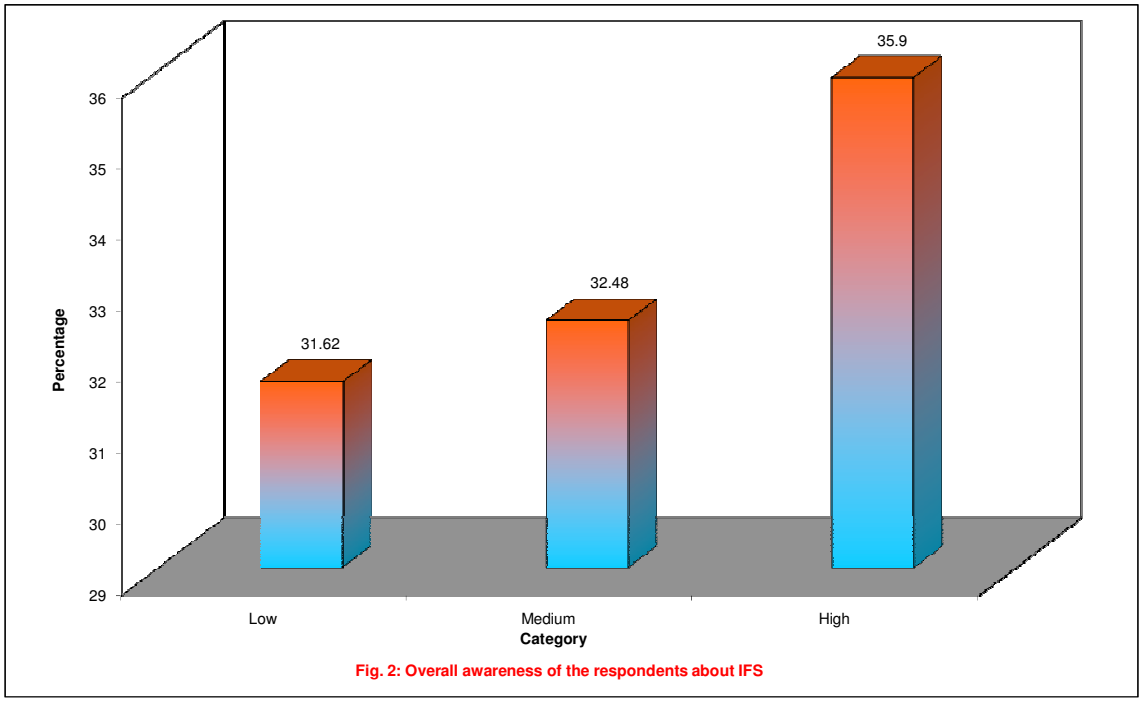


Fig. 2: Overall awareness of the respondents about IFS

Fig 2: Overall awareness of the SC/ST farmers about IFS

Table 2: SC/ST farmers awareness about individual components of integrated farming system

n=117

Sl. No	Awareness	Aware		Not Aware	
		F	%	F	%
1	IFS is a combination of crop and animal enterprises.	97	82.90	20	17.09
2	Different combination of enterprises helps in maximizing the annual income	78	66.66	39	33.33
3	Adoption of crop rotation like (cereals + legumes) will improve the soil health.	65	55.55	52	44.44
4	IFS is ecofriendly technology.	55	47.00	62	52.99
5	IFS reduce the degradation of Agro forestry system.	40	34.18	77	65.81
6	Adoption of IFS practice increases yield	80	68.37	37	31.62
7	IFS improve the standard of living of beneficiary.	85	72.64	32	27.35
8	Diversification of enterprises leads to sustainable income throughout the year.	80	68.37	37	31.62
9	In IFS Agri + Horti combination adds to more income.	78	66.66	39	33.33
10	Production & productivity per unit area will increase, through IFS.	82	70.08	35	29.91
11	IFS solves the energy crisis.	31	26.49	86	73.50
12	IFS make recycling of farm waste in efficient way in rural area.	80	68.37	37	31.62
13	Diversified farming ensures employment to family members round the year.	86	73.50	31	26.49
14	IFS practice improves/updates the knowledge of the beneficiary.	45	38.46	72	61.53
15	In IFS Agri + poultry/dairy/sheep rearing, will increase the additional income	88	75.21	29	24.78
16	Beneficiary are aware of insurance coverage in case of dairy enterprise.	52	44.44	65	55.55
17	Helps in efficient management of pest and diseases.	46	39.31	71	60.68
18	IFS reduce the cost of cultivation.	43	36.75	74	63.24
19	Provides knowledge regarding subsidy available.	42	38.89	75	64.10
20	A farm with several enterprises produces adequate proof against uncertainties in farm yield	61	52.13	56	47.86

F – Frequency % - Percentage

Table 3: Relationship between awareness of SC/ST farmers about IFS and socio-psychological and economic characteristics

Characteristics	r –value
Age	0.093NS
Education	0.237*
Family size	0.242*
Land holding	0.312**
Farming experience	0.210*
Annual income	0.076NS
Organization participation	0.262*
Extension participation	0.253*
Extension contact	0.324**
Mass media exposure	0.291*
Utility of income generated	0.221*

* Significant at 5 per cent

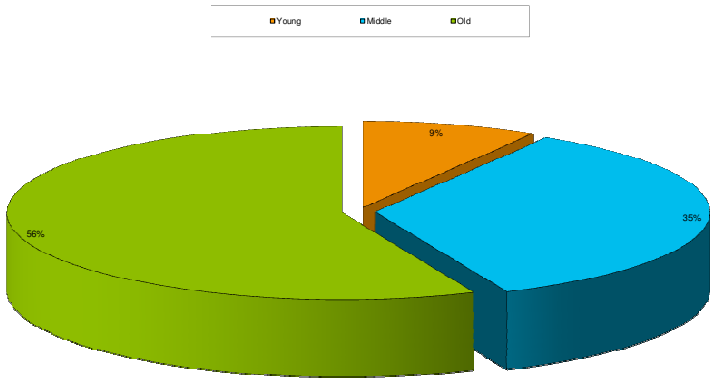
** Significant at 1 per cent

NS - Non significant

Table 4: Distribution of SC/ST farmers according to their socio-psychological and economic characteristics

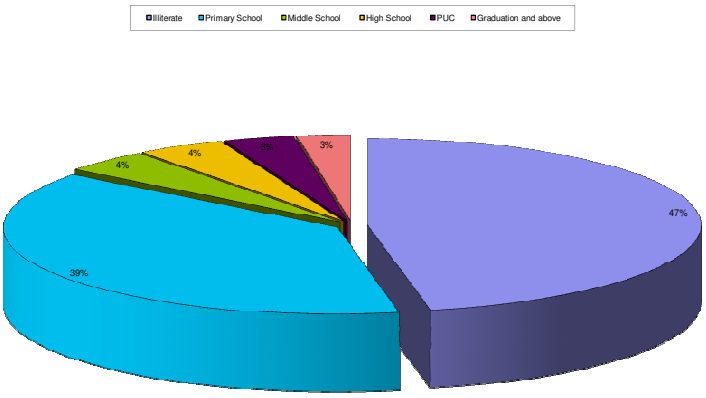
n=117

Sl. No.	Variables	Frequency	Percentage
1	Age		
	Young(<36years)	10	8.54
	Middle(36-50 years)	41	35.04
	Old (>50 years)	66	56.42
2	Education		
	Illiterate	55	47.00
	Primary School	45	38.46
	Middle School	5	4.27
	High School	5	4.27
	PUC	4	3.42
	Graduation and above	3	2.58
3	Family size		
	Small size (up to 4 members)	24	20.51
	Medium (5-7 members)	73	62.40
	Large (> 7 members)	20	17.09
4	Land holding		
	Marginal (up to 2.5 acre)	56	47.86
	Small (2.6 ac to 5 acre)	43	36.76
	Medium (5.01 ac to 10 acre)	14	11.96
	Large (above10.01acre)	4	3.42
5	Farming experience		
	High(above 28 years)	77	65.81
	Medium (15-28years)	19	16.24
	Low(10-15years)	21	17.95



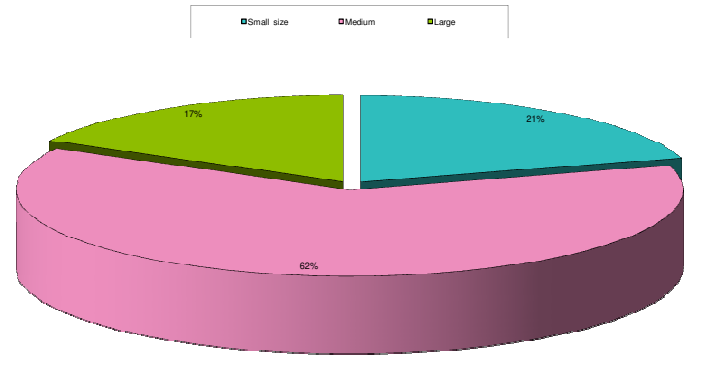
Age

Fig. 3a: Distribution of respondents according to their socio-psychological and economic characteristics characteristics



Education

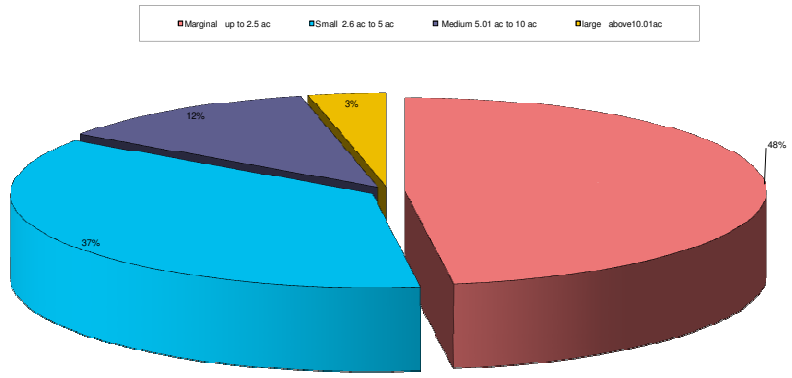
Fig. 3b: Distribution of respondents according to their socio-psychological and economic characteristics characteristics



Family size

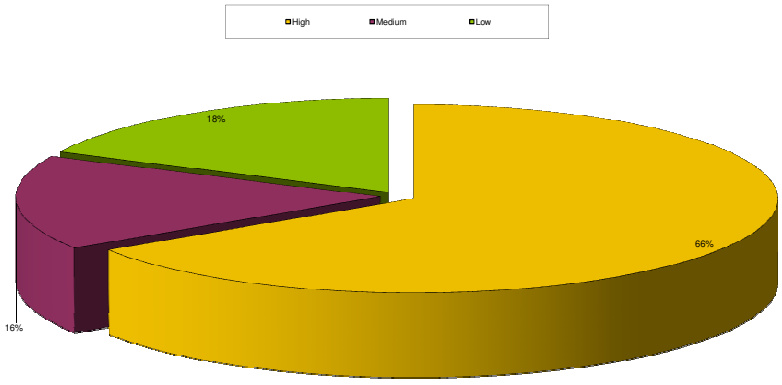
Fig. 3c: Distribution of respondents according to their socio-psychological and economic characteristics characteristics

Fig 3: Distribution of SC/ST respondents according to their socio psychological and economic characteristics



Size of land holding

Fig. 3d: Distribution of respondents according to their socio-psychological and economic characteristics characteristics



Farming experience

Fig. 3e: Distribution of respondents according to their socio-psychological and economic characteristics characteristics

4.1.3 Relationship between socio-psychological and economic characteristics and awareness about Integrated Farming System

The result presented in the Table 3 reveals the relationship between socio- economic and psychological characteristics and awareness of IFS by SC/ST farmers.

In order to find out the relationship between awareness of IFS farmers and their socio- economic characteristics zero order correlation coefficient was employed as. The results indicated in the Table 3 revealed that, education, family size, land holding, farming experience, organization participation, extension participation, extension contact, mass media exposure, and utility of income generated were positively and significant related with awareness. Whereas, age and annual income did not show significant relation with awareness of SC/ST farmers in IFS

4.2 Socio-psychological and economical characteristics of SC/ST farmers in integrated farming system

4.2.1 Age

The result presented in Table 4 indicated that more than half of the respondents were under old age (56.42%) followed by middle age (35.04%) and young age (8.54 %) category.

4.2.2 Education

It is observed from Table 4 that 47.00 per cent of the farmers were illiterates followed by primary school level (38.46%), middle school (4.27%), high School (4.27%), PUC (3.42%) and above degree level (2.58%).

4.2.3 Family size

It is clear from Table 4 that 62.40 per cent of the respondents had medium family followed by 20.51 per cent of the respondents had small family, and 17.05 per cent of the respondents were in large family.

4.2.4 Land holding

It is clear from Table 4 that, 47.86 per cent of the respondents had marginal land holding, followed by small, medium and large land holdings (36.76%), (11.96%) and (3.42%) respectively.

4.4.5 Farming experience

It was observed from the Table 4 that 65.81 per cent of respondents had high farming experience. However 16.24 per cent had medium level of farming experience and 17.95 per cent had low experience in farming activity.

4.2.6 Annual income

4.2.6.1 Annual income from agriculture crops by the SC/ST farmers in IFS

A. Soybean

The insight in Table 5 revealed that the average annual income of the IFS farmers was Rs 11758.67 during 2010, with respect to soybean crop production in *kharif* season. Whereas it was decreased to Rs 8036.80 in 2011 and again the income increased to Rs 9979.38 in 2012. However, the average area under soybean crop production was 1.40 acre during 2010, 1.10 acre during 2011 and1.07 acre during 2012.

B. Maize

The result represented in Table 5 revealed that the average annual income of the IFS farmers was Rs 17190.52 during 2010, with respect to maize crop production in *kharif* season. Whereas it increased to Rs 22414.98 during 2011 and again decreased to Rs 16825.23 during 2012. However, the average area under maize crop production was 1.15 acre in 2010, and decreased to 1.14 acre during 2011 and again increased to 1.25 acre during 2012.

The insight in Table 5 revealed that annual income of the IFS farmers was Rs 30512.12 during 2010, with respect to maize crop production in Rabi season. Whereas it decreased to Rs 20728.94 during 2011 and again increased to Rs 25073.94 during 2012. However, the average area under maize crop production was 2.32 acre during 2010, and decreased to 1.57acre during 2011 and again increased to 2.11 acre during 2012.

The insight in Table 5 revealed that the average annual income of the IFS farmers was Rs 32033.33 during 2010, with respect to maize crop production in summer season. Whereas it decreased to Rs 27150.00 during 2011 and again decreased to Rs 26861.11 during 2012. However, the average area under maize crop production was 2.33 acre during 2010, and increased to 3.66 acre during 2011 and again decreased to 2.55 acre 2012.

C. Cotton

The Table 5 also revealed that the average annual income of the IFS farmers was Rs 13733.35 during 2010, with respect to cotton crop production in *kharif* season. Whereas it increased to Rs 15098.27 during 2011 and again increased to Rs 17775.73 in 2012. However, the average area under cotton crop production was 1.20 acre during 2010, and decreased to 1.13 acre during 2011 and again increased to 1.17 acre during 2012.

D. Jowar

It is observed from Table 5 that the average annual income of the IFS farmers was Rs 14000.00 during 2010, with respect to jowar crop production in *kharif* season. Whereas it increased to Rs 10400.00 during 2011 and again decreased to Rs 13687.50 during 2012. However, the average area under jowar crop production was 1.00 acre during 2010 and decreased to 0.87 acre during 2011 and again increased to 1.12 acre in 2012.

The insight in Table 5 revealed that the average annual income of the IFS farmers was Rs 18741.18 during 2010, with respect to jowar crop production in Rabi season. Whereas it increased to Rs 20327.20 during 2011 and again increased to Rs 23660.39 during 2012. However, the average area under jowar crop production was 2.41 acre during 2010 and increased to 2.70acre during 2011 and again increased to 2.79acre in 2012.

4.2.6.2 Annual income from horticulture crops by the IFS farmers

Vegetables

1. Brinjal

The insight in Table 6 revealed that the average annual income of the IFS farmers with respect to vegetables. Income from brinjal crop was Rs 4825.00 during 2010, whereas it increased to Rs 7824.35 during 2011 and again decreased to Rs 4210.00 in 2012. However, the average area under brinjal production was 0.49 acre during 2010, increased to 0.57 acre during 2011 and again decreased to 0.44 acre during 2012 respectively.

2. Tomato

The insight in Table 6 also revealed that the average annual income of the IFS farmers from tomato crop, was Rs 10466.67 during 2010, whereas it decreased to Rs 6976.00 during 2011, and again decreased to Rs 6472.00 in 2012. However, the average area under tomato production was 0.51 acre during 2010 and decreased to 0.46 acre and 0.46 acre during 2011 and 2012, respectively.

3. French bean

The Table 6 revealed that the average annual income of the IFS farmers was Rs 3386.25 during 2010, with respect to french bean production whereas it increased to Rs 3682.38 during 2011, and decreased to Rs 2936.43 in 2012. However, the average area under french bean production was 0.25 acre during 2010, and increased to 0.35 acre during 2011 and decreased to 0.26 acre during 2012, respectively.

4. Bhendi

A perusal of Table 6 revealed that the annual income of the IFS farmers was Rs 3475.00 during 2010, for bhendi crop whereas it decreased to Rs 3343.08 during 2011, and increased to Rs 3406.00 during 2012. However, the area under bhendi production was increased over the period 0.29 acre, 0.32 acre and 0.33acre for the three periods 2010, 2011 and 2012, respectively.

5. Cucumber

Table 6 also revealed that the annual income of the IFS SC/ST farmers from cucumber during 2010 was Rs 2995.23 whereas it decreased to Rs 2758.82 during 2011, and increased to Rs 2827.78 during 2012. However, the area under cucumber production was 0.34 acre during 2010 and decreased to 0.32 acre during 2011 and increased to 0.33 acre in 2012.

4.2.6.3 Annual income from dairy by the IFS farmers

A. Cow

The result presented in Table 7 indicated that 25.64 per cent of SC/ST farmers in IFS received cows during the year 2011 and got on an average net income of Rs 6225.00 and these farmers obtained an average net income of Rs 6828.00 during the year 2012.

B. Buffalow

The result presented in Table 7 indicated that 23.93 per cent of SC/ST farmers in IFS received buffalo during the year 2010 and obtained net income of Rs 6961.71. Whereas, 44.44 per cent of farmers received buffalo during 2011 and obtained an average net income of Rs 7568.58 and these farmers earned a net income of Rs 8980.77 during the year 2012.

