IMPACT OF DIPLOMA IN AGRICULTURAL EXTENSION SERVICES FOR INPUT DEALERS (DAESI) TRAINING ON AGRICULTURAL INPUT DEALERS

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in

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BENGALURU **SEPTEMBER, 2018**


Affectionately
Dedicated to
My Beloved Parents

DEPARTMENT OF AGRICULTURAL EXTENSION
UNIVERSITY OF AGRICULTURAL SCIENCES
BENGALURU-65

CERTIFICATE

This is to certify that thesis entitled **"IMPACT OF DIPLOMA IN AGRICULTURAL EXTENSION SERVICES FOR INPUT DEALERS (DAESI) TRAINING ON AGRICULTURAL INPUT DEALERS"** *submitted by* **Ms. MAMATHA, D. N., ID. No. PALB 6140** *for the award of the degree of* **MASTER OF SCIENCE (Agriculture)** *in* **AGRICULTURAL EXTENSION** *to the University of Agricultural Sciences, Bengaluru, is a record of bonafide research work done by her during the period of her study in this university under my guidance and supervision and the thesis has not previously formed the basis for the award of any degree, diploma, associateship, fellowship or other similar titles.*

BENGALURU
SEPTEMBER, 2018

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(S. S. PATIL)

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With regardful memories…..

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Bengaluru

September, 2018 ***(MAMATHA, D.N.)***

IMPACT OF DIPLOMA IN AGRICULTURAL EXTENSION SERVICES FOR INPUT DEALERS (DAESI) TRAINING ON AGRICULTURAL INPUT DEALERS

MAMATHA, D. N.

THESIS ABSTRACT

The study was conducted in Davanagere district of Karnataka during the year 2017-18. Total 80 number of input dealers were selected as a sample for the study, out of them 40 trained and 40 untrained input dealers were randomly selected. The present study revealed that 45.00 per cent and 57.50 per cent of trained dealers had high level of knowledge and diagnostic skills respectively. About 50.00 per cent and 55.00 per cent of untrained dealers had medium level of knowledge and diagnostic skills respectively. Education, mass media use, extension contact, extension participation, social participation and scientific orientation had significant relationship with level of knowledge and diagnostic skills of trained dealers. Education, mass media use, extension contact and social participation had significant relationship with level of knowledge and diagnostic skills of untrained dealers. Regarding opinion of DAESI training majority of the trained dealers opinioned training content is very good (92.50 %) followed by training methodology (85.00%) and facilities (80.00%). More number of trainees suggested to increase the class room session's (95.00%), conduct the classes more in the field (80.00%) and to give more importance to display the specimens chart related to nutrient deficiency, insect damage and disease symptoms in the training hall (70.00%).

September, 2018

Dept. of Agril. Extension
UAS, GKVK, Bengaluru-65

(G. R. Pennobaliswamy)
Major Advisor

ಕೃಷಿ ಪರಿಕರ ಮಾರಾಟಗಾರರಿಗೆ ಕೃಷಿ ವಿಸ್ತಾರಣಾ ಸೇವೆಯ ಡಿಪ್ಲೋಮಾ (DAESI) ತರಬೇತಿಯ ಪರಿಣಾಮದ ಬಗ್ಗೆ ಅಧ್ಯಯನ