4.2.6.4 Annual income from poultry by the IFS farmers

The result presented in Table 8 indicate that 36.75 per cent of IFS farmers received poultry birds during the year 2011 and generated net income of Rs 3193.48, whereas 63.24 per cent of IFS farmers received poultry birds and generated net income of Rs 5320 during 2012.

4.2.6.5 Annual income from vermicompost by the SC/ST farmers in IFS

The result presented in Table 9 indicate that 36.75 per cent of IFS farmers started vermicompost during the year 2010, and earned net income of Rs 3939.02 and Rs 4475.61 during the years 2011, and 2012, respectively

4.2.7 Organizational participation

It is evident from Table 10 that, none of the respondents were members of zilla panchayat and only 17.09 per cent of them participated occasionally and 12.82 per cent of respondents expressed that the information provided by zilla panchayat was somewhat useful. None of the respondents were members of taluk panchayat and 17.94 per cent of them participated occasionally and 17.09 per cent expressed that information provided by taluk panchayat was somewhat useful. About 5.12 per cent of respondents were members of gram panchayat and 18.80 per cent of them participated regularly and almost sixty per cent (59.82%) of them participated occasionally and 9.40 per cent expressed that information provided by taluk panchayat was most useful and 55.55 per cent expressed that information provided by taluk panchayat was somewhat useful. None of the respondents were members of Mahila mandal, 16.23 per cent of them participated occasionally and 21.36 expressed that information provided by Mahila mandal was somewhat useful. None of the respondents were members of Co-operative society and 42.73 per cent of them participated occasionally and 35.89 per cent expressed that information provided by co-operative society was somewhat useful. None of the respondents were members of Youth clubs and 12.82 per cent of them participated occasionally and 19.65 expressed that information provided by youth clubs was somewhat useful. None of the respondents were members of Raitha samparka Kendra, 21.36 per cent of them participated regularly and 68.37 per cent of them participated occasionally and 23.93 expressed that information given by Raitha samparka Kendra was most useful and 55.55 per cent expressed that Raitha samparka Kendra gave somewhat useful information. In Raita sanghas, 29.91 per cent of them participated regularly and 36.75 per cent of them participated occasionally and 20.51 per cent expressed that information provided by Raita sanghas was most useful and 23.93 expressed that information provided by Raita sanghas was somewhat useful.

Table 5: Annual Income from agriculture crops by the SC/ST farmers of IFS

A. Soybean

Category	Unit	Kharif (N=92)			Rabi			Summer		
		2010	2011	2012	2010	2011	2012	2010	2011	2012
Average area	Acre	1.40	1.10	1.07	-	-	-	-	-	-
Average yield	Qtls.	9.77	7.78	8.59	-	-	-	-	-	-
Average gross Income	Rs.	20712.00	15098.00	16942.05	-	-	-	-	-	-
Average total expenditure	Rs.	8953.33	7061.20	6962.27	-	-	-	-	-	-
Average net income	Rs.	11758.67	8036.80	9979.38	-	-	-	-	-	-

B. Maize

Category	Unit	Kharif (n=86)			Rabi (n=44)			Summer (n=27)		
		2010	2011	2012	2010	2011	2012	2010	2011	2012
Average area	Acre	1.15	1.14	1.25	2.32	1.57	2.11	2.33	3.66	2.55
Average yield	Qtls.	21.68	20.50	20.65	34.54	24.47	31.55	37.78	29.44	34.88
Average gross income	Rs.	27250.00	31778.61	27332.65	47272.72	32978.94	39947.22	46944.44	42350.00	43011.11
Average total expenditure	Rs.	10059.48	9363.63	10511.42	16760.54	12250.00	14873.33	14911.11	15200.00	16150.00
Average net income	Rs.	17190.52	22414.98	16825.23	30512.12	20728.94	25073.94	32033.33	27150.00	26861.11

C. Cotton

Category	Unit	Kharif (n=87)			Rabi			Summer		
		2010	2011	2012	2010	2011	2012	2010	2011	2012
Average area	Acre	1.20	1.13	1.17	-	-	-	-	-	-
Average yield (kapas)	Qtls.	7.59	7.77	7.84	-	-	-	-	-	-
Average gross income	Rs.	23568.13	24961.90	28642.39	-	-	-	-	-	-
Average total expenditure	Rs.	9834.78	9863.63	10866.66	-	-	-	-	-	-
Average net income	Rs.	13733.35	15098.27	17775.73	-	-	-	-	-	-

D. Jowar

Category	Unit	Kharif (n=69)			Rabi (n=76)			Summer		
		2010	2011	2012	2010	2011	2012	2010	2011	2012
Average area	Acre	1.00	0.87	1.12	2.41	2.70	2.79	-	-	-
Average yield	Qtls.	8.50	6.50	8.87	15.38	16.64	14.54	-	-	-
Average gross income	Rs.	19250.00	15275.00	19437.50	29914.70	33377.20	36835.27	-	-	-
Average total Expenditure	Rs.	5250.00	4875.00	5750.00	11173.52	13050.00	13174.88	-	-	-
Average net income	Rs.	14000.00	10400.00	13687.50	18741.18	20327.20	23660.39	-	-	-

Table 6: Annual income from horticulture (Vegetable) crops by the SC/ST farmers of IFS

Crop	Brinjal (n=22)			Tomatto (n=27)			French bean (n=33)			Bhendi (n=35)			Cucumber (n=21)		
Year	2010	2011	2012	2010	2011	2012	2010	2011	2012	2010	2011	2012	2010	2011	2012
Average area (acre)	0.49	0.57	0.44	0.51	0.46	0.46	0.25	0.35	0.26	0.29	0.32	0.33	0.34	0.32	0.33
Average total Yield (quintals)	8.00	9.78	7.20	13.11	12.12	12.12	3.25	4.20	3.24	2.82	2.98	3.04	5.14	4.87	4.93
Average gross income(Rs)	8461.36	12715.65	7450.00	15318.52	11736.00	11392.00	5146.67	6063.33	4668.57	5650.00	5538.46	5666.67	4685.71	4376.47	4466.67
Average total expenditure (Rs)	3636.36	4891.30	3230.00	4851.85	4760.00	4920.00	1760.42	2380.95	1732.14	2175.00	2195.38	2266.00	1690.48	1617.65	1638.89
Average net income(Rs)	4825.00	7824.35	4210.00	10466.67	6976.00	6472.00	3386.25	3682.38	2936.43	3475.00	3343.08	3406.00	2995.23	2758.82	2827.78

Table 7: Annual income from dairy by the SC/ST farmers of IFS

A. Cow
n=30

Category		Year					
	Unit	2010		2011		2012	
Average number of cow Distributed /farmer	Numbers	0		1		0	
Number of beneficiaries	Numbers	F	%	F	%	F	%
		0	0	30	25.64	0	0
Average No. of milking Days	Days	0		152.67		163.67	
Average Total expenditure (Rs.)	Rs.	0		2625.00		3200.00	
Average Gross Income (Rs.)	Rs.	0		8850.33		10028.00	
Average Net income (Rs.)	Rs.	0		6225.33		6828.00	

B. Buffalo **n=80**

Category		Year					
	Unit	2010		2011		2012	
Average number of buffalo distributed /farmer	Numbers	1		1		0	
Number of beneficiaries	Numbers	F	%	F	%	F	%
		28	23.93	52	44.44	0	0
Average No. of milking Days	Days	159.11		149.25		166.54	
Average Total expenditure (Rs.)	Rs.	2996.15		3398.57		3450.15	
Average Gross Income (Rs.)	Rs.	9957.86		10976.15		12430.92	
Average Net income(Rs.)	Rs.	6961.71		7568.58		8980.77	

Table 8: Annual income from poultry by the SC/ST farmers of IFS

n=117

Sl No	Year	No. of birds(25)		Average total expenditure(Rs)	Average gross income (Rs)	Average Net income(Rs)
		F	%			
1	2010	00	00	00	00	00
2	2011	43	36.75	360.00	3553.48	3193.48
3	2012	74	63.24	280.00	5600.00	5320.00

4.2.8 Extension participation

The data presented in Table 11 revealed that most of the SC/ST farmers attended the krishimela (60.68%), followed by demonstration (41.03%), training programmes (29.06%), agriculture exhibition (28.21%), educational tours and field days (23.93%), field visits (22.22%), and group meeting (11.97%).

Regarding extent of participation in extension activities, SC/ST farmers participated regularly in krishimelas (37.61%), followed by training programmes and field days (17.09 %), demonstration (13.68%), field visits (10.26%), agriculture exhibition (8.55%), educational tour and group meeting (6.84%). Respondents participated occasionally in demonstration (27.35%), followed krishimelas (23.08%), agriculture exhibition (19.66), educational tours (17.09%), field visits and training programmes (11.97%), field days (6.84%) and group meeting (5.13%).

4.2.9 Extension contact

The Table 12 revealed that SC/ST farmers contacted Private agency Extension officer (38.46%) followed by Scientists of UAS (21.37%), Agricultural Assistant (17.09%), Asst. Director of Agriculture (6.84%), Asst. Agricultural officers (5.98%) and Agricultural Officer (5.13%) once in a week.

Whereas SC/ST farmers contacted the extension agencies once in two weeks are Agricultural Assistant (42.74%), followed by Scientists of UAS (34.19%), Private agency Extension officer (23.93%), Asst. Agricultural officers (19.66%), Agricultural Officer (17.09%), Asst. Director of Agriculture (11.11%).

The SC/ST farmers also contacted concerned Agricultural Officer (41.88%), followed by Scientists of UAS (29.91%), Agricultural Assistant (25.64%), Private agency Extension officer (21.37%), Asst. Agricultural officers (18.80%), Asst. Director of Agriculture (12.82%).Whenever problems araised.

4.2.10 Mass media exposure

The data in Table 13 depicts the mass media exposure of the SC/ST farmers. Radio was possessed by 16.23 per cent of the respondents, whereas 4.17 and 7.50 per cent of them regularly listened to agricultural and general programme, respectively. While 5.83 and 9.17 per cent of SC/ST farmers occasionally listened to agricultural and general programmes, respectively.

Television was possessed by 81.67 per cent of the SC/ST farmers. In which 8.54 and 41.88 per cent of them regularly viewed agricultural and general programme, respectively. Whereas 12.82 and 38.46 per cent of respondents occasionally viewed agricultural and general programmes, respectively.

In case of the news papers 20.83 per cent the respondents subscribed to news papers of which 7.50 per cent and 10.83 per cent of them read agricultural and general information, respectively. While 6.67 per cent and 8.83 per cent of respondents were occasional readers of agricultural and general news, respectively.

In case of magazine, 17.50 per cent of SC/ST farmers had subscribed to magazine of which 9.17 per cent and 5.83 per cent of respondents were regular readers of agricultural and general articles, respectively. While 6.67 per cent and 10.83 per cent of respondents were occasional readers of agricultural and general article, respectively.

4.2.11 Utility of income generated

The data in Table 14 indicated the utility of income generated by SC/ST farmers in IFS cent per cent of respondents spent their income on livelihood security, family nutrition, health expenses and to perform rituals/festivals/family functions followed by education of children (64.95%), to repay the loans (27.35%), saving (17.09%), investment on land property (12.82%) and investment on income generating assets (10.25%).

Table 9: Annual income from vermicompost by the SC/ST farmers of IFS

n=43

Sl No	Year	No of farmers received pits		Average vermicompost production/ year (tones)	Average total expenditure (Rs.)	Average total income (Rs.)	Average net income (Rs.)
1	2010	43	36.75	00	9840.00	00	00
2	2011	-		2.20	1548.78	5487.80	3939.02
3	2012	-		2.28	2329.27	6804.88	4475.61

Table 10: Distribution of SC/ST farmers according to their organizational participation

n=117

Sl. No.	Category	Members		Extent of participation				Extent of usefulness of information			
				Regularly		Occasional		Most useful		Somewhat useful	
		F	%	F	%	F	%	F	%	F	%
1	Zilla Panchayat	0	0	0	0	20	17.09	0	0	15	12.82
2	Taluk Panchayat	0	0	0	0	21	17.94	0	0	20	17.09
3	Gram Panchayat Farmers forum	6	5.12	22	18.80	70	59.82	11	9.40	65	55.55
4	Mahila mandal	0	0	0	0	19	16.23	0	0	25	21.36
5	Co-operative society	0	0	0	0	50	42.73	0	0	42	35.89
6	Youth clubs	00	00	0	0	15	12.82	0	0	23	19.65
7	RSK	00	00	25	21.36	80	68.37	28	23.93	65	55.55
8	Raita sanghas	05	04.27	35	29.91	43	36.75	24	20.51	28	23.93

Table 11: Distribution of SC/ST farmers according to their extension participation

n =117

Sl.No	Extension activities	Attended		Extent of participation					
				Regular		occasional		Never	
		F	%	F	%	F	%	F	%
1	Krishi mela	71	60.68	44	37.61	27	23.08	46	39.32
2	Demonstration	48	41.03	16	13.68	32	27.35	69	58.97
3	Field visits	26	22.22	12	10.26	14	11.97	91	77.78
4	Agriculture exhibitions	33	28.21	10	8.55	23	19.66	84	71.79
5	Educational tour	28	23.93	8	6.84	20	17.09	89	76.07
6	Training programme	34	29.06	20	17.09	14	11.97	83	70.94
7	Field days	28	23.93	20	17.09	8	6.84	89	76.07
8	Group meetings	14	11.97	8	6.84	6	5.13	103	88.03

F = Frequency % = Percentage

Table 12: Distribution of SC/ST farmers according to their extension contact

n =117

Sl. No.	Extension worker	Frequency of contact							
		Once in a week		Once in a two week		Whenever problem arises		Never	
		F	%	F	%	F	%	F	%
1	Agricultural Assistant	20	17.09	50	42.74	30	25.64	17	14.53
2	Asst. Agricultural officers	7	5.98	23	19.66	22	18.80	65	55.56
3	Agricultural Officer	6	5.13	20	17.09	49	41.88	42	35.90
4	Asst. Director of Agriculture	8	6.84	13	11.11	15	12.82	81	69.23
5	Scientists of UAS	25	21.37	40	34.19	35	29.91	17	14.53
6	Private agency Extension officer	45	38.46	28	23.93	25	21.37	19	16.24

F = Frequency % = Percentage

Table 13: Distribution of SC/ST farmers in IFS according to their mass media exposure

n=117

Mass media	Possessed/sub scribed		Extent of Exposure					
			Regular		Occasional		Never	
	F	%	F	%	F	%	F	%
Radio	19	16.23						
Agriculture			5	4.17	7	5.83	105	89.74
General			9	7.50	11	9.17	97	82.90
Television	98	81.67						
Agriculture			10	8.54	15	12.82	92	78.63
General			49	41.88	45	38.46	23	19.17
Newspaper	25	20.83						
Agriculture			9	7.50	8	6.67	100	85.47
General			13	10.83	10	8.33	94	80.34
Magazine	21	17.50						
Agriculture			11	9.17	8	6.67	98	8376
General			7	5.83	13	10.83	97	83.33

F = Frequency % = Percentage

4.3 Document of different components of integrated farming system as adopted by SC/ST farmers

A. Dry land

The information furnished in Table 15 clearly indicated the most profitable, profitable and less profitable combination of IFS components distributed to IFS beneficiaries as income generating assets in dry land situation. The most profitable combination of components as adopted by the respondents in dry land were Agri + sheep/goat + poultry + agro forestry (95.72%), Agri + Goat /Sheep + Poultry (94.87%), Agri + Goat + Agro forestry (88.88%), Agri + sheep rearing and agri + goat rearing (85.47%), followed by Agri + dairy and agri + poultry with 80.34 per cent and 66. 66 per cent respectively.

Whereas 84.61 per cent of respondents felt Agri + vermiculture was profitable, 67.52 per cent and 66.66 per cent of them perceived that agri + bio gas + vermiculture and agri + agro forestry were profitable respectively. Only 20.51 per cent of them felt Agri + azolla farming were least profitable followed by Agri + poultry (14.52%).

B. Garden land

The information furnished in Table 18 clearly indicated the most profitable, profitable and less profitable combination of IFS components distributed to IFS SC/ST beneficiaries as income generating assets in garden land. The most profitable combination of components as adopted by the respondents in garden land were Horti + Sheep/Goat (91.45%), Horti + Dairy + Vermiculture + Apiculture (89.74%), Horti + Apiculture + Diary (87.17%), Horti + Agriculture (82.05%), followed by Horti + Dairy 74.35 per cent, Horti + Poultry 70.08 per cent and Horti + Dairy + Biogas 49.57 per cent.

Whereas 77.77 per cent of respondents felt Horti + Apiculture was profitable followed by 76.92 per cent, horticulture + vermiculture. Whereas 40.17 per cent of them said Horti + Dairy + Biogas was profitable. Only 11.11 per cent of them felt Horti + Vermiculture was least profitable followed by Horti + Dairy + Biogas (10.25%).

4.3.1 Relationship between socio-psychological and economical characrestics of SC/ST farmers and adoption of integrated farming system.

The result presented in Table 16 revealed that relationship between socio- psychological and economical characteristics and adoption of IFS by SC/ST farmers.

In order to find out the relationship between adoption of IFS farmers and their socio-psychological and economical characteristics, zero order correlation coefficient were computed. The result indicated in Table 21 showed that education, family size, land holding, farming experience, organization participation, extension participation, extension contact, mass media exposure, and Utility of income generated were positively and significant correlated with adoption. Whereas, age and annual income of SC/ST farmers did not show significant relation with the adoption of IFS farmers.

4.4 Perception about integrated farming system by SC/ST farmers

4.4.1 Overall perception of SC/ST farmers about IFS

A perusal of Table 17 indicated that, almost half of the SC/ST farmers (49.57%), belonged to high perception level towards integrated farming system, while 22.22 per cent of them belonged to low and the remaining 28.20 per cent belonged to medium level of perception towards integrated farming system.

4.4.2 Extent of perception about individual components of integrated farming system by SC/ST farmers

It is evident from Table 18 that a majority of SC/ST farmers perceived that the components of IFS was most useful because, IFS increases productivity by way of increase in economic gain per unit area (88.03%), followed by supply of balanced and nutritious food to family due to combination of various enterprises (80.34%), IFS improves the standard of living of beneficiary (76.92%), IFS helps in improving the knowledge and skill of beneficiary and complimentary combination of farm enterprises creates self-employment to the beneficiaries throughout the year have equal per cent (75.21%).

Table 14: Utility of income generated by SC/ST farmers in IFS

n=117

Sl. No.	Items on which the amount is spent*	Frequency	Percentage
1	Livelihood security	117	100
2.	Family Nutritional	117	100
3.	Health expenses	117	100
4.	Education of children	76	64.95
5.	To perform rituals/festivals/family functions	117	100
6.	To repay the loans	32	27.35
7.	For social/organizational recognition	19	16.23
8.	Investment on land property	15	12.82
9.	Savings	20	17.09
10.	Further investment on income generating assets	12	10.25

* Multiple responses possible

Table 15: Profitability of different combination of IFS components adopted by SC/ST farmers

n=117

Sl. No	Different components	Most Profitable		Profitable		Least Profitable	
		F	%	F	%	F	%
A	Dry land						
1	Agri+Sheep rearing	100	85.47	17	14.52	0	0.00
2	Agri+Goat rearing	100	85.47	17	14.52	0	0.00
3	Agri+Poultry	78	66.66	22	18.80	17	14.52
4	Agri+ Dairy	94	80.34	23	19.65	0	0.00
5	Agri+ Vermiculture	09	5.08	99	84.61	09	7.69
6	Agri+ Agro forestry	31	26.49	78	66.66	08	6.83
7	Agri+ Goat + Agro forestry	104	88.88	13	11.11	0	0.00
8	Agri + Goat /Sheep + Poultry	111	94.87	06	5.12	0	0.00
9	Agri + Goat/Sheep + Poultry +agroforestry	112	95.72	05	4.27	0	0.00
10	Agri + Biogas + Vermiculture	27	23.07	79	67.52	11	9.40
11	Agri + Azolla farming	27	23.07	66	56.41	24	20.51
B	Garden land						
1	Horti+Agriculture	96	82.05	21	17.94	0	0.00
2	Horti+Dairy+Vermiculture+Apiculture	105	89.74	12	10.25	0	0.00
3	Horti+Poultry	82	70.08	30	25.64	05	4.27
4	Horti+Sheep/Goat	107	91.45	10	8.54	0	0.00
5	Horti+Apiculture	17	14.52	91	77.77	09	7.69
6	Horti+Vermiculture	14	11.96	90	76.92	13	11.11
7	Horti+Apiculture+Diary	102	87.17	15	12.82	0	0.00
8	Horti+Dairy+Biogas	58	49.57	47	40.17	12	10.25
9	Horti+Dairy	87	74.35	23	19.65	07	5.98

Table 16: Relationship between Adoption and socio-psychological and economic characteristics of SC/ST farmers in IFS

Characteristics	r –value
Age	0.075NS
Education	0.194*
Family size	0.286*
Land holding	0.305**
Farming experience	0.242*
Annual income	0.110NS
Organization participation	0.328**
Extension participation	0.294*
Extension contact	0.344**
Mass media exposure	0.351**
Utility of income generated	0.233*

* Significant at 5 per cent

** Significant at 1 per cent

NS - Non significant

Table 17: Overall perception of SC/ST farmers about IFS

n = 117

Category	Frequency	Percentage (%)
Less useful (<26.85)	26	22.22
Useful (26.85 to 39.16)	33	28.20
More useful (>39.16)	58	49.57
Mean	33.01	
SD	14.48	

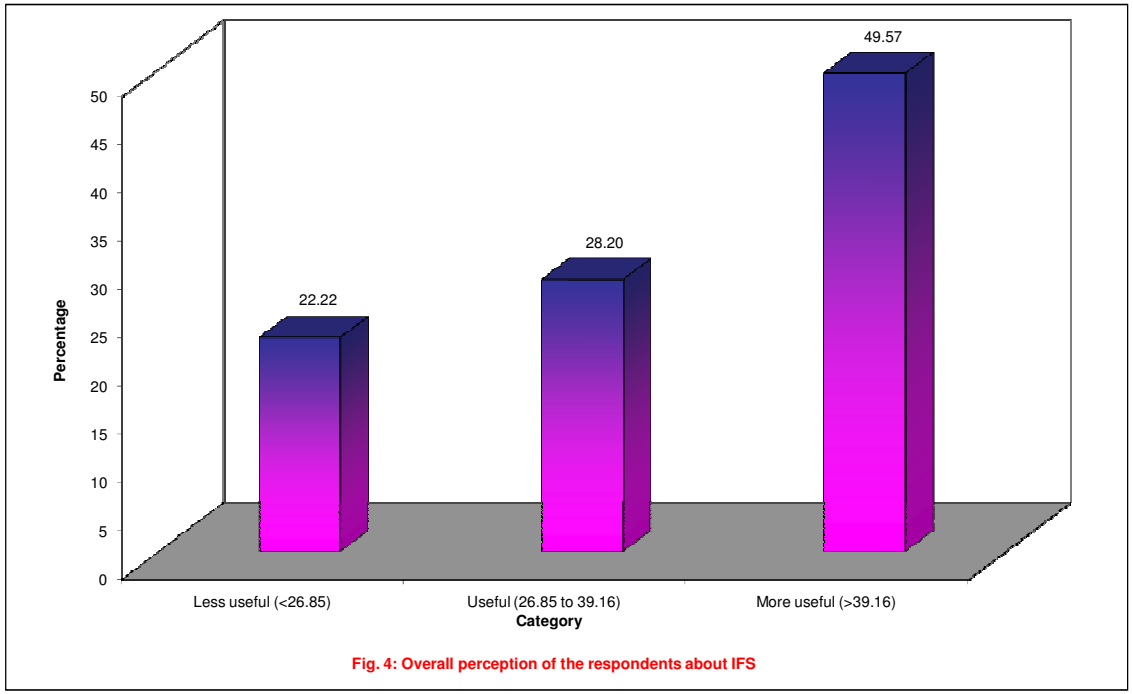


Fig. 4: Overall perception of the respondents about IFS

Fig 4: Overall perception of the SC/ST farmers about IFS

Table 18: Individual perception of SC/ST farmers about IFS

Sl. No	Farmer perception of IFS	Most useful		Useful		Less useful	
		F	%	F	%	F	%
1	IFS increases productivity by way of increase in economic gain per unit area.	103	88.03	14	11.96	0	0
2	Supply of balanced and nutritious food to family due to combination of various enterprises.	94	80.34	23	19.65	0	0
3	IFS help in improving the knowledge and skill of beneficiary.	88	75.21	19	16.23	10	8.54
4	IFS mitigate ecosystem of forest.	24	20.51	32	27.35	61	52.13
5	IFS improve the standard of living of beneficiary.	90	76.92	27	23.07	0	0
6	IFS increase the income of the beneficiary because of different combination of enterprise.	80	68.37	37	31.62	0	0
7	IFS make the beneficiary conscious about farm management.	60	51.28	35	29.91	22	18.80
8	Combination of different enterprises will increase the productivity by way of increasing the economic yield per unit area.	45	38.46	50	42.73	22	18.80
9	IFS help in efficient recycling of the farm bio-mass and animal waste.	80	68.37	30	25.64	7	5.98
10	Ensure the complimentary combination of farm enterprises.	40	34.18	30	25.64	47	40.17
11	Planting trees on bund will reduce the degradation of forest.	42	35.89	29	24.78	46	39.31
12	Better use of farm by-products from the various enterprises	77	65.81	22	18.80	18	15.38
13	Timber and fire wood required for domestic purpose will be met through IFS system without affect the natural forestry.	66	56.41	24	20.51	27	23.07
14	Supply of smokeless chullas and biogas will mitigate the fuel crisis	70	59.82	26	22.22	21	17.94
15	In IFS Combination of enterprises will reduce the production cost to some extent	78	66.66	25	21.36	14	11.96
16	IFS make sustainable family income throughout the year.	84	71.79	20	17.09	13	11.11

Contd…

17	Sustainable soil fertility and productivity by way of organic waste recycling.	78	66.66	22	18.80	17	14.52
18	IFS units act as model in agricultural development in the local area.	50	42.73	38	32.47	29	24.78
19	IFS lead to pollution free environment because of efficient recycling of organic waste from different enterprises.	70	59.82	25	21.36	22	18.80
20	Complimentary combination of farm enterprises creates self-employment to the beneficiaries throughout the year.	88	75.21	14	11.96	15	12.82
21	Multiple combination enterprises will give more benefit to the beneficiary.	84	71.79	16	13.67	17	14.52
22	Adoption of complimentary enterprises as a whole increases the input use efficiency.	58	49.57	36	30.76	23	19.65
23	Improves the soil health	73	62.39	24	20.51	20	17.09

F – Frequency % - Percentage

IFS make sustainable family income throughout the year and multiple combination enterprises will give more benefit to the beneficiary have equal per cent (71.79%), IFS increase the benefit of the beneficiary because of different combination of enterprise (68.37%), IFS help in efficient recycling of the farm bio-mass and animal waste have equal per cent (68.37%), In IFS combination of enterprises will reduce the production cost to some extent (66.66%), sustainable soil fertility and productivity by way of organic waste recycling have equal per cent (66.66%), better use of farm by-products from the various enterprises (65.81%), improves the soil health (62.39%), supply of smokeless chullas and biogas will mitigate the fuel crisis (59.82%), IFS lead to pollution free environment because of efficient recycling of organic waste from different enterprises have equal per cent (59.82%), timber and fire wood required for domestic purpose will be met through IFS system without affect the natural forestry (56.41%), IFS make the beneficiary conscious about farm management (51.28%), adoption of complimentary enterprises as a whole increases the input use efficiency (49.57%), IFS units act as model in agricultural development in the local area (42.73%), combination of different enterprises will increase the productivity by way of increasing the economic yield per unit area (38.46%), planting trees on bund will reduce the degradation of forest (35.89%), ensure the complimentary combination of farm enterprises (34.18%) and IFS mitigate ecosystem of forest (20.51%).

Less than half of IFS SC/ST farmers felt the scheme was useful because, combination of different enterprises will increase the productivity by way of increasing the economic yield per unit area (42.73%), followed by IFS units act as model in agricultural development in the local area (32.47%), IFS increase the profit of the beneficiary because of different combination of enterprise (31.62%), adoption of complimentary enterprises as a whole increases the input use efficiency (30.76%), IFS make the beneficiary conscious about farm management (29.91%), IFS mitigate degradation of forest (27.35%), IFS help in efficient recycling of the farm bio-mass and animal waste, ensure the complimentary combination of farm enterprises (25.64%), planting trees on bund will reduce the degradation of forest (24.78%), IFS improve the standard of living of beneficiary (23.07%), supply of smokeless chullas and biogas will mitigate the fuel crisis (22.22%) in IFS combination of enterprises will reduce the production cost to some extent, (21.36%) IFS lead to pollution free environment because of efficient recycling of organic waste from different enterprises (21.36%), timber and fire wood required for domestic purpose will be met through IFS system without affect the natural forestry, Improves the soil health (20.51%), supply of balanced and nutritious food to family due to combination of various enterprises (19.65%), better use of farm by-products from the various enterprises, (18.80%) sustainable soil fertility and productivity by way of organic waste recycling (18.80%), IFS make sustainable family income throughout the year (17.09%). IFS help in improving the knowledge and skill of beneficiary (16.23%), multiple combination enterprises will give more benefit to the beneficiary (13.67%), IFS increases productivity by way of increase in economic gain per unit area, (11.96%) and complimentary combination of farm enterprises creates self-employment to the beneficiaries throughout the year (11.96%).

A little more than half (52.13%) of IFS SC/ST farmers felt the scheme was less useful because about the fact that, IFS mitigate degradation of forest followed by ensure the complimentary combination of farm enterprises (40.17%), planting trees on bund will reduce the degradation of forest (39.31%), IFS units act as model in agricultural development in the local area (24.78%), timber and fire wood required for domestic purpose will be met through IFS system without affect the natural forestry (23.07%), adoption of complimentary enterprises as a whole increases the input use efficiency (19.65%), IFS make the beneficiary conscious about farm management (18.80%), combination of different enterprises will increase the productivity by way of increasing the economic yield per unit area (18.80%), IFS lead to pollution free environment because of efficient recycling of organic waste from different enterprises (18.80%), supply of smokeless chullas and biogas will mitigate the fuel crisis (17.94%), improves the soil health (17.09%), better use of farm by-products from the various enterprises (15.38%), sustainable soil fertility and productivity by way of organic waste recycling (14.52%), multiple combination enterprises will give more benefit to the beneficiary (14.52%), complimentary combination of farm enterprises creates self-employment to the beneficiaries throughout the year (12.82%), in IFS combination of enterprises will reduce the production cost to some extent (11.96%), IFS make sustainable family income throughout the year (11.11%), IFS help in improving the knowledge and skill of beneficiary (8.54%), and IFS help in efficient recycling of the farm bio-mass and animal waste (5.98%).

Table 19: Relationship between perception and socio-psychological and economic characteristics of SC/ST farmers in IFS

Characteristics	r –value
Age	0.052NS
Education	0.210*
Family size	0.236*
Land holding	0.325**
Farming experience	0.262*
Annual income	0.266*
Organization participation	0.375**
Extension participation	0.319**
Extension contact	0.310**
Mass media exposure	0.380**
Utility of income generated	0.235*

* Significant at 5 per cent

** Significant at 1 per cent

NS - Non significant

Table 20: Constraints faced by SC/ST farmers in adoption of IFS

n=117

Constraints		Greater extent		Lesser extent	
		F	%	F	%
Production constraints					
1.	Non availability of quality planting materials/breeds/species	113	96.58	04	3.41
2.	Lack of knowledge regarding identification of pest and diseases	99	84.61	18	15.38
3.	Lack of the technical knowledge regarding IFS	102	87.17	15	12.82
4.	Lack of resistant varieties / breeds for various pests and diseases	90	76.92	27	23.07
5.	Lack of knowledge on balanced use of fertilizer	95	81.19	22	18.80
Situational constraints					
1.	Inadequate irrigation facilities	92	78.63	25	21.36
2.	Limited and irregular power supply	99	84.61	18	15.38
3.	Non-availability of labour in peak seasons	96	82.05	21	17.94
4.	Lack of custom hiring centers for agricultural operations	94	80.34	23	19.65
5.	Non availability of quality inputs in required quantity and in required time	96	82.05	21	17.94
6.	Lack of suitable farm/ implements	97	82.90	20	17.09
Financial constraints					
1.	Lack of timely availability of credit	102	87.17	15	12.82
2.	High rate of interest on borrowings	104	88.88	13	11.11
3.	High initial cost of production	107	91.45	10	8.54
4.	Non availability of subsidy / credit in time.	109	93.16	8	6.83
5.	Loan disbursement procedure is cumbersome	105	89.74	12	10.25
Marketing constraints					
1.	Lack of marketing facilities at local level	103	88.03	14	11.96
2.	Fluctuations in the prices	107	91.45	10	8.54
3.	No storage facilities for perishable farm produce	101	86.32	16	13.67
4.	Untimely payment for the produce	111	94.87	6	5.12
5.	Lack of exclusive markets	100	85.47	17	14.52
6.	Problem of transportation	103	88.03	14	11.96
7.	Exploitation by the middleman	105	89.74	12	10.25
Organization constraints					
1.	Lack of timely guidance by extension agencies	90	76.92	27	23.07
2	Lack of capacity building programmes	102	87.17	15	12.82
3	Non availability of clinical services for livestock	105	89.74	12	10.25
4	Lack of demonstrations to prove the worthiness of the technology	100	85.47	17	14.52
5	Non accessibility of extension personnel.	104	88.88	13	11.11
6	Information is not covered by media/radio/news paper	97	82.90	20	17.09

4.4.3 Relationship between socio-psychological and economical characrestics of SC/ST farmers and perception about integrated farming system

The result presented in the Table 19 revealed that relationship between socio- psychological and economic characteristics and perception of IFS SC/ST farmers. In order to find out the relationship between perception of SC/ST farmers and their socio-psychological and economic characteristics zero order correlation coefficient were computed. The result indicated in the Table 19 showed that education, family size, land holding, farming experience, organization participation, extension participation, extension contact, mass media exposure, and Utility of income generated were positively and significant related with perception. While, age did not show any significant relation with perception of IFS SC/ST farmers.

4.5 Constraints faced and suggestions given by SC/ST farmers about integrated farming system

4.5.1 Constraints faced by SC/ST farmers in adoption of IFS

The constraints faced by the SC/ST farmers were classified as Production, Situational, financial, marketing and Organizational constraints (Table 20)

Production constraints

In case of production constraints, Non availability of quality planting materials/breeds/species was constraint of greater extent as opined by (96.58%) of SC/ST farmers followed by lack of the technical knowledge regarding IFS (87.17%), lack of knowledge in identification of pest and diseases (84.61%), and balanced use of fertilizer (81.19%). A majority (76.92%) of respondents mentioned that lack of pest and disease resistant varieties is a problem of greater extent.

Situational constraints

In case of Situational constraints, limited and irregular power supply was greater constraint as opined by 84.61 per cent of SC/ST farmers followed by lack of suitable farm implements/ equipments (82.90%), non-availability of labour in peak seasons, (82.05%) non availability of quality inputs in time and required quantity (82.05%), lack of custom hiring centers for agricultural operations (80.34%) and inadequate irrigation facilities (78.63%).

Financial constraints

In case of financial constraints, non availability of subsidy / credit in time was greater constraint as opined by 93.16 per cent of SC/ST farmers followed by high initial cost of production (91.45%), loan disbursement procedure is cumbersome (89.74%), high rate of interest on borrowings (88.88%) and lack of timely availability of credit (87.17%).

Marketing constraints

In case of marketing constraints, a high majority of SC/ST farmers (94.87%) expressed that payment for produce was not given immediately after sale followed by fluctuations in the prices (91.45%), exploitation by the middleman (89.74%), lack of marketing facilities at local level (88.03%), problem of transportation (88.03%), no storage facilities for perishable farm produce (86.32%) and lack of exclusive markets (85.47%).

Organization constraints

In case of Organization constraints, non availability of clinical services for livestock was greater constraint as opined by 89.74 per cent of SC/ST farmers followed by non accessibility of extension personnel (88.88%), lack of capacity building programmes (87.17%), lack of demonstrations to prove the worthiness of the technology (85.47%), information not covered by media/radio/news paper (82.90%), and lack of timely guidance by extension agencies (76.92%).

4.5.2 Suggestions expressed by beneficiaries to increase the adoption of IFS

The data presented in Table 21 indicates the suggestions given by the SC/ST farmers to increases adoption of IFS, A greater majority of farmers suggested that providing training about IFS (95.72%), followed by providing marketing facilities at local level (90.59%), and conduct demonstrations on IFS to increase the confidence level of farmers (82.90%), supply of quality inputs at village level at required time (80.34%), eliminating middle man in the marketing of agriculture produce (66.66%), improve the transportation facilities (54.70%), provide credit facilities to IFS farmers (34.18%) and increased use ICT tools (TV, radio, news paper, farm magazines etc) in transfer of technology of integrated farming system (30.76%). Will enable the respondents to increase the adoption of IFS.