ಮಮತ, ಡಿ. ಎನ್

ಪ್ರಬಂಧ ಸಾರಾಂಶ

ಈ ಅಧ್ಯಯನವನ್ನು ಕರ್ನಾಟಕದ ದಾವಣಗೆರೆ ಜಿಲ್ಲೆಯಲ್ಲಿ ೨೦೧೭–೧೮ರ ಅವಧಿಯಲ್ಲಿ ನಡೆಸಲಾಯಿತು. ಒಟ್ಟು ೮೦ ಕೃಷಿ ಪರಿಕರ ಮಾರಾಟಗಾರರನ್ನು ಆಯ್ಕೆ ಮಾಡಿ, ಅದರಲ್ಲಿ ೪೦ ತರಬೇತಿ ಪಡೆದ ಮತ್ತು ೪೦ ತರಬೇತಿ ಪಡೆಯದ ಕೃಷಿ ಪರಿಕರ ಮಾರಾಟಗಾರಿಂದ ಮಾಹಿತಿಯನ್ನು ಸಂಗ್ರಹಿಸಲಾಯಿತು. ಪ್ರಸ್ತುತ ಅಧ್ಯಯನದಿಂದ ಕಂಡು ಬಂದ ಅಂಶವೆನೆಂದರೆ, ತರಬೇತಿ ಪಡೆದವರಲ್ಲಿ ಶೇ. ೪೫.೦೦ ಮತ್ತು ಶೇ. ೫೭.೫೦ ರಷ್ಟು ಉನ್ನತ ಮಟ್ಟದ ಜ್ಞಾನ ಮತ್ತು ರೋಗ ಮತ್ತು ಕೀಟ ಭಾದೆ ಗುರುತಿಸುವ ಕೌಶಲ್ಯಗಳನ್ನು ಕ್ರಮಾನುಸಾರವಾಗಿ ಹೊಂದಿದ್ದಾರೆ. ಸರಿ ಸುಮಾರು ಶೇ. ೫೦.೦೦ ಮತ್ತು ಶೇ. ೫೫.೦೦ ರಷ್ಟು ತರಬೇತಿ ಪಡೆಯದ ಕೃಷಿ ಪರಿಕರ ಮಾರಾಟಗಾರರು ಮಧ್ಯಮ ಜ್ಞಾನ ಮತ್ತು ರೋಗ ಮತ್ತು ಕೀಟ ಭಾದೆ ಗುರುತಿಸುವ ಕೌಶಲ್ಯಗಳನ್ನು ಕ್ರಮಾನುಸಾರವಾಗಿ ಹೊಂದಿದ್ದಾರೆ. ವಿದ್ಯಾಭ್ಯಾಸ, ಸಮೂಹ ಮಾಧ್ಯಮಗಳ ಬಳಕೆ, ವಿಸ್ತಾರಣಾ ಸಂಪರ್ಕ, ವಿಸ್ತಾರಣಾ ಚಟುವಟಿಕೆಗಳಲ್ಲಿ ಭಾಗವಹಿಸುವಿಕೆ, ಸಾಮಾಜಿಕ ಚಟುವಟಿಕೆಗಳಲ್ಲಿ ಭಾಗವಹಿಸುವಿಕೆ ಮತ್ತು ವೈಜ್ಞಾನಿಕ ದೃಷ್ಟಿಕೋನವು ಜ್ಞಾನ ಮತ್ತು ರೋಗ ಮತ್ತು ಕೀಟ ಭಾದೆ ಗುರುತಿಸುವ ಕೌಶಲ್ಯಗಳೊಂದಿಗೆ ಪ್ರಮುಖ ಸಂಬಧವನ್ನು ತರಬೇತಿ ಪಡೆದ ಕೃಷಿ ಪರಿಕರ ಮಾರಾಟಗಾರರು ಹೊಂದಿದ್ದಾರೆ. ವಿದ್ಯಾಭ್ಯಾಸ, ಸಮೂಹ ಮಾಧ್ಯಮಗಳ ಬಳಕೆ, ವಿಸ್ತಾರಣಾ ಸಂಪರ್ಕ ಮತ್ತು ಸಾಮಾಜಿಕ ಚಟುವಟಿಕೆಗಳಲ್ಲಿ ಭಾಗವಹಿಸುವಿಕೆಯು ಜ್ಞಾನ ಮತ್ತು ರೋಗ ಮತ್ತು ಕೀಟ ಭಾದೆ ಗುರುತಿಸುವ ಕೌಶಲ್ಯಗಳೊಂದಿಗೆ ಪ್ರಮುಖ ಸಂಬಧವನ್ನು ತರಬೇತಿ ಪಡೆಯದ ಕೃಷಿ ಪರಿಕರ ಮಾರಾಟಗಾರರು ಹೊಂದಿದ್ದಾರೆ. DAESI ತರಬೇತಿಯಲ್ಲಿ, ತರಬೇತಿ ಪರಿವಿಡಿ (೯೨.೫೦%) ನಂತರ ತರಬೇತಿ ಪದ್ದಿತಿ (೮೫.೦೦%) ಮತ್ತು ಸೌಲಭ್ಯಗಳು (೮೦.೦೦%) ತುಂಬಾ ಉತ್ತಮವಾಗಿದ್ದವು ಎಂದು ತರಬೇತಿ ಪಡೆದ ಕೃಷಿ ಪರಿಕರ ಮಾರಾಟಗಾರರು ಅಭಿಪ್ರಾಯವನ್ನು ವ್ಯಕ್ತಪಡಿಸಿದ್ದಾರೆ. ಹೆಚ್ಚಿನ ಸಂಖ್ಯೆಯ ತರಬೇತಿದಾರರು ನೀಡಿರುವ ಪ್ರಮುಖ ಸಲಹೆಗಳೆಂದರೆ, ತರಬೇತಿಯ ಅವಧಿಯನ್ನು ಹೆಚ್ಚಿಸಬೇಕು (೬೫.೦೦%), ಹೆಚ್ಚಿನ ತರಗತಿಗಳನ್ನು ರೈತರ ಜಮೀನಿನಲ್ಲಿ ನಡೆಸಬೇಕು (೮೦.೦೦%) ಮತ್ತು ಪೌಷ್ಟಿಕಾಂಶದ ಕೊರತೆ, ಕೀಟಗಳ ಹಾನಿ ಮತ್ತು ರೋಗಲಕ್ಷಣಗಳಿಗೆ ಸಂಬಂಧಿಸಿದ ಮಾದರಿ ಫಲಕಗಳನ್ನು ತರಬೇತಿಯ ಕೊಠಡಿಯಲ್ಲಿ ಪ್ರದರ್ಶಿಸಬೇಕು (೭೦.೦೦%).