Table 21: Suggestions expressed by SC/ST farmers to overcome the problem encountered in IFS

n=117

Sl. No.	Suggestions	F	%
1	Provide training about IFS	112	95.72
2	Provide marketing facilities at local level	106	90.59
3	Conduct demonstrations on IFS to increased the confidence	97	82.90
4	Supply of quality inputs at village level at required time	94	80.34
5	Remove middle man in the marketing of agriculture produce	78	66.66
6	Improve the transportation facilities	64	54.70
7	Provide credit facilities to IFS farmers	40	34.18
8	Use ICT tools (tv,radio, news papper,farm magazines etc) in TOT of IFS	36	30.76

* More than one response is possible

DISCUSSION

The finding of the study is discussed in this chapter under the following headings:

5.1 Extent of awareness of integrated farming system by SC/ST farmers.

5.2 Socio-psychological and economic characteristics of SC/ST Farmers

5.3 Document of different components of integrated farming system as adopted by SC/ST farmers.

5.4 Perception of SC/ST farmers about integrated farming system.

5.5 Constraints faced and suggestions given by SC/ST farmers about integrated farming system.

5.1 Extent of awareness of integrated farming system by SC/ST farmers

5.1.1 Overall awareness of SC/ST farmers about IFS

It is clear from Table 1 that 35.90 per cent of the SC/ST farmers had high awareness followed by low (31.62%) and medium (32.47%) awareness about IFS respectively.

The probable reason could be that the present agriculture is gambling with nature and its dependence on chemical fertilizers and pesticides leading to high cost of cultivation and lowering the net profit. Another reason could be that dependence on single crop/ enterprise for income generation might be little risky and this might be promoted the respondents to know about IFS.

The findings of the result are similar to the findings of Suresh (2004) and Raghavendra (2007).

5.1.2 Ascertain the extent of awareness about individual components of integrated farming System by SC/ST farmers

Table 2 revealed the awareness of SC/ST farmers about individual components of IFS. A great majority of respondents had awareness about integrated farming system. IFS is an integrated crop and animal enterprises components (82.90%) followed by in IFS Agri + poultry/dairy/sheep rearing, will increase the additional income (75.21%), diversified farming ensures employment to family member round the year (73.50), IFS improves the standard of living of beneficiary (72.64%), production & productivity per unit area will increased through IFS (70.08%), adoption of IFS practice increases yield (68.37%), diversification of enterprises leads to sustainable income throughout the year, (68.37%), IFS makes recycling of farm waste in efficient way in rural area (68.37%), different combination of enterprises helps in maximizing the annual income (66.66%) and in IFS, Agri + Horti combination adds to more income (66.66%). Nearly fifty per cent of the respondents opined that, adoption of crop rotation like (cereals + legumes) will improve the soil health. (55.55%), a farm with several enterprises produces adequate proof a giant uncertainties in farm yield (52.13%), IFS is ecofriendly technology (47.00%), beneficiary are aware of insurance coverage in case of dairy enterprise (44.44%), helps in efficient management of pest and diseases (39.31%), provides knowledge regarding subsidy available (38.89%), IFS practice improves/updates the knowledge of the beneficiary (38.46%), IFS reduce the cost of cultivation (36.75%), IFS reduce the degradation Agro forestry system (34.18%) and IFS solve the energy crisis (26.49%) respectively.

This clearly shows, that the SC/ST farmers had high level of awareness, because IFS provides income and generate employment opportunity throughout the year, this in turn improves the standards of living of beneficiary. Use of combination of more than two components is always beneficial because if one enterprise fails the farmer gets income from other enterprise. The different combinations of the components effectively utilize the available waste of one enterprise to that of another.

Another probable reason could be that respondents will be in regular touch with Raitha sanghas, and also have participated in Krishimelas, and IFS demonstrations/ training programme. They are frequently in touch with extension officers or scientists to solve their problem.

5.1.3 Relationship between socio-psychological and economic characteristics of SC/ST farmers and awareness about integrated farming system

In order to find out the relationship between awareness of IFS farmers and their socio-psychological and economic characteristics, zero order correlation coefficient were computed. The result indicated in the Table 3 showed that education, Family size, land holding, farming experience, organization participation, extension participation, extension contact, mass media exposure, and Utility of income generated were positively and significant related with awareness. Whereas, age and annual income did not show significant relation with awareness of SC/ST farmers of IFS.

It is obvious that education, farming experience, mass media exposure, extension contact and extension participation might have enhanced the SC/ST farmers awareness of Integrated Farming System. Higher organizational and extension participation and more frequent contact with extension agency have helped the farmers in developing more awareness with respect to IFS.

Similar findings were reported by Kenchanagoudra (2007) and Ramesh and Santha govind (2008).

5.2 Socio-psychological and economic characteristics of SC/ST farmers

5.2.1 Age

It is apparent from Table 4 that more than half of the respondents were under old age (56.41%) followed by middle (35.04%) and young (8.54 %) age category.

The probable reason for majority of the respondents being under old age category might be due to the fact that most of the young people are not interested in farming and are looking for better livelihood options in urban area. Individual may not be ready to accept the responsibility in the young age itself. Individuals in middle age group have physical vigour and also more responsibility towards family than the younger ones. As they become middle aged they will be taking more responsibility for the family.

These findings were in line with the findings Muni Kishore (2006) Shanthamani (2007).

5.2.2 Education

It is observed from Table 4 that 47.00 per cent of the farmers were illiterates followed by farmers educated upto primary school level (38.46%), 4.27 per cent had educate up to middle school only 3.41 per cent and 2.56 per cent of them had educate unto PUC and degree level respectively.

This might be due to the fact that nearly fifty per cent of respondents had no access to schools as they illiterates. Only one third got formal education in the present situation. Large farmers found under low education category may be because of their old age as they may not have access to education in those days compared to marginal and small farmers who were under middle age. In the present scenario, almost everyone wants to be literate because of awareness about the importance of the education by the various government programmes.

The findings are in line with the research results of Mangala (2008) and Pottappa (2008)

5.2.3 Family size

It is clear from Table 4 that 62.39 per cent of the respondents had medium family, followed by 20.51 per cent of the respondents with small size and 17.05 per cent of the respondents having large family.

The probable reasons for this findings could be that, off late the social structure of the society is moving towards nuclear families because of fragmentation and division of land holding. Further, the social values attached to the joint family system is slowly eroding may be because of the influence of urbanization and cosmopoliteness

Another reason behind these findings could be that young and middle age people would prefer to live in nuclear families and old age people prefer joint family.

The findings are similar with the finding Chandrani Saha (2008) and Vishvanath Hiremath (2009).

5.2.4 Land holding

It is clear from Table 4 that, majority of the respondents (47.86%) had marginal land holding, followed by small, medium and large land holding (36.75, 11.96 and 3.41 %, respectively).

The probable reason might be that, as the study conducted on SC/ST, IFS farmers it is known fact that SC/ST farmers possess meager land holdings or no land holding and they depend on other subsidiary occupation for their livelihood due to this reason Government of India is supporting them by formulating different programmes/schemes to improve their standard of living and economic condition.

The findings are similar with the findings of Malathesh (2004) and Chitra (2010).

5.2.5 Farming experience

It was observed from the Table 4 that 65.81 per cent of respondents had high farming experience, (above 28 year). However, 16.24 per cent had medium (15 to 28 years) and 17.95 per cent had low, (10 years and low), experience in farming activity.

It is quite obvious to find this type of finding because a majority of respondents are old aged and it is quite natural that they have high farming experience The small holdings also make them to depend on other subsidiary occupation to improve their source of income.

The results are in accordance with the findings of Natikar (2001) and Thiranjangowda (2005).

5.2.6 Annual income

5.2.6.1 Annual income from agriculture crops by the IFS farmers

A. Soybean

The insight in Table 5 revealed that the average annual income of the IFS farmers was Rs 11758.67 during 2010, with respect to soybean crop production in *kharif* season. Whereas, it decreased to Rs. 8036.80 in 2011 and again increased to Rs. 9979.38 in 2012. However, the average area under soybean crop production was 1.40acre during 2010, 1.10 acre during 2011 and1.07acre during 2012.

The probable reasons behind this finding may be due to the fact that during *kharif* there not much fluctuation in the annual income for the period of three years more. Hence, the area also reduced.

B. Maize

The insight in Table 5 revealed that the annual income of the IFS farmers was Rs. 17190.52 during 2010, with respect to maize crop production in *kharif* season. Whereas it increased to Rs. 22414.98 during 2011 and again decreased Rs. 16825.23 during 2012. However, the area under maize crop production was 1.15 acre during 2010, and decreased to 1.14 acre during 2011 and again increased to 1.25 acre during 2012.

The insight in Table 5 revealed that the annual income of the IFS farmers was Rs. 30512.12 during 2010, with respect to maize crop production in Rabi season. Whereas it decreased to Rs. 20728.94 during 2011 and again increased to Rs. 25073.94 during 2012. However, the area under maize crop production was 2.32 acre during 2010, and decreased to 1.57acre during 2011 and again increased to 2.11 acre during 2012.

The insight in Table 5 revealed that the annual income of the IFS farmers was Rs. 32033.33 during 2010, with respect to maize crop production in summer season. Whereas it decreased to Rs. 27150.00 during 2011 and again decreased to Rs. 26861.11 during 2012. However, the area under maize crop production was 2.33 acre during 2010, and increased to 3.66 acre during 2011 and again decreased to 2.55 acre 2012.

The probable reasons behind the annual income of the IFS farmers from maize crop was decreased or increased because of market rate fluctuation and marginal changes in the area under cultivation. There is no much fluctuation in the net income over the period of these years. However, the farmers might have taken up the crop in summer because of the assured irrigation.

C. Cotton

The Table 5 also revealed that the annual income of the IFS farmers was Rs. 13733.35 during 2010, with respect to cotton crop production in *kharif* season. Whereas it increased to Rs. 15098.27 during 2011 and again increased to Rs. 17775.73 during 2012. However, the area under cotton crop production was 1.20 acre during 2010, and decreased to 1.13 acre during 2011 and again increased to 1.17 acre during 2012.

The probable reasons behind this findings was increasing trend of net annual income from cotton crop of the IFS farmers because of market price fluctuation and deviation of Indian currency against the dollar over the three years period might be the another reason for above findings.

D. Jowar

The insight in Table 5 revealed that annual income of the IFS farmers was Rs. 14000.00 during 2010, with respect to jowar crop production in *kharif* season. Whereas it was increased to Rs. 10400.00 during 2011 and again decreased to Rs. 13687.50 during 2012. However, area under jowar crop production was 1.00 acre during 2010 and decreased to 0.87 acre during 2011 and again increased to 1.12 acre during 2012.

The insight in Table 5 revealed that annual income of the IFS farmers was Rs 18741.18 during 2010, with respect to jowar crop production in Rabi season. Whereas, it increased to Rs 20327.20 during 2011 and again increased to Rs. 23660.39 during 2012. However, the area under jowar crop production was 2.41 acre during 2010 and increased to 2.70 acre during 2011 and again increased to 2.79 acre 2012.

The probable reasons behind this annual income of the IFS farmers on jowar crop was decreased or increased because of market rate fluctuation. Hence there is marginal changes in the area under cultivation.

5.2.6.2 Annual income from horticulture crops by the IFS farmers

Vegetable

1. Brinjal

The insight in Table 6 revealed that the annual income of the IFS farmers with respect vegetable. Income from brinjal crop was Rs. 4825 during 2010, whereas it increased to Rs. 7824.35 during 2011, and again decreased to Rs. 4210.00 during 2012. However, area under brinjal production was 0.49 acre during 2010, increased to 0.57 acre during 2011 and decreased to 0.44 acre during 2012, respectively.

2. Tomato

The insight in Table 6 also revealed that the annual income of the IFS farmers from tomato. Rs. 10466.67 during 2010, whereas it decreased to Rs. 6976 during 2011, and again decreased to Rs. 6472.00 during 2012. However, the area under tomato production was 0.51 acre during 2010 and decreased to 0.46 acre and 0.46 acre during 2011 and 2012, respectively.

3. French bean

The table 6 revealed that the annual income of the IFS farmers was Rs. 3386.25 during 2010, with respect to french bean production whereas it increased to Rs. 3682.38 during 2011, and decreased to Rs 2936.43 during 2012. However, the area under french bean production was 0.25acre during 2010, and increased to 0.35acre during 2011 and decreased to 0.26 acre during 2012.

4. Bhendi

The insight in Table 3 revealed that the annual income of the IFS farmers was Rs. 3475 during 2010, for bhendi crop whereas it decreased to Rs. 3343.08 during 2011, and increased to Rs. 3406.00 during 2012. However, the area under bhendi production was 0.29 acre during 2010 and increased to 0.32 acre during 2011 and again increased to 0.33 acre in 2012.

5. Cucumber

Table 6 also revealed that the annual income of the IFS farmers from cucumber during 2010 was Rs. 2995.23 whereas it decreased to Rs. 2758.82 during 2011 and increased to Rs. 2827.78 during 2012. However, the area under cucumber production was 0.34 acre during 2010 and decreased to 0.32 acre during 2011 and increased to 0.33 acre during 2012.

The probable reason for fluctuation in the net income of IFS farmers from vegetable crops like Brinjal, tomato, French bean, bhendi and cucumber is due to marginal change in the area under vegetable crop for the three years. As vegetables are more prone to pests and diseases, the crops needs good management practices, which is difficult for the farmers having small land holdings and they practice farming for subsistence. Because of this the farmers have not increased the area under vegetables crops with assured irrigation coverage and getting less income from the existing holdings.

5.2.6.3 Annual income from dairy by the IFS farmers

A. Cow

The result presented in Table 7 indicated that (25.64%) IFS farmers received cows during the year 2011 and got on an average net income of Rs 6225.00 and same farmers got on an average net income of Rs 6828.00 during the year 2012.

The probable reasons behind the increase in annual income of the IFS farmers on dairy might be that increase in price of milk and milking days of the cow. There is not much research study to support this findings.

B. Buffalo

The result presented in Table 7 indicated that (23.93%) IFS farmers received buffalo during the year 2010 and got on an average net income of Rs 6961.71 and (44.44%) IFS farmers received buffalo during the year 2011 and got on an average net income of Rs. 6828 during the year 2012. And same farmers got on an average net income of Rs. 8980.77 during the year 2012.

The probable reasons behind the increase in annual income of the IFS farmers on dairy might be that increase in price of milk and milking days of the buffalo.

5.2.6.4 Annual income from poultry by the IFS farmers

The result presented in Table 8 indicate that (36.75%) of IFS farmers received poultry birds during the year 2011 and generate net income of Rs. 3193.48, during the year 2012, 63.24 per cent of IFS farmers received poultry birds and generate net income of Rs. 5320.00.

In the initial stage this Giriraja poultry birds were not known to local people and more so many birds died because of disease. But during 2012, majority of beneficiaries started rearing the birds (63.24%) due to its unique taste giriraja became more and more popular in the locality this is another reason for increase in the income

5.2.6.5 Annual income from vermicompost by the IFS SC/ST farmers

The result presented in Table 9 indicate that 36.75 per cent of IFS farmers started vermicompost during the year 2010 and earned net income of Rs. 3939.02 and Rs. 4475.61 during the years 2011 and 2012, respectively.

The probable reason for this type of results may due to the fact that beneficiaries were not aware of the importance of the vermiculture. But, some technical problem for mass scale production to meet the requirement of the present situation.

The above results are similar to the findings of Nirmala (2003) Chandra Charan (2005).

5.2.7 Organizational participation

It is evident from Table 10 that, none of the respondents were members of zilla panchayat and 17.09 per cent of them participated occasionally and 12.82 per cent of respondents expressed the information provided by zilla panchayat was somewhat useful. None of the respondents were members of taluk panchayat and 17.94 per cent of them participated occasionally and 17.09 per cent expressed that information provided by taluk panchayat was somewhat useful. About 5.12 per cent of respondents were members of gram panchayat and 18.80 per cent of them participated regularly and 59.82 per cent of them participated occasionally and 9.40 per cent expressed that information provided by taluk panchayat was most useful and 55.55 per cent expressed that information provided by taluk panchayat was somewhat useful. None of the respondents were members of Mahila mandal, 16.23 per cent of them participated occasionally and 21.36 expressed that information provided by Mahila mandal was somewhat useful. None of the respondents were members of Co-operative society and 42.73 per cent of them participated occasionally and 35.89 per cent expressed that information provided by co-operative society was somewhat useful. None of the respondents were members of Youth clubs and 12.82 per cent of them participated occasionally and 19.65 expressed

that information provided by youth clubs was somewhat useful. None of the respondents were members of Raitha samparka Kendra, 21.36 per cent of them participated regularly and 68.37 per cent of them participated occasionally and 23.93 expressed that Raitha samparka Kendra gave most useful and 55.55 per cent expressed that Raitha samparka Kendra gave somewhat useful information. In Raita sanghas, 29.91 per cent of them participated regularly and 36.75 per cent of them participated occasionally and 20.51 per cent expressed that information provided by Raita sanghas was most useful and 23.93 expressed that information provided by Raita sanghas was somewhat useful.

In general, the above trend is due to the fact that the co-operative societies and RSKs provide fertilizers, pesticides and credit facilities to its members and office bearers. Further, the government encourages the farmers to form association to work for the right cause of the community.

These findings were in line with the findings Rangi (2002) and Vani (2005).

5.2.8 Extension participation

The data presented in Table 11 revealed that most of the respondents attended Krishimela (60.68%), followed by demonstration (41.03%), training programmes (29.06%), agriculture exhibition (28.21%), educational tours and field days (23.93%), field visits (22.22%) and group meeting (11.97%).

The marginal farmers who will be satisfied with the technologies which are sufficient for subsistence farming may not look forward for different extension activities which are aimed for commercial and market led production systems. Further, as the modernization creeps into farming also in the advent of free market and globalization, the small and medium farmers are also tend to improve their participation in different extension activities which is very common like Krishimela and demonstration. The medium farmers tend to be progressive and in transitional stage of change in order to come out of subsistence to commercial farming. Further, demands more technological information which may help them to practice farming on more scientific lines. Hence, the medium level of extension participation might have been observed with medium farmers practiced different integrated farming systems.

These findings were in line with the findings of Vani (2005) and Mangala (2008).

5.2.9 Extension contact

The Table 12 revealed that SC/ST farmers contacted Private agency Extension officer (38.46%) followed by Scientists of UAS (21.37%), Agricultural Assistant (17.09%), Asst. Director of Agriculture (6.84%), Asst. Agricultural officers (5.98%) and Agricultural Officer (5.13%) once in a week. Whereas beneficiaries contacted the extension agencies once in two weeks were Agricultural Assistant (42.74%), followed by Scientists of UAS (34.19%), Private agency Extension officer (23.93%), Asst. Agricultural officers (19.66%), Agricultural Officer (17.09%), Asst. Director of Agriculture (11.11%). The respondents also contacted concerned Agricultural Officer (41.88%), followed by Scientists of UAS (29.91%), Agricultural Assistant (25.64%), Private agency Extension officer (21.37%), Asst. Agricultural officers (18.80%), Asst. Director of Agriculture (12.82%).Whenever problems araised.

The possibility of getting this type of results may be due to the fact that non accessibility of extension workers to the farmers at appropriate time. In view of this, concerned extension agencies should take atmost measures to strengthen extension support and take up capacity building activities for solving the problems of farmers.

The results are in line with the findings of Raju (2002) and Kishorbabu (2004).

5.2.10 Mass media exposure

The data in Table 13 depicts the mass media exposure of the respondents. Radio was possessed by 16.23 per cent of the respondents, whereas 4.17 and 7.50 per cent of them regularly listened to agricultural and general programme, respectively. While 5.83 and 9.17 per cent of respondents occasionally listened to agricultural and general programmes, respectively. Television was possessed by 81.67 per cent of the respondents. In which 8.54 and 41.88 per cent of them regularly viewed agricultural and general programme, respectively. Whereas 12.82 and 38.46 per cent of respondents occasionally viewed agricultural and general programmes, respectively. In case of the news papers 20.83 per cent the respondents subscribed to news papers of which 7.50 per cent

and 10.83 per cent of them read agricultural and general information, respectively. While 6.67 per cent and 8.83 per cent of respondents were occasional readers of agricultural and general news, respectively. In case of magazine, 17.50 per cent of respondents subscribed for magazine 9.17 per cent and 5.83 per cent of respondents were regular readers of agricultural and general articles, respectively. While 6.67 per cent and 10.83 per cent of respondents were occasional readers of agricultural and general article, respectively.

Around eighty one per cent of respondents owned television. When viewing behaviour analysed it was noted that 8.54 and 41.88 per cent of respondents regularly viewed agricultural and general programmes respectively. So majority of the farmers used it for watching the general programme than the agriculture programme. The reason could be that most of the agriculture programs are telecasted in the morning hours and the farmers could spend time to watch TV after completing all the field works in the evening hours. Also the people could prefer to watch general programs that are more entertaining than the agriculture programs.

The findings of the result are similar to the findings of Venkataramalu (2003) and Moulasab (2004).

5.2.11 Utility of income generated

The data in Table 14 indicated the utility of income generated by IFS farmers cent per cent of respondents spent their income on livelihood security, family nutrition, health expenses and to perform rituals/festivals/family functions followed by education of children (64.95%), to repay the loans (27.35%), saving (17.09%), investment on land property (12.82%) and investment on income generating assets (10.25%).

The probable reasons behind this may be that, a great majority of SC/ST farmers spent their money on livelihood security, family nutrition, health expenses, because these are the basic needs and one has to fulfill immediatly. Since majority were marginal farmers their entire earning is not sufficient enough to meet their livelihood. Hence they may not left with more money for saving, further investment and to spend for social/organizational recognition. However they are spending recognizable amount for their childrens edocation.

The findings of the result are similar to the findings of Hemalatha Prasad and Om Prakash (1997) and Snehalatha and Reddy (1998).

5.3 Document of different components of integrated farming system as adopted by SC/ST farmers

A. Dry land

It is evident from Table 15 that in dry land condition IFS containing Agri + Goat/Sheep + Poultry + Agro forestry was found to be highly profitable as opined by highest number of respondents (95.72%) Followed by Agri + Goat /Sheep + Poultry (94.87%). Agri + Goat + Agro forestry (88.88%) Agri + Sheep rearing, Agri + Goat rearing (85.47%) Agri + Dairy (80.34%) Agri + Poultry (66.66%) Agri + Agro forestry (26.49%) Agri + Biogas + Vermiculture, Agri + Azolla farming (23.07%). Agri + Vermiculture (5.08%).

It is evident from Table 18 that in dry land condition ifs containing Agri + Vermiculture was found to be profitable as opined by highest number of respondents (84.61%). Followed by Agri + Biogas + Vermiculture (67.52%). Agri + Agro forestry (66.66%). Agri + Azolla farming (56.41%). Agri + Dairy (19.65%). Agri + Poultry (18.80%). Agri + Sheep rearing, Agri + Goat rearing (14.52%). Agri + Goat + Agro forestry (11.11%). Agri + Goat /Sheep + Poultry (5.12%). Agri + Goat/Sheep + Poultry + Agro forestry (4.27%).

The combination of enterprises practiced by the farmers in any of the region mainly depends on the agricultural situation exist in the area and the resources which are under the disposal of the farmer. Hence, it is quite obvious that the farmers practiced Agriculture (mainly cotton jowar maize soybean based cropping system) + sheep/goat + poultry + agro forestry. Further, under such circumstances it is needless to say that Dairy and poultry provides additional income generating activity especially for farm women. Further, the other combinations followed by relatively less percentage of respondents also with the same logic and in principle the long duration enterprise combined with other enterprises which fetches them the income in regular periods. Further, small farmers land holding itself is less and they cannot divert their land for any other crops except field

crops. It is also very much essential for them to cultivate food crops to meet family basic family requirements. Hence the small farmers always look towards systems which do not demand land for production but at the same time fetch regular income. Hence, agriculture + dairy is more popular farming systems among the small farmers. Whereas, majority of farmers, practiced agriculture + goat/sheep rearing + poultry + Agro forestry.

B. Garden land

The information furnished in the Table 15 clearly indicated the most profitable, profitable and less profitable combination of IFS components distributed to IFS beneficiciaries as income generating assets in garden land situation. The most profitable combination of components as adopted by the respondents in garden land were horti + Sheep/Goat (91.45%), Horti + Dairy + Vermiculture + Apiculture (89.74%), Horti + Apiculture + Diary (87.17%), Horti + Agriculture (82.05%), followed by Horti + Dairy 74.35 per cent, Horti + Poultry 70.08 per cent and Horti + Dairy + Biogas 49.57 per cent.

Whereas 77.77 per cent of respondents felt Horti + Apiculture was profitable followed by 76.92 per cent,horticulture + vermiculture. Whereas 40.17 per cent of them said Horti + Dairy + Biogas was profitable. Only 11.11 per cent of them felt Horti + Vermiculture was least profitable followed by Horti + Dairy + Biogas (10.25%).

The combination of enterprises practiced by the farmers in any of the region is mainly depends on the farming situation exist in that particular area and the resources which available to the farmers. Hence, it is quite obvious that the farmers growing horticulture crops mainly tomato, brinjal, bhendi, French bean and cucumber. Further, under such circumstances it is needless to say that Dairy, poultry is an additional income generating activity especially for SC/ST farmers. Further, small farmers land holding itself is less and they cannot divert their land for any other enterprises. Hence, the small farmers always look towards for combination of enterprise which do not demand land for production, but at the same time fetch regular income. Hence, horticulture + sheep/goat are more popular farming systems among the small farmers. Whereas, majority of farmers, practiced horticulture + dairy, + vermicompost + apiculture + dairy, horticulture + agri and horti + dairy.

The findings are in line with the results of Malathesh (2004) and Ramana Rao (2005).

5.3.3 Relationship between socio-psychological and economic characteristics of SC/ST farmers and adoption about integrated farming system

In order to find out the relationship between adoption of IFS farmers and their socio psychological and economic characteristics, zero order correlation coefficient were computed. The result indicated in the Table 16 showed that education, family size, land holding, farming experience, organization participation, extension participation, extension contact, mass media exposure, and Utility of income generated were positively and significant related with adoption, while the age and annual income did not show significant relation with adoption of IFS farmers.

The probable reason for these results might be due to the fact that, majority of the SC/ST farmers were having marginal land holdings. Good mass media exposure, higher extension and organizational participational might have helped them to become aware of the profitability in adoption of different combination of enterprise which is more suited to their situation.

The results are in line with Shrivastav (2002) and Pottappa (2008)

5.4 Perception about integrated farming system by SC/ST farmers

5.4.1 Overall perception of farmers about IFS

The results presented in Table 17 indicated that, nearly fifty per cent of respondents (49.57%) belonged to high category of perception level towards integrated farming system, while 22.22 per cent of the respondents were belonged to low category and remaining 28.20 per cent of the respondents belonged to medium category towards the perception of IFS.

The reason for nearly fifty per cent of the respondents perceived the IFS as more useful because they had higher awareness about the integrated farming system which is going to provide their livelihood security to all the farmers because majority of them are illiterate having marginal holdings. More so majority of the respondents are old aged with farming experience of more than twenty eight years which gives them enough experience regarding the farming problem when they

depend up on only one or two enterprise. They perceived many components of the IFS as more useful to useful because it is providing them income throughout the year.

The findings are in line with the results of Deepak (2003) and Kiran (2007).

5.5.2 Ascertain the extent of perception about individual components of integrated farming system by SC/ST farmers

It is evident from Table 18 that a majority of respondents perceived that the components of IFS was most useful because, IFS increases productivity by way of increase in economic gain per unit area (88.03%), followed by supply of balanced and nutritious food to family due to combination of various enterprises (80.34%), IFS improves the standard of living of beneficiary (76.92%), IFS helps in improving the knowledge and skill of beneficiary, (75.21%), complimentary combination of farm enterprises creates self-employment to the beneficiaries throughout the year have equal per cent (75.21%), IFS make sustainable family income throughout the year (71.79%), multiple combination enterprises will give more benefit to the beneficiary have equal per cent (71.79%), IFS increase the benefit of the beneficiary because of different combination of enterprise (68.37%), IFS help in efficient recycling of the farm bio-mass and animal waste have equal per cent (68.37%), In IFS combination of enterprises will reduce the production cost to some extent (66.66%), sustainable soil fertility and productivity by way of organic waste recycling have equal per cent (66.66%), better use of farm by-products from the various enterprises (65.81%), improves the soil health (62.39%), supply of smokeless chullas and biogas will mitigate the fuel crisis (59.82%), IFS lead to pollution free environment because of efficient recycling of organic waste from different enterprises have equal per cent (59.82%), timber and fire wood required for domestic purpose will be met through IFS system without affect the natural forestry (56.41%), IFS make the beneficiary conscious about farm management (51.28%), adoption of complimentary enterprises as a whole increases the input use efficiency (49.57%), IFS units act as model in agricultural development in the local area (42.73%), combination of different enterprises will increase the productivity by way of increasing the economic yield per unit area (38.46%), planting trees on bund will reduce the degradation of forest (35.89%), ensure the complimentary combination of farm enterprises (34.18%) and IFS mitigate ecosystem of forest (20.51%).

Less than half of IFS farmers felt the scheme was useful because, combination of different enterprises will increase the productivity by way of increasing the economic yield per unit area (42.73%), followed by IFS units act as model in agricultural development in the local area (32.47%), IFS increase the profit of the beneficiary because of different combination of enterprise (31.62%), adoption of complimentary enterprises as a whole increases the input use efficiency (30.76%), IFS make the beneficiary conscious about farm management (29.91%), IFS mitigate degradation of forest (27.35%), IFS help in efficient recycling of the farm bio-mass and animal waste, ensure the complimentary combination of farm enterprises (25.64%), planting trees on bund will reduce the degradation of forest (24.78%), IFS improve the standard of living of beneficiary (23.07%), supply of smokeless chullas and biogas will mitigate the fuel crisis (22.22%) in IFS combination of enterprises will reduce the production cost to some extent, (21.36%) IFS lead to pollution free environment because of efficient recycling of organic waste from different enterprises (21.36%), timber and fire wood required for domestic purpose will be met through IFS system without affect the natural forestry, Improves the soil health (20.51%), supply of balanced and nutritious food to family due to combination of various enterprises (19.65%), better use of farm by-products from the various enterprises, (18.80%) sustainable soil fertility and productivity by way of organic waste recycling (18.80%), IFS make sustainable family income throughout the year (17.09%). IFS help in improving the knowledge and skill of beneficiary (16.23%), multiple combination enterprises will give more benefit to the beneficiary (13.67%), IFS increases productivity by way of increase in economic gain per unit area, (11.96%) and complimentary combination of farm enterprises creates self-employment to the beneficiaries throughout the year (11.96%).

The possible reasons could be, majority of the beneficiaries know about the IFS and they perceived, IFS supplies balanced and nutritious food to family due to combination of various enterprises and IFS increases productivity by way of increase in economic gain per unit area. The farmers participated in extension activities like krishimelas, field days and demonstrations. More so through mass media also they have exposed to new IFS technologies. These factors must have contributed for the above findings.

The present study gets the conformity with the findings of padmaiah and Ansari (1997) and Rajvendra and kinjulck (2012).

5.5.3 Relationship between socio-psychological and economic characteristics and perception about integrated farming system

In order to find out the relationship between perception of IFS SC/ST farmers and their socio-psychological and economic characteristics, zero order correlation coefficient were computed. The result indicated in the Table 19 showed that education, family size, land holding, farming experience, annual income, organization participation, extension participation, extension contact, mass media exposure, and Utility of income generated were positively and significant related with perception, whereas, age did not show significant relation with perception of IFS farmers.

The reason attributed for this may be educational status of SC/ST farmers their media exposure, extension contact and utility of the income generated out of IFS in short term little investment.

Similar result were obtained by, Nimbalkar and Pawar (1990) and Nagananda (2005).

5.5 Constraints faced and suggestions given by SC/ST farmers about integrated farming system

5.5.1 Constraints faced by SC/ST farmers in adoption of IFS

It is evident from Table 20 that the constraints faced by the SC/ST farmers were classified as Production, Situational, financial, marketing and Organization constraints.

In case of production constraints, Non availability of quality planting materials/breeds/species was greater constraint as opined by (96.58%) of respondents followed by lack of the technical knowledge regarding IFS (87.17%), lack of knowledge in identification of pest and diseases (84.61%), and balanced use of fertilizer (81.19%). A majority (76.92%) of respondents mentioned that lack of pest and disease resistant varieties is a problem of greater extent.

In case of Situational constraints, limited and irregular power supply was greater constraint as opined by 84.61 per cent of respondents followed by lack of suitable farm implements/ equipments (82.90%), non-availability of labour in peak seasons, (82.05%) non availability of quality inputs in required quantity and in required time (82.05%), lack of custom hiring centers for agricultural operations (80.34%) and inadequate irrigation facilities (78.63%).

In case of financial constraints, non availability of subsidy / credit in time was greater constraint as opined by 93.16 per cent of respondents followed by high initial cost of production (91.45%), loan disbursement procedure is cumbersome (89.74%), high rate of interest on borrowings (88.88%) and lack of timely availability of credit (87.17%).

In case of marketing constraints, Untimely payment for the produce was greater constraint as opined by 94.87 per cent of respondents followed by fluctuations in the prices (91.45%), exploitation by the middleman (89.74%), lack of marketing facilities at local level (88.03%), problem of transportation(88.03%), no storage facilities for perishable farm produce (86.32%) and lack of exclusive markets (85.47%).

In case of Organization constraints, non availability of clinical services for livestock was greater constraint as opined by 89.74 per cent of respondents followed by non accessibility of extension personnel (88.88%), lack of capacity building programmes (87.17%), lack of demonstrations to prove the worthiness of the technology (85.47%), information not covered by media/radio/news paper (82.90%), and lack of timely guidance by extension agencies (76.92%).

The possible reasons could be in case of production constraints, non availability of quality planting materials/breeds/species, and lack of the technical knowledge regarding IFS was the major constraints faced by farmers. Any production system will survive only when it is supplemented with basic quality input like seed/ breed or species. Hence, this might have been rated as top most constraint. Further, many government schemes have failed to reach the farmers to supply the inputs at right time, at right place and required quantity.

Situational constraints like irregular power supply, and lack of suitable farm/ implements were the major situation constraints faced by farmers. It is quite obvious that the lack of labour especially for farming is common phenomenon and hence the need of farm mechanization is realized by all. Over a period of time the uneven distribution of rainfall is common. Further, the availability of power is again depends on many factors like rainfall to generate hydro electricity and the respective

governments might have failed to make use of the renewable sources of energy to reduce the pressure on hydro power projects.

With respect to financial constraints, Non availability of subsidy / credit in time, high initial cost of production and loan disbursement procedure is cumbersome were the major constraints faced by respondents. It is quite natural that any financial institute for advancing loan follows stringent procedures regarding land records and repayment capacity of the borrowers. The social structure of the Indian communities is such that the land records sometimes are not properly maintained by the families and that may lead to confusion during sanction. Further, in the absence of single window system, it may create more problems for disbursement. The production cost is escalating day by day including the labour costs and bringing efficiency into the production system may reduce the cost of production.

Marketing constraints like fluctuation in the prices, untimely payment for the produce and fluctuations in the prices and exploitation by the middleman is very common in our present situation. The farmers find it difficult to sell their produce profitably due to lack of good market and marketing facilities. The absence of linking roads to the nearby markets may be another constraint.

Organization constraints like Non availability of clinical services for livestock, and poultry birds, non availability of extension personnel and lack of capacity building programmes to prove the worthiness of the technology. This may be due to the government policies on ban on new recruitments and unwillingness of the extension personnel to stay in the villages and to conduct the demonstrations.

These findings were in line with the findings of Pushpa (2010) and Shwetha (2012).

5.5.2 Suggestions expressed by beneficiaries to increase the adoption of IFS

The data presented in Table 21 indicates the suggestions given by the SC/ST farmers adoption of IFS, A greater majority of farmers suggested that providing training about IFS (95.72%), followed by providing marketing facilities at local level (90.59%), and conduct demonstrations on IFS to increase the confidence level of farmers (82.90%), supply of quality inputs at village level at required time (80.34%), eliminating middle man in marketing of agriculture produce (66.66%), improve the transportation facilities (54.70%), provide credit facilities to IFS farmers (34.18%) and increased use ICT tools (TV, radio, news paper, farm magazines etc) in transfer of technology of IFS (30.76%). Will enable the respondents to increase the adoption of IFS.