ಸೆಪ್ಟೆಂಬರ್, ೨೦೧೮

ಕೃಷಿ ವಿಸ್ತರಣಾ ವಿಭಾಗ
ಕೃಷಿ ವಿಶ್ವವಿದ್ಯಾಲಯ, ಗಾ.ಕೃ.ವಿ.ಕ್ರೇ
ಬೆಂಗಳೂರು– ೬೫

(ಜಿ. ಆರ್. ಪೆನ್ನೋಬಳಿಸ್ವಾಮಿ)
ಪ್ರಾಧಾನ ಮಾರ್ಗದರ್ಶಕರು

Impact of Diploma in Agricultural Extension Services for Input Dealers (DAESI) training on Agricultural Input Dealers

D. N. MAMATHA. PALB 6140 and Dr. G. R. PENNOBALISWAMY

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Introduction

In India, there are about 2.82 lakhs of agri-input dealers. While purchasing different inputs required for farming operations, the farmer naturally tries to find out from the input dealer about the usage of inputs, both in terms of quality and quantity. However, most of these input dealers do not have formal agricultural education. If these input dealers can be shaped as para-extension professionals by providing requisite knowledge and skill, they can professionalise extension services and contribute to bring a paradigm shift in Indian Agriculture.

National Institute of Agriculture Extension Management (MANAGE) had designed a one-year diploma course titled 'Diploma in Agricultural Extension Services for Input Dealers (DAESI)', which imparts relevant and location-specific agricultural education to equip these input dealers with sufficient knowledge and skill to transform them into para-extension professionals so as to enable them to address the day-to-day problems being faced by the farmers at field level.