The reasons might be Provide more market information was also an important suggestion made by IFS farmers. It brings the heard truth that farmers are not getting up-to-date market information. Possession of knowledge of market rates on day-to-day basis is a must for getting a reasonable profit. This necessitates for providing necessary infrastructure facilities and equipments to impart latest market rates to farmers. ‘Subsidies for agricultural inputs should be increased’ was also another suggestion made by farmers; the RSKs are ensuring the timely supply of inputs. Further, the subsidies provided by RSKs vary for different categories like SC/ST and other backward classes, but in general, farmers are facing lot of problems with the resources and high cost of inputs in market. Hence they might have suggested for increasing subsidies.

Further, there is no study to support the present study.

SUMMARY AND POLICY IMPLICATIONS

In an agricultural country like India, the average land holding is very small. The population is steadily increasing without any possibility of increase in land area. The income from cropping for an average farmer is hardly sufficient to sustain his family. The farmer has to be assured of a regular income for a reasonable standard of living by including other enterprises.

India with 2.2 per cent of global geographical area supports more than 15 per cent of the total world population, 60 per cent of whom depend on crop production. It also supports nearly 15 per cent of the total livestock population of the world. One third of the Gross National Product comes from agricultural sector alone. Though there has been an increase in food production from 51 million tonns during 1950, to 250 million tonns in 2012, but nearly 40 per cent of the Indian rural population still lives below the poverty line who cannot afford two square meals a day. Nearly 84 per cent of farm families belong to small and marginal categories. The per capita availability of land has declined from 0.36ha and is projected to touch 0.2ha by the turn of the century.

The Integrated Farming System, therefore, assumes prime place for sound management of farm resources to enhance the farm productivity, reduce the environmental degradation, improve the quality of life of resource poor farmers and to maintain the sustainability through integration of various agricultural enterprises *viz*., crop, animal husbandry, fishery, forestry etc. have great potentialities in the agricultural economy. These enterprises not only supplement the income of the farmers but also help in increasing the family labour employment. The integrated farming system approach introduces a change in the farming techniques for maximum production in the cropping pattern and takes care of optimal utilization of resources. The farm wastes are better recycled for productive purposes in the integrated system. A judicious mix of agricultural enterprises like dairy, poultry, piggery, fishery, sericulture etc. suited to the given agro-climatic conditions and socio-economic status of the farmers would bring prosperity in the farming. At present, the farmers concentrate mainly on crop production which is subjected to a high degree of uncertainty in income and employment to the farmers. In this context, it is imperative to evolve suitable strategy for augmenting the income of a farm.

Objectives of the investigation

1. To ascertain the extent of awareness of integrated farming system by SC/ST farmers
2. To study the socio-psychological and economic characteristics of SC/ST farmers
3. To document different components of integrated farming system adopted by SC/ST farmers
4. To study the perception of SC/ST farmers about integrated farming system
5. To study the constraints faced and suggestions given by SC/ST farmers about integrated farming system

Methodology

The study conducted in Dharwad district of Karnataka during 2012-13. This district comprises of five taluks, of which three taluks namely Hubli, Kalghatagi and Kundgol were selected purposively, because in all these taluks the IFS scheme for SC/ST was implemented. From these taluks, five villages namely Kurdikere, Rravankoppa, Kalasankoppa, Mallali, and Jiglure were selected for the study purposively. From all these five villages, a total of 117 beneficiaries were selected for the study. Hence, the sample size of the study consists of 117 SC/St beneficiary farmers.

The data were collected from farmers by personal interview with the help of structured interview schedule. Data were analyzed by using appropriate statistical tools *viz*., frequency, percentage, mean, standard deviation and correlation.

Major findings of the study

1. It was found clear that 35.89 per cent of the respondents had high awareness followed by low 31.62% and medium 32.47%) awareness about IFS, respectively.
2. A maximum number of SC/ST farmers had high awareness about the fact that, IFS is an integrated crop and animal enterprises components (82.90%).
3. A large number of respondents had no awareness about the fact that, IFS solve the energy crisis (73.50%). followed by IFS reduce the degradation Agro forestry system (65.81%).

4. Diversified farming ensures employment to family member all round the year (26.49%). In IFS agri + poultry/dairy/sheep rearing, will increase the additional income (24.78%). IFS is an integrated crop and animal enterprises components (17.09%).
5. More than half of the respondents were under old age (56.42%) followed by middle age (35.04%) and young age (8.54 %).
6. Forty seven per cent of the farmers were illiterates followed by farmers who had studied up to primary school level (38.46%), middle school level and high school (4.27%), PUC (3.42%) and degree level (2.58%).
7. Majority of the respondents (47.86%) were marginal farmer, followed by small farmers (36.76%), medium farmers (11.96%) and large farmers (3.41%).
8. It was observed that 65.81 per cent of respondents had high farming experience (more than 28 years). Whereas, 16.24 per cent had medium level of farming experience (15-28 years) and 17.95 per cent had low experience (10-15 years) in farming activity.
1. The annual income of the IFS SC/ST farmers was Rs 11758.67 during 2010, with respect to soybean crop production in *kharif* season.
2. The annual income of the IFS SC/ST farmers was Rs 17190.52 during 2010, with respect to maize crop production in *kharif* season.
3. The annual income of the IFS SC/ST farmers was Rs 13733.35 during 2010, with respect to cotton crop production in *kharif* season.
4. The annual income of the IFS SC/ST farmers was Rs 14000.00 during 2010, with respect to jowar crop production in *kharif* season.
5. The annual income of the IFS SC/ST farmers with respect to vegetables. Income from brinjal crop was Rs 4825.00 during 2010, whereas it increased to Rs 7824.35 during 2011 and again decreased to Rs 4210.00 in 2012.
6. The annual income of the IFS SC/ST farmers from tomato crop was Rs 10466.67 during 2010, whereas it has decreased to Rs 6976.00 during 2011, and again decreased to Rs 6472.00 in 2012.
7. The annual income of the IFS SC/ST farmers was Rs 3386.25 during 2010, with respect to French bean production, whereas it was increased to Rs 3682.38 during 2011, and decreased to Rs 2936.43 in 2012.
8. The annual income of the IFS SC/ST farmers was Rs 3475 during 2010, for bhendi crop whereas it was decreased to Rs3343.08 during 2011, and increased to Rs3406.00 during 2012.
9. The annual income of the IFS SC/ST farmers from cucumber during 2010 was Rs2995.23, whereas it was decreased to Rs2758.82 during 2011, and increased to Rs2827.78 during 2012.
10. The result presented in table 4 indicated that over one fourth of IFS SC/ST farmers (25.64%) received cows during the year 2011 and got on an average net income of Rs 6225.33 and same farmers got on an average net income of Rs 6828.00 during the year 2012.
11. The result presented in table 4 indicated that less than one fourth of SC/ST farmers of IFS (23.93%) received buffalo during the year 2010 and got net income of Rs 6961.71. Whereas 44.44 per cent of farmers received buffalo during 2011 and gained the net income of Rs 7568.58 and same farmers got net income of Rs 8980.77 during the year 2012.
12. The result presented in table 5 indicate that more than one-third of SC/ST farmers of IFS (36.75%) received poultry birds during the year 2011 and generated net income of Rs 3193.48, whereas 63.24 per cent of IFS farmers received poultry birds and generate net income of Rs 5320.00 during 2012.
13. It was found that, none of the SC/ST were members of zilla panchayat and 17.09 per cent of them participated occasionally and 12.82 per cent of respondents expressed that zilla panchayat information was somewhat useful.
14. Most of the SC/ST farmers attended the krishimela (60.68%), followed by demonstration (41.03%), training programmes (29.06%), agriculture exhibition (28.21%), educational tours and field days (23.93%), field visits (22.22%), and group meeting (11.97%).

15. Education, Family size, land holding, farming experience, organization participation, extension participation, extension contact, mass media exposure, and Utility of income generated were positively and significant related with awareness, the other two variable age and annual income did not show significant relation with awareness of SC/ST farmers in IFS.
16. Education, Family size, land holding, farming experience, organization participation, extension participation, extension contact, mass media exposure, and Utility of income generated were positively and significant correlated with adoption, the other two variable age and annual income did not show significant relation with adoption of SC/ST farmers in IFS.
17. Education, Family size, land holding, farming experience, organization participation, extension participation, extension contact, mass media exposure, and Utility of income generated were positively and significant related with perception, the other one variable age did not show significant relation with perception of IFS farmers.
18. Majority of the SC/ST farmers (49.57%) were having high perception towards integrated farming system, while 22.22 per cent of them had low perception and the remaining 28.20 per cent belonged to medium level perception of IFS.
19. It was found that in table 15 dry land condition, IFS containing Agri + Goat/Sheep + Poultry + Agro forestry was found to be highly profitable as opined by highest number of respondents (95.72%) followed by Agri + Goat /Sheep + Poultry (94.87%).
20. It is observed that in dry land condition IFS containing Agri + Vermiculture was found to be profitable as opined by highest number of respondents (84.61%). followed by Agri + Biogas + Vermiculture (67.52%).
21. The table 15 also revealed that, in garden land condition IFS containing Horti + Sheep/Goat was found to be most profitable as opined by highest number of respondents (91.45%) followed by Horti + Dairy + Vermiculture + Apiculture.(89.74%), Horti + Apiculture + Diary (87.17%), Horti + Agriculture (82.05%), Horti + Dairy (74.35%), Horti + Poultry (70.08%), Horti + Dairy + Biogas (49.57%), Horti + Apiculture (14.52%) and Horti + Vermiculture (11.96%).
22. In garden land condition IFS containing Horti + Apiculture was found to be profitable as opined by highest number of respondents (77.77%) followed by Horti + Vermiculture (76.92%), Horti + Dairy + Biogas (40.17%), Horti + Poultry (25.64%), Horti + Dairy (19.65%), Horti + Agriculture (17.94%), Horti + Apiculture + Diary (12.82%), Horti + Dairy + Vermiculture + Apiculture (10.25%) and Horti + Sheep/Goat (8.54%).
23. Non availability of quality planting materials/breeds/species was the major constraint as opined by 96.58 per cent of SC/ST farmers followed by lack of the technical knowledge regarding IFS (87.17%).
24. Lack of knowledge in identification of pest and diseases was expressed by (84.61%) of SC/ST farmers followed by balanced use of fertilizers (81.19%).
25. In case of Situational constraints, limited and irregular power supply was greater constraint as opined by 84.61 per cent of SC/ST farmers followed by lack of suitable farm implements (82.90%) and 82.05 per cent of them expressed that labour and required inputs are not available in time.
26. Lack of custom hiring centers for agricultural operations (80.34%), inadequate irrigation facilities (78.63%).
27. In case of financial constraints, non availability of subsidy / credit in time was greater constraint as opined by 93.16 per cent SC/ST farmers followed by high initial cost of production (91.45%).
28. In case of marketing constraints, untimely payment for the produce was greater constraint as opined by 94.87 per cent of SC/ST farmers followed by fluctuations in the prices, (91.45%).
29. In case of organization constraints, non availability of clinical services for livestock was greater constraint as opined by 89.74 per cent of the respondents.
30. A great majority of SC/ST farmers suggested that they need training on IFS (95.72%) followed by extend market facilities at local level (90.59%) and organize demonstrations (82.90%).
31. Non availability of quality Planting materials/breeds/species was the major constraint as opined by 96.58 per cent of SC/ST farmers followed by lack of the technical knowledge regarding IFS (87.17%).

32. Lack of knowledge in identification of pest and diseases was expressed by (84.61%) of SC/ST farmers followed by balanced use of fertilizers (81.19%).
33. In case of Situational constraints, limited and irregular power supply was greater constraint as opined by 84.61 per cent of SC/ST farmers followed by lack of suitable farm implements (82.90%) and 82.05 per cent them expressed that labour and required inputs are not available in time.
34. Lack of custom hiring centers for agricultural operations (80.34%), inadequate irrigation facilities (78.63%).
35. In case financial constraints, non availability of subsidy / credit in time was greater constraint as opined by 93.16 per cent SC/ST farmers followed by high intial cost of production (91.45%).
36. In case of marketing constraints, untimely payment for the produce was greater constraint as opined by 94.87 per cent of SC/ST farmers followed by fluctuations in the prices, (91.45%).
37. In case of organization constraints, non availability of clinical services for livestock was greater constraint as opined by 89.74 per cent of the respondents.
38. A great majority of SC./ST farmers suggested that they need training on IFS (95.72%) followed by extend market facilities at local level (90.59%) and organize demonstrations (82.90%).

Implication and suggestions

In the light of findings of the study and from the personal experiences of researcher at the time of interviewing respondents, the following implications are made about different Integrated Farming Systems adopted by SC/ST farmers.

- As many as 31.62 per cent of the respondents are found in the less awareness category. Hence this call for intensification of efforts by all the concern to create more and more awareness about the IFS programme.
- It was found that education, family size, farming experience, land holding, extension participation, organization participation, extension contact, mass media exposure and utility of income generated were positively significantly related to awareness and usefulness of the programme. Hence these variables may be considered by the local change agents to educate the rural masses for popularizing IFS programme
- The study revealed that, in case of dry land situation the most profitable combination adopted by farmers were Agri + goat/sheep + poultry + agro forestry followed by Agri + goat rearing or Agri + sheep rearing. But in case of garden land Horti + sheep/goat rearing followed by Horti + dairy + vermiculture + apiculture. Hence, the govt and other concerned agencies may promote similar related enterprise in the rural areas to improve the socio economic conditions of the beneficiaries in rural areas.
- The extent of participation of beneficiaries in IFS programme was encouraging in all the stages of implementation. Hence, the agencies involved in rural development may use the participatory approach, to create awareness about IFS programme.
- The results of the study revealed that, the IFS programme has made positive and significant impact on increasing the respondents annual income. Hence, the implementation of Integrated Farming System programme needs to be continued in future with little modification.

Future line of work

- Due to the paucity of time and resource crunch of the student researcher, the study was limited to few taluks of Dharwad district. Hence more comprehensive study can be planned involving more area and more number of respondents focusing on all aspects of the integrated farming system programme/scheme.
- There is a need to study the knowledge and impact of beneficiaries and non beneficiaries of integrated farming system programme/scheme on socio-economic status at state level.

REFERENCES

Aghazia, Md., 2008, Training needs of onion cultivation in Afghanistan country. *M. Sc. (Agri.) Thesis*, (Unpub.), Acharya N. G. Ranga Agricultural University, Hyderabad.

Angadi, S. C., 1999, A study on knowledge, adoption and marketing pattern of pomegranate growers in Bagalkot district in Karnataka state. *M. Sc. (Agri.) Thesis*, (Unpub.), Univ. Agric. Sci., Dharwad.

Ankulwar, B. N., Jondhale, S. G. and Rangari, P. V., 2001, Extent of adoption of recommended package of practices of sunflower by the farmers. *Maharashtra J. Ext. Edu.,* 22:96-99.

Anonymous, 1978, International Encyclopedia of the social sciences, Crowell Collier and Mhillan inc, US.

Arulraj. S. and Ulagalandan,R., 1995, Early planting in sugarcane a perception analysis. *J. Ext. Edu*., 6(6): 1065-1070.

Arunkumar, Y. S., 1998, Economic evaluation of watershed development- a case study of Kuthangere micro-watershed in Karnataka. *Ph. D. Thesis*, (Unpub.), Univ. Agric. Sci.,Bangalore, Karnataka, India.

Behera, U. K., Jha, K. P. and Mahapathra, I.C., 2001, Generation of income and employment-A success story. *Intensive Agric*., 39(7-8):9-13.

Beheran, U. K. and Yates, C. M., 2008, Farming systems methodology for efficient resource management at the farm level: A review from an Indian perspective*. J. Agric. Sci.,* 146(5): 493-505.

Bhagwat, M.R and Gohad, V.V., 2003, Adoption of dry land cotton cultivation technology by the farmers, *Maharashtra J. Ext. Edu.,* 22(2):108-110.

Bharathamma, G. U., Angadi, J. G., Hirevenkanagoudar, L. V. and Natikar, K. V., 2006,Empowerment of rural women through income generating activities. *Karnataka J. Agric. Sci*., 19(3) : 600-602.

Binkadakatti, J. S., 2008, Impact of Krishi Vigyan Kendra (KVK) trainings on use of bio-fertilizers and bio-pesticides by Tur farmers in Gulbarga district. *M.Sc. (Agri.) Thesis*, (Unpub.), Univ. Agric. Sci., Dharwad (India).

Chandra Charan, V., 2005, Profile of sujala watershed project beneficiary farmers in Dharwad district. *M. Sc. (Agri.)* (Unpub.)*, Thesis*, Univ. Agric. Sci., Dharwad, Karnataka, India.

Chandra, N. N., Bhagirath, B. and Mishra, P., 2009, *Report on appraisal of processes and procedures of NREGS in Orissa: A study of Mayurbhanj and Balasore districts*. Indian Institute of Technology, Kharagpur, pp. 59-64.

Chandrani Saha, 2008, A study on sustainability of farming system and livelihood security among rural house hold in Tripura. *M.Sc. (Agri.) Thesis* (Unpub.), Univ. Agri. Sci., Bangalore.

Chandregowda, M. J. and Jayaramaiah, K. M., 1990, Impact of watershed development programme on socio-economic status, land productivity and income of small and marginal farmers. *Indian J. Ext. Edu*., 25(3&4): 44-47.

Channabasavanna, A. S., Biradar D. P., Prabhudev, K. N. and Mahabhaleswar Hegde, 2009, Development of profitable integrated farming system model for small and medium farmers of Tungabhadra project area of Karnataka. *Karnataka J. Agric. Sci.,* 22(1): 25-27.

Chinmay, B. and Singh, R., 2003, Integrated farming system: An intensive approach. *Intensive Agric.,* 41(7-8):22-23.

Chitra, B. M., 2010, A study on knowledge and adoption of improved practices in selected farming systems of Mandya district. *M.Sc. (Agri.) Thesis* (Unpub.), Univ. Agri. Sci*.,* Bangalore.

Clothe, G. D. and Borkar, M. M., 2000, Constraints faced by farmers in adoption of bio-fertilizers. *Maharashtra J. Ext. Edu*. 19: 298-299.

Dasaratharamaiah, K., Naidu, M. C. and Jayaraju, M., 2006, Women's empowerment through DWCRA – An empirical study. *Soc. Wel*., 52(12): 33-38.

Deepak, M. P., 2003, A study on perception of benefeciaries and non-beneficiaries towards WYTEP programme in Dharwad district. *M. Sc (Agri.), (Unpub.), Thesis,* Univ. Agric. Sci., Dharwad.

Deshmukh, B. A., Swathi, D.S. and Patil, S.S., 2010, Perception of rural youth about Adarsh Gaon Yojana. *J. Rural Dev.*, 29(1) : 35-41.