Objective

1. To know the level of Knowledge and Diagnostic skills acquired by the Agricultural Input Dealers.

Materials and methods

Research design: Ex-post facto research design

Locale of the study: Davanagere district of Karnataka

Selection of Respondents:

In Davanagere, DAESI training was conducted in four Nodal Training Institutes (NTI). Forty trained dealers (10 from each NTI) were matched with 40 untrained input dealers. Totally 80 input dealers, selling seeds, fertilizers and plant protection chemical constituted the sample.

Data collection tool: Interview schedule

Statistical tools: Frequency, percentage, mean and standard deviation were used.

Results

Table 1: Component wise Knowledge gained by the Agricultural Input Dealers (n=80)

Sl. No	Level of Knowledge	Components (%)					
		Seeds		Fertilizers		PPCs	
		T	UT	T	UT	T	UT
1.	Low	22.50	32.50	27.50	30.00	20.00	27.50
2.	Medium	27.50	35.00	35.00	42.50	20.00	40.00
3.	High	50.00	32.50	37.50	27.50	60.00	32.50

Fig.1:Overall Knowledge gained by the Agricultural Input Dealers

Table 2: Component wise Diagnostic skills acquired by the Agricultural Input Dealers (n=80)

Sl. No	Level of diagnostic skills acquired	Components (%)							
		Fertilizers		Deficiency symptoms		Insect damage		Disease symptoms	
		T	UT	T	UT	T	UT	T	UT
1.	Low	30.00	40.00	30.00	39.50	17.50	22.50	11.00	45.00
2.	Medium	15.00	37.50	22.50	28.00	20.00	62.50	21.00	17.50
3.	High	55.00	22.50	47.50	32.50	62.50	15.00	68.00	37.50

T: Trained
UT: Untrained
PPCs: Plant Protection Chemicals

Fig.2:Overall Diagnostic skills acquired by the Agricultural Input Dealers

Discussion

Table 1 reveals that higher level of knowledge was gained by 50 per cent of the trained dealers in seeds, 60 per cent in PPCs and 37.5 per cent in fertilizers. While untrained dealers had lower level of knowledge on the knowledge items mentioned above.

Table 2 reveals that majority of trained dealers posses higher level of diagnostic skills with respect to identification of fertilizers, nutrient deficiency symptoms, insect damage and disease symptoms of paddy and maize. Where as in case of untrained dealers, no one posses higher level of higher level of diagnostic skills with respect to identification of fertilizers, nutrient deficiency symptoms, insect damage and disease symptoms of paddy and maize.

This indicates 'Diploma in Agricultural Extension Services for Input Dealers (DAESI)' is having positive impact in enhancing knowledge and skills of the input dealers.

Summary

Results of the study reveals that higher level of knowledge and diagnostic skills acquired by majority of trained input dealers. This indicates the impact of DASEI training programme of Agricultural Input Dealers. Thus, DAESI trained input dealers are serving as Para-Extension professionals in Davanagere district.

Advisory committee

Chairman: Dr. G. R. Pennobaliswamy
Members: Dr. V. L. Madhu Prasad
Dr. R. Narayana Reddy
Dr. S. S. Patil

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%	=	Percentage
AAO	=	Assistant Agricultural Officer
ADA	=	Assistant Director of Agriculture
AHO	=	Assistant Horticulture Officer
AO	=	Agricultural Officer
ATMA	=	Agriculture Technology Management Agency
CIG	=	Commodity Interest Group
DAC	=	Department of Agriculture and Cooperation
DAESI	=	Diploma in Agricultural Extension Services for Input Dealers
DDA	=	Deputy Director of Agriculture
F	=	Frequency
FIG	=	Farmer Interest Group
FPO	=	Farmer Producer Organization
JDA	=	Joint Director of Agriculture
KVK	=	Krishi Vigyan Kendra
MANAGE	=	National Institute of Agricultural Extension Management
NGO	=	Non-Governmental Organization
PPCs	=	Plant Protection Chemicals
SADHO	=	Senior Assistant Director of Horticulture
SAMETI	=	State Agricultural Management and Extension Training Institute
VLW	=	Village Level Worker