Dhamodaran, T. and Vasanth Kumar, J., 2001, Relationship between selected characteristics of registered sugarcane growers and their extent of adoption of improved sugarcane cultivation practices. *J. Ext. Edu.*, 12(2) : 3138 3143.

Dolli, S. S., 2006, Sustainability of natural resources management in watershed development project. *Ph. D. Thesis* (Unpub.), Univ. Agri. Sci., Dharwad.

Ganesh Prasad, T.S., 2006, An analysis of adoption, marketing and constraints of turmeric growers in Chamarajanagar district. *M.Sc. (Agri.) Thesis* (Unpub.), Univ. Agri. Sci., Bangalore.

Gattu, C. K., 2001, Production constraints of turmeric cultivation in Karimnagar district of Andhra Pradesh. *M.Sc. (Agri.) Thesis*, (Unpub.), Acharya N. G. Ranga Agril. Univ., Hyderabad.

Gopinath, M., 2005, Knowledge and adoption of bengalgram farmers in Kurnool district of Andhra Pradesh. *M.Sc. (Agri) Thesis*, (Unpub.), Acharya N.G. Ranga Agril. Univ., Hyderabad.

Goudar, G. B., 1997, A study on role perception and role performance of link workers under WYTEP programme. *M. Sc. (Agri.),* (Unpub.), *Thesis,* Univ. Agric. Sci., Dharwad, Karnataka (India).

Gupta, V., 1999, A study on the knowledge and adoption behavior of rice growers in Jammu district of Jammu and Kashmir state. *M. Sc. (Agri.), Thesis*, (Unpub.), Univ. Agric. Sci. Dharwad, Karnataka, India.

Gurprit Singh Dhillon and Kuldip Kumar, 2004, Adoption of improved menthe cultivation, *Indian J. Ext. Edu.,* 40:40-43.

Hardikar, D. P., 1998, Perception of development programme and benefits derived by women beneficiaries of Ratnagiri district (Maharashtra). *Ph. D. Thesis*, (Unpub.), Univ. Agric. Sci., Dharwad, Karnataka (India).

Heimstra, N. W. and Ellingstad, V. S., 1972, Human Behavior: A System Approach, Wadsworth publishing co. California.

Hemalatha Prasad, C. and Om Prakash, 1997, Sustainable employment for women – Mahila Chetna Manch shows the way. *Gramin Vikas Newsletter*, 13(6): 13-15.

Hommes, T. D., 1997, Self help group in Vietnam. Development and Cooperation, 5: 25-26.

Hosamani, M. M., 1999, Research extension linkage in IFS development. *Lecture Notes of Summer Short Course on Farming Systems for Sustainable Production,* Univ. Agric. Sci. Dharwad, pp. 266-269.

Ismal, M. R., Biswas, J. C. and Islam, M. N., 2002, Correlates of some selected characteristics of FFS farmers with their integrated pest management skill. *Bangladesh J. Train. and Dev.,* 15(1/2): 75-80.

Itnal, C. J., Hundekar, S. T., Warad, S. M. and Itnal, M. C., 1999, Farming system-A rational approach for sustainable agriculture. *Lecture notes of summer short course on Farming System for sustainable production*, Univ. Agric. Sci., Dharwad, pp. 53-73.

Jadhav, H. V., 2000, a study on correlates of socio-economic status of tribal farmers. *M. Sc. (Agri.) Thesis,* (Unpub.), *Dr Babasaheb Kondkan Krishi Vidya Peth* (D B. K. K. V), Dapoli.

Jahagirdar, A. K. and Sundaraswamy, B., 2002, Adoption of recommended practices of tomato cultivators 2002 .*Agril. Ext. Rev.,* 14(3): 12-16.

Jayanth, C., Mythrili, S., Balusamy, M., Shakthivel, N. and Shankaran, N., 2003, Integrated nutrient management through residue recycling in low land integrated farming system. *Madras Agri. J.*, 90(1-3):103-107.

Jayanthi, C., Rangasamy, A. and Chinnusamy, C., 1998, Economic efficiency of component linkage in lowland integrated farming system: *Madras Agril. J.,* 84(8): 498-504.

Jha, D., 2003, An overview of farming systems research in India. *Ann. Agril. Res.*, 24(4):695-706.

Jyothi, D., 2012, Perception of Bhagyalakshmi Scheme by rural women of Dharwad district. *M. Sc. (Agri.) Thesis*, (Unpub.), Univ. Agric. Sci., Dharwad.

Kadam, R. P., 1999. A study on knowledge, cultivation practices followed and marketing behavior of sweet orange growers in Nanded district, Maharashtra state, *M. Sc. (Agri.) Thesis*, (Unpub.), Univ. Agric. Sci., Dharwad, (India).

Kalaskar, A. P., Shinde, P. S., Bhople, R. S. and Geete, M. H., 2001, Factors influencing knowledge of cotton growers about integrated pest management practices in cotton. *Maharashtra J. Ext. Edu.*, 16 : 386-399.

Kella Lakshmana, Iqbal, I. M., Netaji Seetharaman, R. and Reangaswamy, R., 2002, Research in field extension- An approach for sustainability. *MANAGE Extn. Res. Rev.*, 111(2):109-112.

Kenchanagoudra S. M., 2007, An analytical study on sampoorna grameen rozgar yojana (sgry) in Gadag district of Karnataka state *M. Sc. (Agri.) Thesis*, (Unpub.), Univ. Agric. Sci., Dharwad

Khare, Y. ., Khare, N. K. and Dubey, M. K., 1998, Role perception and attitude of village panchayat sarpanchs towards agricultural development. *Maharashtra J. Ext. Educ.,* 17 : 49-52.

Kiran, T. R., 2007, Perception of organizational climate by scientists of University of Agricultural Sciences Dharwad. *M. Sc. (Agri.) Thesis*, (Unpub.), Univ. Agric. Sci. Dharwad.

Kishorbabu, B., 2004, Marketing Behaviour of vegetable growers in Ranga Reddy district of Andhra Pradesh. *M. Sc. (Ag) Thesis*, Acharya N. G. Ranga Agricultural University, Hyderabad.

Krishnamurthy, B., Ranganath, A. D. and Vanitha, C., 2004, Constraints in adoption of integrated pest management practices by rice farmers. *Indian J. Ext. Educ.,* 40:101-102.

Kubde, V. R. and Waghdhare, K. W., 1996, Perception of extension personnel and contact farmers about functioning of training and visit system. *Maharashtra J. Ext. Educ.*, 15 : 151-155.

Kumar, H. S., 1998, A study on knowledge, adoption and economic performance of banana growers. *M. Sc. (Agri.) Thesis*, Univ. Agric. Sci., Bangalore.

Lakshminarayan, M. T., 1997, Adoption of sustainable sugarcane farming practices – An analysis. *Ph. D. Thesis*, *(Unpub.),* Univ. Agric. Sci., Bangalore, Karnataka, India.

Lavanya, S., 2010, Assessment of farming systems efficiency in Theni district of Tamil Nadu. *M. Sc. (Agri.) Thesis* (Unpub.), Univ. Agri. Sci., Bangalore.

Madhusekhar, B. R., 2009, A study on marketing behaviour of chilli growers in guntur district of Andhra Pradesh. M.Sc. *(Agri.)* Thesis, (Unpub.), Acharya N. G. Ranga Agricultural University, Hyderabad.

Malathesh, G.B., 2004, An Analysis of selected farming system in eastern dry zone of Karnataka, *M. Sc. (Agri.) Thesis* (Unpub.), Univ. Agri. Sci., Bangalore.

Mangala, B., 2008, Impact of integrated farming system on socio-economic status of BAIF beneficiary Farmers *M.Sc. (Agri.) Thesis* (Unpub.), Univ. Agri. Sci., Dharwad.

Manjunth, B., 2011 "A Study on Knowledge and Adoption of Bt Cotton Recommended Production Practices Followed By Farmers in Raichur District of Karnataka". *M. Sc. (Agri.) Thesis*, (Unpub.), Univ. Agric. Sci., Raichur, Karnataka, India.

Meeran, M. N. and Jayaseelan, M. J., 1999, Socio-personal, socio-economic and socio psychological profile of shrimp farmers. Indian. *J. Ext. Edu.*, 10 (2): 2445-2448.

Mehta, P. G., Sawant, and Nirban, A.J., 1989, Knowledge of farmers in respect of selected agricultural practices of rice and mango crops. *Maharashtra J. Ext. Edu.*, 8: 167-178.

Mitchell, B., 1973, An Analysis of the perception of the role of subordinate and super ordinate with respect of authority responsibility and delegation in the community schools of flint at the attendance centre level. *Ph.D. Thesis,* (Unpub.), *Univ. Agril. Sci.,* Bangalore.

Moulasab, I., 2004, A study on knowledge and adoption of improved cultivation practices by mango growers of North Karnataka, *M.Sc. (Agri.) Thesis* (Unpub.), Univ. Agri. Sci., Dharwad.

Moulasab, I., Jahagirdar, K. A., Hirevenkanagoudar, L. V. and Chandargi, D. M., 2006, A study on knowledge level of improved cultivation practices by mango growers of North Karnataka. *Karnataka J. Agric. Sci*., 19(2): 435-436.

Muni Kishore S., 2006, Beneficiaries' attitude and project facilitation services of sujala watershed project. *M. Sc. (Agri.) Thesis*, (Unpub.), Univ. Agric. Sci, Dharwad.

Murugan, G. and Kathiresan, R.M., 2005, Income and economic efficiency under low land integrated farming systems. *Res. Crops*, 6(2): 234-236.

Nagananda, C., (2005), Study of organizational climate perception of Assistant Directors of Agriculture and Agricultural officers of KSDA, M.Sc. (Agri.) Thesis, (Unpub.), Uni. Agric. Sci. Dharwad (India).

Nagaraja, G. N. and Yellappa, E., 2002, Economic impact of integrated farming system demonstrations on participating farmers, Univ. Agri. Sci., Bangalore, 32-34.

Nagesha, P.N., 2005, Study on entrepreneurial behaviour of vegetable seed producing farmers of Haveri district. *M. Sc. (Agri.) Thesis*, (Unpub.), Univ. Agril. Sci., Dharwad.

Nagpal,A. and Yadav,L.,1991, Impact of Biogas on Rural women. *Maharashtra J. Ext. Educ*., 10 (2): 343-345.

Naidu, V, G., Gopal, T. and Nagabhushan, K., 2009, Impact of NREGA on the living conditions of rural poor. *Southern Econ*., 49(7) : 17-20.

Narayanan, A. V. G. and Sarvanan, T. P., 2011, A study on customers' perception towards general insurance products (livestock & crop insurance) with special reference to erode rural, Tamil Nadu, India. *European J. Soc. Sci.,* 25 (2): 219-232.

Natikar, K. V., 2001, Attitude and use of farm journal by the subscribers farmers and their profile. A critical analysis. *Ph. D. Thesis*, (Unpub.), Univ. Agric. Sci., Dharwad, Karnataka, India.

Navjyoti, J., 2009, Employment guarantee and women empowerment in rural India, *Report of the Working Group on Empowerment of Women for the XI Plan*. Ministry of Rural Development.

Nimbalkar, S. O. and Pawar, R. S., 1990, Perception of televiewers towards farmprogramme. *Maharashtra J. Ext. Edu*., 9: 157-160.

Ninga Reddy., 2005, A study on knowledge, extent of participation and benefit derived by participation farmers of the watershed development programm in Raichur district of Karnataka state. *M. Sc. (Agri.) Thesis,* (Unpub.), Univ. Agric. Sci., Dharwad, Karnataka, India.

Nirmala, B., 2003, Impact of watershed development programme on socio-economic dimensions of beneficiaries in Rangareddy district of Andhra Pradesh. *M. Sc. (Agri.) Thesis*, (Unpub.), Univ. Agric. Sci., Dharwad, Karnataka, India.

Padmaiah, M. and Ansari, M. R., 1997, Attributes influencing the perception about usefulness of watershed development programme. *J. Ext. Edu*., 8(5) : 1615-1619.

Padmaiah, M., 1995, Watershed Development Programmes in Mahabubnagar district of Andhra Pradesh. A diagnostic study. *Ph.D. Thesis (Unpub.)* UAS, Dharwad.

Patel, B. S. and Patel, R.B., 1993, Image regarding lab to land programme in South Gujarat. *Maharashtra. J. Ext. Edu*., 12: 229-230.

Patil,S.L., 1994, National Agricultural Extension Project on perceived by farmers and extension personnel at Department of Agriculture-Karnataka *Ph. D. Thesis* (Unpub.), Univ. Agril. Sci., Dharwad.

Paumolee, M. and Disha, P. M., 2009, *A report on study of implementation of NREGS: Focus on migration*. Ministry of Rural Development, pp. 27-28.

Pottappa, K., 2008, Knowledge and adoption of potato growers in Chikkaballapur district – A study, *M.Sc. (Agri.) Thesis (Unpub.)*, Univ. Agri. Sci., Bangalore.

Premkumar. N. and Rahulkumar, A., 1992, How does DWCRA scheme operates – A case study. *Kurukshetra*, 11 (5): 24-29.

Pushpa J., 2010, Constraints in various integrated farming systems. *Agriculture-update*. 5(3&4):370-372.

Pushpa, J. and Netaji Seetharaman, R., 1999, Impact on income and employment of farmers in various integrated farming system. *J. Ext. Edu.,* 10(4): 2628-2630.

Radhamani, S., Balasubramanian, A., Ramamoorthy, K. and Geethalakshmi, V., 2003, Sustainable integrated farming systems for dry land. *Agril. Res.,* 24(3): 204-210.

Raghavendra Naik, 2007, A study on management practices of pineapple growers in Karnataka. M. Sc. (Agri.) Thesis, *(Unpub.),* Univ. Agric. Sci., Dharwad, Karnataka, India.

Rajashekhar, T. B., 2009, An analysis of technological gap in papaya cultivation in Bidar and Gulbarga districts of North Karnataka. *M. Sc. (Agri.) Thesis*, (Unpub.), Univ. Agric. Sci., Dharwad.

Raju, A., 2002, Analysis of selected factors responsible for sustainability of major crops production in a watershed area as perceived by farmers in Medak district of Andhra Pradesh. *M. Sc. (Agri.) Thesis*, (Unpub.), Acharya N. G. Ranga Agricultural University, Hyderabad.

Rajvendra Bagri and Kinjulck. C., 2012, Perception of Farmers towards Seed Village Programme in Madhya Pradesh. *Mysore J. Agric, Sci.,* 46(3):628-633.

Ram Suresh And Hubba Lal Singh, 2008, Income and employment generation in mixed farming systems in Gonda district of Uttar Pradesh, *Agric. Sci. Digest*., 28(2):121 - 123.

Rama Mohan Rao, M. S., 1996, Soil and water conservation through watershed management in the semi-arid region of south India in watershed development. Proceedings of paridas Int. workshop on W. D, WDVC, New Delhi.

Ramana Rao, 2005, General studies for agricultural research services and other competitive examination .*Jain Brothers New Delhi*, 4 (9).

Ramesh, P. and Santha Govind, 2008, Extent of adoption and Relationship between the characteristics of organic farmers and their adoption level. *Mysore J. Agric. Sci.,* 42(3): 526-529.

Ramrao, W. Y., Tiwari, S. P. and Singh, P., 2005, Crop-livestock integrated farming system for augmenting socio-economic status of small holder tribal of Chhattisgarh in Central India. *Livestock Res. Rural Devel.,* 17: 25-28.

Rangasamy, A., 1999, In lecture notes of summer short course on farming systems for sustainable production. *M. Sc. (Agri.) Thesis,* (Unpub.), *Univ*. Agric. Sci., Dharwad.

Rangi, P. S., Sidhu, M. S. and Harjit Singh., 2002, Economic empowerment of rural women through self help groups: *A case study of Fategarh Sahib district, Punjab*, 24(3): 65078.

Ratanakar and Reddy, S.M., 1991, Knowledge level of tribal farmers about recommended farm practices. *Indian J. Ext. Edu*., 27(3&4):91-94.

Rathore, S. S. and Bhatt, B. P., 2008, Productivity improvement in jhum fields through integrated farming system. *Indian J. Agric. Sci.,* 53(3):167-171.

Ratnakar, R., 1990, Impact of ITDA on tribal farmers of Khammam district of Andhra Pradesh. *M. Sc. (Agri.) Thesis*, (Unpub.), Andhra Pradesh Agric. Univ., Hyderabad

Ratnakar. R.and Sudharshan Reddy, M.S., 1991, Tribal farmers perception ITDA programmes. *Maharashtra J .Ext. Edu*., 10(2):p75-78

Ravishankar, K., 2005, Agricultural wealthier forecasting impct and analysis in Andhra Pradesh. *Ph. D. Thesis*, (Unpub.), Acharya N. G. Ranga Agril. Univ., Hyderabad

Sadek, N. F. and Oktarani, Y. P., 2009, Consumer knowledge and perception about organic food: A challenge for consumer education on the benefits of going organic. *Asian J. Food Agro-Industry,* 2(1): 5363-5367.

Sahana, 2003, A Study on knowledge and attitude of farmers and extension personnel towards functioning of RSKs in Shimoga district. *M. Sc. (Agri.) Thesis,* (Unpub.), *Univ*. Agric. Sci., Bangalore.

Saikrishna, M., 1998, A study on knowledge on paddy cultivation practices an adoptionbehaviour Andhra migrant farmers in Raichur district. *M. Sc. (Agri.) Thesis*, (Unpub.), Univ. Agric. Sci., Dharwad, Karnataka, India.

Sajithkumar, K., 2004, Adoption of recommended package of practices by the coconut farmers of Mahe region of Union territory of Pondicherry. *M. Sc. (Agri.) Thesis*, (Unpub.), Acharya N. G. Ranga Agril. Univ., Hyderabad.

Sakharkar, V. S., 1995, A study on knowledge, fertilizer use pattern and constraints in the cultivation of soybean by farmers of Nagpur district, Maharashtra. *Ph. D. Thesis*, (Unpub.), Univ. Agric. Sci., Dharwad, Karnataka, India.

Sanjeev Kumar Singh, S. S. and Shivani Dey, A., 2011, Integrated farming systems for Eastern India. *Indian J. Agron.,* 56(4):297-304.

Saravankumar, R., 1996, A study on management of mango gardens by the farmers in Krishnagiri taluk of Dharmapuri district. *M. Sc. (Agri.) Thesis*, (Unpub.), Univ. Agric. Sci., Dharwad, Karnataka, India

Sawant, P. A., 1999, An experimental study on the effectiveness of different modes of presentation of information on mushroom cultivation through television. *Ph. D. Thesis*, (Unpub.), Univ. Agric. Sci., Dharwad, Karnataka, India.