CHAPTER I
INTRODUCTION

Agriculture is a backbone of our country. It accounts for 18 per cent of India's Gross Domestic Product (GDP), provides employment to 54.60 per cent of the countries workforce and it has achieved 275.68 million tons of food grain production in the year 2016-17 (Madhusudan, 2015). India's total food grain production has increased at an annual growth rate of 2.68 per cent since 1960-61. The increase in food grain production is mainly due to increase in yield. Growth rate being 2.44 per cent as against growth rate of area being 0.17 per cent per annum during 1960-61 to 1998-99). To project the future food grains supply, past growth trend has been extrapolated. Based on this assumption, the food grain supply is expected to be about 342 million tonnes by 2030 AD (Goyal and Singh, 2002). Shift in consumption pattern and future demand for food is analysed for both rural and urban India. However, for sustaining this production and growth rate includes effective and efficient technology transfer and delivery mechanism is required.

Transformation of the Indian agriculture from subsistence to a modern scientific system of farming calls for a continuous strong research, education and extension programmes in agriculture. The extension credibility was much earned must be nurtured and developed. Extension must change the type, content and method of its functions and the innovations it is trying to diffuse. National education system is not sufficient to achieve this. A separate system of extension education needs to be evolved which is effectible and within easy reach of this work force, aiming to produce job creators rather than the job seekers.

At present there is a wide gap between technical know-how and do-how, particularly to location specific problems in the fields of small farmers, marginal farmers, share croppers, tenants, and farmers belonging to resource poor communities. National Agricultural Policy and tenth approach paper stressed the need for reforms in agricultural extension of the country. Ministry of Agriculture and Farmer's Welfare, Government of India emphasized to have multi agency extension services such as multinational companies, corporate bodies, farmers groups and input dealers.

Among all, the input dealer agencies constituted a large number and spread even in interior areas of the country. Unlike other agencies, they need not go to the farmers to spread the messages. Farmers themselves approach Input dealers, for their requirement i.e., input and credit.

There is lack of sufficient field level staff and the apparent absence of systematic dissemination of important information regarding appropriate cropping pattern, inputs, and cultivation practices and so on. In this context, with their locational advantage and easy access, input dealers became the most important source of such information to farmers. Credit availability, quality of the product, availability of preferred brand and price of the product significantly influenced the dealer's loyalty among farmers (Padmanabhan, 1999). The implied role of an ideal agro input dealer is one:

1. Who provides inputs to the farmer including credit.
2. Act as opinion leader.
3. Act as advisor to the farmer.
4. A link between input agencies and farmers
5. Has direct contact with farmer.
6. Available for farmer day in and day out for any advice.

Dealer serves as an important link between the manufacturers and the farmers. So he has the responsibility to disseminate latest farm technology up to the field level especially in the era of the free economy and world trade organization (Khose, 2004).

The input dealer is basically a businessman with or without a technical qualification and a service provider. In order to overcome the possible negative effects, it is necessary to make technical qualification in agriculture as mandatory for issuing dealership license to provide agro-advisory services besides selling agricultural inputs.

At present, there are about 2.82 lakh practicing agri-input dealers, who are the prime source of farm information to the farming community. The first contact point for majority of farmers is the agri-input dealer. While purchasing different inputs required for

farming operations, the farmer naturally tries to find out from the input dealer about the usage of inputs, both in terms of quality and quantity. However, most of these input dealers do not have formal agricultural education. If these input dealers can be shaped as para-extension professionals by providing requisite knowledge, they can professionalise extension services and contribute to bring a paradigm shift in Indian Agriculture (Anonymous, 2014).

In this context, the National Institute of Agriculture Extension Management (MANAGE) had designed a one-year diploma course titled 'Diploma in Agricultural Extension Services for Input Dealers (DAESI)' programme in the year 2003, which imparts relevant and location-specific agricultural education to equip these input dealers with sufficient knowledge and skills to transform them into para-extension professionals. So as to enable them to address the day-to-day problems being faced by the farmers at field level.

The Diploma in Agricultural Extension Services for Input dealers (DAESI) programme personalized for capacity building of Agricultural input dealers with following objectives.

- Orientation on location specific crop production technologies of broad based agriculture and specific package of practices related to field problems.
- Capacity building of input dealers in efficient handling of inputs.
- To impart the knowledge about the government regulations of Agricultural inputs.
- To make Inputs Dealers effective source of farm information at village level (one stop shop) for the farmers / farm women.

Description of DAESI programme

This program is upscaled to train 12,000 input dealers per year through active involvement of SAMETIs, Agribusiness companies, ATMAs, KVKs, Agriculture Colleges and NGOs under the overall supervision of State Agriculture Departments and facilitation by MANAGE.

DAESI has been designed in such a way that the input dealer can pursue the program without adversely affecting his day-to-day business. The program is spread over a period of 52 weeks, with 84 classroom sessions and 8 field visits to various institutions and farmers' fields. The classroom sessions and field visits are conducted on Sundays or local market holidays. The field visits are intended to acquaint the input dealers with location-specific field problems and expose them to relevant technologies. They are trained to identify pests, diseases and nutritional disorders. Study material in local language is provided and multi-media instructional devices are used in the classrooms.

All the stakeholders involved in DAESI program i.e. the input dealers, resource persons, facilitators, institutions capable of delivering the program viz. ATMAs, KVKs, NGOs, Agricultural Colleges etc. are located at district level. The cropping pattern, the package of practices and the field visits are location specific. Hence, 'decentralized approach' is adopted to cover 300 batches per year. Each batch comprises of 40 input dealers.

The program will be implemented by MANAGE through SAMETIs under the overall guidance and supervision of respective state departments of agriculture. MANAGE, in consultation with state agriculture department and with the approval of Department of Agriculture and Cooperation (DAC), will assign state-wise annual targets based on the potential of each state. DAC would release funds to MANAGE, under intimation to the State department concerned.

Keeping all these facts in view the present study was an attempt to analyse the Impact of Diploma in Agricultural Extension Services for Input Dealers (DAESI) training on Agricultural Input Dealers with the following objectives.

Objectives of the study

1. To study the profile of Agricultural Input Dealers.
2. To know the level of Knowledge and Diagnostic skills of Agricultural Input Dealers.

3. To measure the relationship between Personal, Psychological and Socio-economic characteristic with their Knowledge and Diagnostic skills level of Agricultural Input Dealers.
4. To document the successful case studies of Extension Services provided by Agricultural Input Dealers.
5. To ascertain the opinion of Trained Agricultural Input Dealers regarding DAESI training and their Suggestions for improvement.

Hypothesis of the study

1. There is no difference in level of knowledge and diagnostic skills of Agricultural Input Dealers.
2. There is no significant relationship between independent variables and knowledge level of Agricultural Input Dealers.
3. There is no significant relationship between independent variables and diagnostic skills level of Agricultural Input Dealers.

Scope of the Study

The input dealer is basically a businessman with or without a technical qualification and a service provider. Though there are few recognized agencies to provide agricultural inputs and agro-advisory services like Karnataka Agro-Industries Corporation, Karnataka Marketing Federation, Karnataka State Seeds Corporation, but major part of the agricultural inputs are provided to the farmers by the input dealers. So, the role of agricultural input dealers is of maximum importance in the agricultural production process. It is observed that there is a very limited literature available on agriculture input dealers and DAESI programme and few scientific study was conducted on profile of input dealers and their role in providing agro-advisory services.