Shanthamani, G., 2007, A critical analysis of MYRADA (ngo) programme in gulbarga district, *M. Sc. (Agri.) Thesis*, (Unpub.), Univ. Agric. Sci., Dharwad.

Sharma, S. K., 2006, Study on functioning of Kisan Seva Kendras in Udaipur district of Rajasthan.*M. Sc. (Agri.) Thesis*, (Unpub.), Univ. Agric. Sci., Dharwad.

Shashidhara, K. K., 2003, A study on socio-economic profile of drip irrigation farmers in Shimoga and Davangere district of Karnataka. M. Sc. (Agri.) Thesis, (Unpub.), Univ. Agric. Sci., Dharwad, Karnataka, India.

Shewathe B. M. 2012 Comparative analysis of integrated farming systems practiced by farmers in mandya district of Karnataka". *M. Sc. (Agri.) Thesis*, (Unpub.), Univ. Agric. Sci., Bangalore, Karnataka, India.

Shrivastav, K. K., Sarkar, J. D. and Lakhera, 2002, Adoption behaviour of farmers about chilli cultivation technology, *Maharashtra J. Ext. Edu.,* 21 (1):58-61.

Siddappa, C. A., 1999, Study on knowledge, adoption and marketing pattern o pomegranate growers in Bagalkot district. *M. Sc. (Agri.) Thesis*, (Unpub.), Univ. Agri Sci., Bangalore.

Sinha, R. R., Bhople, R. S. and Shinde, P. S., 1994, Differential perception of concept of feedback by the field level extension personnel in training and visit system. *Maharashtra J. Ext. Edu.*, 13 : 171-173.

Sivamuruga, A. P. and Saravanane, P., 2008, Integrated farming systems for sustaining productivity in irrigated uplands. *International J. Agric. Sci.,* 4(2):506-509.

Sivasubrahmanian, J., 2003, Impact of coconut development schemes among coconut growers. *M. Sc. (Agri.) Thesis*, (Unpub.), Annamalai University, Tamilnadu.

Snehalatha, M. and Reddy, M. N., 1998, Impact of thrift and credit groups in income generation of rural women. *J. Ext. Edu.*, 9 (2):2031-2032.

Sowjanya, 2007, A comparative analysis of successful and unsuccessful self-help groups in gadag district of Karnataka. *M. Sc. (Agri.) Thesis*, (Unpub.), Univ. Agri. Sci., Dharwad.

Srinivasareddy, M. V., 1995, A study on knowledge and adoption of recommended mango cultivation practices among farmers of Kolar district. *M. Sc. (Agri.) Thesis*, *(Unpub.),* Univ. Agric. Sci., Dharwad, Karnataka, India.

Subrahmanyam, I., 2002, A study on the impact of Agricultural Market Committee level Training Programmes in Nellore district of Andhra Pradesh. *M.Sc. (Agri.) Thesis, (Unpub.),* Acharya, N. G., Ranga Agril. Unvi., Hyderabad.

Sudheendra, M. and Hirevenkanagoudar, L. V., 2005, Relationship between characteristics of beneficiaries and their knowledge about their joint forest management programme. *Karnataka J. Agric. Sci*., 18(2) : 426-429.

Sudheendra.M., 1986, A study on knowledge, perception and adoption pattern by f armers about sunflower (Helianthus annus L.) crop in selected taluks of Chitradurga district. *M. Sc. (Agri.) Thesis* (Unpub.), Univ. Agri. Sci. Bangalore.

Sunilkumar, G. M., 2004, A study on farmer's knowledge and adoption of production and post harvest technology in Tomato crop of Belgaum district in Karnataka. M. Sc. (Agri.) Thesis, (Unpub.), Univ. Agric. Sci., Dharwad (India).

Suresh, 2004, Entrepreneurial behaviour of milk producers in Chittoor district of Andhra Pradesh – A critical study*. M. V. Sc. The*sis, Acharya N. G. Ranga Agric. Univ., Hyderabad.

Thangavel, N. R., Subramanian, R. and Kartikeyan, C., 1996, Characteristics of buffalo farmers*. J. Extn. Edu*., 7(1): 1307-1309

Thejaswini, C. N., Chandrashekar, V. and Narayana Gowda, K., 2004, Performance of farm women in agriculture and income generating activities. Manage *Ext. Res. Rev*., pp. 68-73.

Thiranjangowda, B. T., 2005, A Study on knowledge and adoption level of soil and water conservation practices by farmers in north Karnataka. *M. Sc. (Agri.) Thesis*, Univ. Agric. Sci., Dharwad, Karnataka, India.

Toor, M. S., Sidhu, A. S. and Sukhpreet Singh, 2009, Integrated farming systems for income and employment increasing possibilities on small farms in Punjab State. *Agricultural Situation in India.* 66(9): 519-524.

Ugwumba, C. O. A., Okoh, R. N., Ike, P.C., Nnabuife, E. L. C. and Orji, E. C., 2010, Integrated farming system and its effect on farm cash income in awka south agricultural zone of Anambra State, Nigeria*. American-Eurasian J. Agric. & Environ. Sci*, 8 (1): 01-06.

Vani, M., 2005, A study on farming system approach: Socio-psychological and economic dimensions of farming system approach in Chitradurga district of Karnataka state. *M.Sc. (Agri.) Thesis* (Unpub.), Univ. Agri. Sci., Bangalore.

Varadaraju, G.M., Ranganath Mangalvedkar and Chandre Gowda, K.N., 2009, Adoption of production technologies by tomato growers: An Analysis. *J. Exten. Educ*., 21(3): 4256-4260.

Vedamurthy, H. J., 2002, A study on the management of areca gardens and marketing pattern preferred by the arecanut farmers of Shimoga district in Karnataka *M. Sc. (Agri.) Thesis*, (Unpub.), Univ. Agric. Sci., Dharwad, Karnataka, India.

Vedwan N. and Rhoades, R. E., 2001, Climate change in the Western Himalayas of India: a study of local perception and response. *Climate Res.,* 19: 109–117.

Venkataramalu, 2003, A study on knowledge level, adoption and marketing behaviour of chilli growers in Guntur district of Andhra Pradesh. *M. Sc. (Agri.) Thesis,* (Unpub.), Univ. Agric. Sci., Dharwad, Karnataka, India.

Vinaykumar, K., 2005, A study on knowledge and adoption of rose growing farmers in Karnataka. *M. Sc. (Agri.) Thesis*, (Unpub.), Univ. Agric. Sci., Dharwad, Karnataka, India.

Vishvanath Hiremath, Shivamurthy, M., Lakshman Reddy, B.S., Kattepa, Y. 2009, Adoption behaviour of vegetable growers regarding Eco-friendly technologies in Kolar district of Karnataka, *Mysore J. Agric. Sci*., 43(2): 352-356.

Vivekananada, 1999, Problems and prospects of agricultural development in Karnataka occational paper-9 NABARD.

INTERVIEW SCHEDULE

TITTLE OF THE RESEARCH: "Awareness and perception of integrated farming system by SC/ST farmers."

PART I

Respondent No.

1. General information

1. Name of the farmer
2. Village: _____, Taluk: _____, Dist: _____

2. Socio-economical and psychological characteristics.

1. Age: _____in complete year

2. Education: Illiterate/ Primary school / Middle school / High school / PUC / Degree

3. Family size (Single /Joint)

Sl no	Name	Relation	Occupation	Age
1	Men			
2	Women			
3	Children			
4	Total			

4. Size of the land holding (ha)

Sl. No.	Type of land	Area owned	Area leased (acre)		Total area (acre)
			Leased in	Leased out	
1	Land				
a	Dry land				
B	Wet land				
c	Garden land/orchard				

5. Farming experience: _____ incomplete years in agril field

6. Annual income (Rs.)

1. Agriculture

Season	Kharif												Rabi												Summer											
	2010				2011				2012				2010				2011				2012				2010				2011				2012			
Crops																																				
Area																																				
Grain yield																																				
Gross income																																				
Total expenditure																																				
Net income																																				

2.Horticulture

Vegetables

Crop	Brinjal			Tomatto			Frence bean			Bhendi			Cucumber		
year	2010	2011	2012	2010	2011	2012	2010	2011	2012	2010	2011	2012	2010	2011	2012
Crops															
Total Yield															
Gross income															
Total expenditure															
Net income															

3.Dairy

a. Cow

Sl no	Year	No.	No. of milking Days	Total Milk production		Price /litre	Total Income	Total expenditure
				Per day	Per month			
1.	2010							
2.	2011							
3	2012							

b. Buffalow

Sl no	Year	No.	No. of milking Days	Total Milk production		Price /litre	Total Income	Total expenditure
				Per day	Per month			
1.	2010							
2.	2011							
3	2012							

4. Poultry

Sl No	year	No. of birds	Eggs production	Production cost	Gross income	Net income
1	2010					
2	2011					
3	2012					

5. Vermicompost

Year	Vermicompost production/ year in tonnes	Price /ton	Total expenditure	Total income	Net income
2010					
2011					
2012					

7. Organizational / social participation:

Pleas mention the response to the following: **Yes/No**

Sl. No.	Name of the organization	Membership		Extent of participation		Extent of usefulness	
		Member	Non member	Regular	Occasional	Most useful	Somewhat useful
1	Zillah panchayat						
2	Taluk panchayat						
3	Gram panchayat						
4	Mahila Mandal						
5	Cooperative society						
6	Youth clubs						
7	Raitha Samparka Kendra						
8	Raita sanghas						

8. Extension Participation

Sl. No.	Extension activity	Attended		Extent of participation		
		Yes	No	Regular	Occasional	Never
1	Krishi melas					
2	Demonstrations					
3	Field visits					
4	Agriculture exhibitions					
5	Educational tours					
6	Training programmes					
7	Field days					
8	Group meetings					

9. Extension contact:

Sl. No.	Extension worker	Frequency of contact			
		Once in a week	Once in a 15 days	Whenever problem arise	Never
1.	AA				
2.	AAO				
3.	AO				
4.	ADA				
5.	Scientist of UAS				
6.	Private Agency Extension Officer				

10. Mass media participation:

Sl. No.	Mass media source	Subscriber/ Possessed	Programmes	Frequency of use		
				Regular	Occasional	Never
1	Radio		i) Agriculture Programmes, News, advertisement			
			ii) General Programmes			
2	Television		i) Agriculture Programmes			
			ii) General Programmes, agril information, news, entertainment			
3	News Paper		i) Agriculture Programmes, news, entertainment			
			ii) General Programmes			
4	Farm Magazine		i) Agriculture Programmes, advertisment & articles			
			ii) General Programmes			

11. Utility of income generated

Income earned is used for

Sl. No.	Items on which the amount is spend	Yes	No
1	Livelihood security		
2.	Family Nutritional		
3.	Health expenses		
4.	Education of children		
5.	To perform rituals/festivals/family functions		
6.	To repay the loans		
7.	For social/organizational recognition		
8.	Investment on land property		
9.	Savings		
10.	Further investment on income generated assets		

Part-II

I) Extent of awareness of integrated farming system by SC/ST beneficiary

Sl. No	Awareness	Aware	Not Aware
1	IFS is an combination of crop and animal enterprises.		
2	Different combination of enterprises helps in maximizing the annual income		
3	Adoption of crop rotation like (cereals+legumes) will improve the soil health.		
4	IFS is ecofriendly & ecologically technology.		
5	IFS reduce the degradation Agro forestry system.		
6	Adoption of IFS practice increases yield		
7	IFS improve the standard of living of beneficiary.		
8	Diversification of enterprises leads to sustainable income throughout the year.		
9	In IFS agri+Horti combination adds to more income.		
10	production & productivity per unit area will increase, through IFS.		
11	IFS Solve the energy crisis.		
12	IFS makes recycling of farm waste in efficient way in rural area.		
13	Diversified farming ensures employment to family member round the year.		
14	IFS practice improves/updates the knowledge of the beneficiary.		
15	In IFS agri+poultry/dairy/sheep rearing, will increase the additional income		
16	Beneficiary will be aware of insurance coverage in case of dairy enterprise.		
17	Helps in efficient management of pest and diseases.		
18	IFS reduce the cost of cultivation.		
19	Provides knowledge regarding subsidy available.		
20	A farm with several enterprises produces adequate proof a giant uncertainties in farm yield		

II) To document the profitable system of integrated farming system adopted by SC/ST beneficiaries

Sl. No	Practice	Most Profitable	Profitable	Least Profitable
A	Dry Land			
1	Agri+Sheep rearing			
2	Agri+Goat rearing			
3	Agri+Poultry			
4	Agri+ Dairy			
5	Agri+ Vermiculture			
6	Agri+ Agro forestry			
7	Agri+ Goat + Agro forestry			
8	Agri + Goat /Sheep + Poultry			
9	Agri + Goat/Sheep + Poultry + Agro forestry			
10	Agri + Biogas + Vermiculture			
11	Agri + Azolla farming			
B	Garden Land			
1	Horti+Agriculture			
2	Horti+Dairy			
3	Horti+Poultry			
4	Horti+Sheep/Goat			
5	Horti+Apiculture			
6	Horti+Vermiculture			
7	Horti+Apiculture+Diary			
8	Horti+Dairy+Biogas			
9	Horti+Dairy+Vermiculture+Apiculture			

III) Beneficiaries perception of Integrated Farming System

Sl. No	Farmer perception of IFS	Most useful	useful	Less useful
1	IFS increases productivity by way of increase in economic gain per unit area.			
2	Supply of balanced and nutritious food to family due to combination of various enterprises.			
3	IFS help in improving the knowledge and skill of beneficiary.			
4	IFS mitigate ecosystem of forest.			
5	IFS improve the standard of living of beneficiary.			
6	IFS increase the income of the beneficiary because of different combination of enterprise.			
7	IFS make the beneficiary conscious about farm management.			
8	Combination of different enterprises will increase the productivity by way of increasing the economic yield per unit area.			
9	IFS help in efficient recycling of the farm bio-mass and animal waste.			
10	Ensure the complimentary combination of farm enterprises.			
11	Planting trees on bund will reduce the degradation of forest.			
12	Better use of farm by-products from the various enterprises			
13	Timber and fire wood required for domestic purpose will be met through IFS system without affect the natural forestry.			
14	Supply of smokeless chullas and biogas will mitigate the fuel crisis			
15	In IFS Combination of enterprises will reduce the production cost to some extent			
16	IFS make sustainable family income throughout the year.			
17	Sustainable soil fertility and productivity by way of organic waste recycling.			
18	IFS units act as model in agricultural development in the local area.			
19	IFS lead to pollution free environment because of efficient recycling of organic waste from different enterprises.			
20	Complimentary combination of farm enterprises creates self-employment to the beneficiaries throughout the year.			
21	Multiple combination enterprises will give more benefit to the beneficiary.			
22	Adoption of complimentary enterprises as a whole increases the input use efficiency.			
23	Improves the soil health			

IV) Constraints faced and suggestion given by SC/ST beneficiary about integrated farming system

Sl. No.	Constraints	Responses	
		Greater Extent	Lesser extent
Production constraints			
1.	Non availability of quality planting materials/breeds/species		
2.	Lack of knowledge regarding identification of pest and diseases		
3.	Lack of the technical knowledge regarding IFS		
4.	Lack of resistant varieties / breeds for various pests and diseases		
5.	Lack of knowledge on balanced use of fertilizer		
Situational constraints			
1.	Inadequate irrigation facilities		
2.	Limited and irregular power supply		
3.	Non-availability of labour in peak seasons		
4.	Lack of custom hiring centers for agricultural operations		
5.	Non availability of quality inputs in required quantity and in required time		
6.	Lack of suitable farm implements		
Financial constraints			
1.	Lack of timely availability of credit		
2.	High rate of interest on borrowings		
3.	High initial cost of production		
4.	Non availability of subsidy / credit in time.		
5.	Loan disbursement procedure is cumbersome		
Marketing constraints			
1.	Lack of marketing facilities at local level		
2.	Fluctuations in the prices		
3.	No storage facilities for perishable farm produce		
4.	Untimely payment for the produce		
5.	Lack of exclusive markets		
6.	Problem of transportation		
7.	Exploitation by the middleman		
8.	Low price for the produce		
Organization constraints			
1.	Lack of timely guidance by extension agencies		
2	Lack of capacity building programmes		
3	Non availability of clinical services for livestock		
4	Lack of demonstrations to prove the worthiness of the technology		
5	Non availability of extension personnel.		
6	Information is not covered by media/radio/news paper		

Any suggestions:-

1. Provide training about IF
2. Provide marketing facilities at local level
3. Conduct demonstrations on IFS to increased the confidence
4. Supply of quality inputs at village level at required time
5. Remove middle man in the marketing of agriculture produce
6. Improve the transportation facilities
7. Provide credit facilities to IFS farmers.
8. Use ICT tools (tv,radio, news papper,farm magazines etc) in TOT of IFS

AWARENESS AND PERCEPTION OF INTEGRATED FARMING SYSTEM BY SC/ST FARMERS

MD. YOUNUS **2013** **Dr. MANJULA N.**
Major advisor

ABSTRACT

A Study on “Awareness and perception of integrated farming system by SC/ST farmers” was undertaken during 2012-13 with a sample of 117 farmers. The data was collected by personal interview method using structured schedule to assess the awareness and perception of farmers regarding integrated farming system (IFS), socio-personal characteristics of farmers. The data was analysed using statistical tools *viz*., frequency, percentage and correlation.

It was found clear that 35.89 per cent of the respondents had high awareness followed by low 31.62% and medium 32.47%) awareness about IFS, respectively. A maximum number of SC/ST farmers had high awareness about the fact that, IFS is an integrated crop and animal enterprises components (82.90%). More than half of the respondents were under old age (56.42%) followed by middle age (35.04%) and young age (8.54 %). Most of the SC/ST farmers attended the krishimela (60.68%), followed by demonstration (41.03%), training programmes (29.06%), agriculture exhibition (28.21%), educational tours and field days (23.93%), field visits (22.22%), and group meeting (11.97%). Forty seven per cent of the farmers were illiterates followed by farmers who had studied up to primary school level (38.46%), middle school level and high school (4.27%), PUC (3.42%) and degree level (2.58%).

Majority of the SC/ST farmers (49.57%) were having high perception towards integrated farming system, while 22.22 per cent of them had low perception and the remaining 28.20 per cent belonged to medium level perception of IFS. Education, Family size, land holding, farming experience, organization participation, extension participation, extension contact, mass media exposure, and Utility of income generated were positively and significant related with perception, the other one variable age did not show significant relation with perception of IFS farmers.