Keeping in view the importance of Agricultural Input dealer as agents of Agricultural extension service. This study was mainly intended to find out the extension services of Agricultural Input Dealers in terms of Knowledge and Diagnostic skills on

handling of agricultural inputs. An attempt is made to study DAESI as an alternate model of Agricultural Extension system. The findings of the study would help for further refinement of DAESI programme for reaching more number of farmers through Agricultural Input dealers with adoptable low cost technologies.

Limitations of the study

As the study was conducted by a post graduate student researcher who had limited time and other resources. Therefore, the study was confined to only Davanagere district of Karnataka with limited sample size. Hence, the findings of the present investigation have the limitation of wider generalizations.

CHAPTER II
REVIEW OF LITERATURE

The chapter consists of research findings drawn from review of literature relevant to the study. In order to develop a proper understanding of the research problem to develop a conceptual framework and conduct the study, it is very essential on the part of the researcher to review the efforts made by the earlier researchers. Since, there were limited studies related to diagnostic skills of input dealers, an attempt is made to put together some of the closely related and available literature on research study. The literature viewed for the purpose of study is organized and presented under the following headings:

2.1 Profile characteristics of the agricultural input dealers

2.2 Knowledge of agricultural input dealers regarding farm inputs

2.3 Diagnostic skills of agricultural input dealers

2.4 Relationship between Personal, Psychological and Socio-economic characteristic of agricultural input dealers with their dependent variables

2.5 Opinion of trained input dealers regarding training programme

2.6 Suggestions of trained input dealers for improving DAESI training

2.1 Profile characteristics of the agricultural input dealers

2.1.1 Age

Anitha (2005) conducted a Study on Knowledge, Attitude and Training needs of Agricultural Input Dealers in Eastern Dry Zone of Karnataka. In this study, she revealed that 41.25 per cent of input dealers belonged to middle age group followed by 35.00 per cent of input dealers belonged to old age group and 23.75 per cent of input dealers belonged to young age group.

Abdullah Faiz (2010) conducted a study on Evaluation of training programmes organized by Staff Training Unit, UAS, Bangalore. In this study, he found that nearly two third (60.00%) of trainees belonged to middle age group followed by young age (28.57%) and old age (11.43%).

A study on Communication Behaviour of Input Dealers in Guntur district of Andhra Pradesh by Leelavani Madem (2011) evident that 58.33 per cent of input dealers belongs to middle age followed by young age (23.33%) and old age (18.33%).

A study on Knowledge, Perception and Role performance of Input Dealers in agro advisory services in Northern Dry Zone of Karnataka by Sangamesh Ganiger (2012) revealed that more than half of input dealers belonged to middle age (51.66%) followed by young age (31.66%) and old age (16.68%).

Srinivas (2013) conducted the study on Critical analysis of effectiveness of DAESI programme in Andhra Pradesh and stated that 93.33 per cent of DAESI dealers belongs to middle age group followed by 5.00 per cent of young age and 1.70 per cent of old age groups. In case of non DAESI dealers 85.00 per cent belonged to middle age followed by 10.00 per cent young and 5.00 per cent old age groups.

Singh *et al.* (2015) conducted the study on Training needs of Agro-input dealers in South 24 Parganas District of West Bengal. In this study, he found that 46.90 per cent of the Agro-input dealers belonged to young age group followed by 39.30 per cent belonged to middle age group and 13.60 per cent belong to old age group.

A study on Impact of training programmes conducted by National Seed Project, UAS, Bangalore by Venkappa *et al.* (2015) reported that more than one third of trainees belong to middle age group (38.70%) followed by young age (35.50%) and old age (25.80%).

Kaushal Chandra Sharma (2017) carried out a Study on the Entrepreneurial Behaviour of agri-inputs retailers in Bilaspur district of Chhattisgarh. In this study, he evident that more than two third (69.17%) of input dealers had middle age followed by old age (16.67%) and young age (14.16%).

2.1.2 Education

Anitha (2005) stated that 30 per cent of input dealers had graduation followed by PUC (28.75%), high school (21.25%), middle school (5.00%) and 10.00 per cent of input dealers had education in Technical courses.

Leelavani Madem (2011) revealed that 46.67 per cent of input dealers had secondary education followed by 30.00 per cent of graduation, 16.67 per cent of collage education and 5.00 per cent of post-graduation and only 1.67 per cent of input dealers had primary education.

Sangamesh Ganiger (2012) revealed that 26.66 per cent of the input dealer had graduation followed by PUC (20.83%), high school (18.33%), primary school (5.83%) and 10.83 per cent of input dealers had education in technical courses.

Srinivas (2013) found that 58.3 per cent of DAESI dealers had collage education and 41.7 per cent of high school education. Whereas, non DAESI dealers 38.40 per cent of respondents had high school education and 18.30 per cent of college education.

A study on training needs of Pesticide retailers in Imphal district of Manipur by Daya Ram *et al.* (2014). The results of the study evident that nearly one third (32.10%) of retailers had graduation followed by PUC (28.40%), post-graduation and above (19.30%), high school (16.50%) and only 3.70 per cent of retailers had primary school education.

Venkappa *et al*. (2015) revealed that 45.2 per cent of trainees had high school education followed by primary school education (32.3%) and college education (22.50%).

Kaushal Chandra Sharma (2017) evident that nearly than two third (65.00%) of input dealers had graduation and above level of education followed by PUC (24.16%), High school (9.17%) and only 1.67 per cent of input dealers had middle level of education.

2.1.3 Annual turnover

Anitha (2005) found that 58.75 per cent of input dealers were belong to the medium level of annual turnover (1,92,424 to 3,85,350) followed by 21.00 per cent high (>3,85,350) and 15.00 per cent low (<1,92,424).

Rudragouda Patil (2009) revealed that majority of KMF trainees had medium level (42.67 %) of annual turnover followed by low (30.67 %) and high (26.66 %).

Leelavani Madem (2011) reported that half of the input dealers (50.00%) had above 5 lakhs of annual turnover followed by 1-5 lakhs (46.67%) and up to 1 lakh (3.33%).

Srinivas (2013) revealed that majority of DAESI dealers had 81-90 lakhs turnover (36.70 %) per annum followed by 91 lakhs to 1 crore (33.30 %), more than 1 crore (23.30 %) and 71-80 lakhs (6.70 %).

2.1.4 Mass media use

Anitha (2005) observed that majority input dealers had medium level of mass media participation (55.00%) followed by (26.25%) high and (18.75%) low level of participation.

Sunil Kharatmol (2006) reported that more than one third of trained respondents had high level of mass media participation (36.66%) followed by medium (31.60%) and low (31.60%). In case of untrained respondents 38.33 per cent had high level of mass media participation followed by low (33.33%) and medium (28.33%).

Appu Halasangi (2009) revealed that nearly half of the trained respondents belonged to high level (40.62%) of mass media participation followed by medium (34.37%) and low (25.00%). While, more than one third of untrained respondents belonged to medium level (37.50%) of mass media participation followed by low (34.37%) and high (28.12%).

Sangamesh Ganiger (2012) stated that 50.83 per cent of input dealers had medium level of mass media use followed by 30.84 per cent of high and 18.33 per cent of low mass media use.

Srinivas (2013) reported that majority of DAESI dealers had medium level of mass media use (46.70%) followed by high mass media use (33.30 %) and low mass media use (20.00%). In case of non DAESI dealers, 48.30 per cent of respondents had medium level of mass media use followed by high (30.00%) and low (21.70%).

Impact of Animal Husbandry Training Programme imparted by KVKs in Chotanagpur division by Mithun Kumar Anand (2016) revealed that half of the respondents had medium level of mass media exposure (50%) followed by low mass media exposure (44.44%) and high mass media exposure (35.56%).

A study on Performance Analysis of Bakery and Value Addition Centre, University Of Agricultural Science, Bangalore by Harshitha (2014). In this study she revealed that majority of the bakery trainees had low level (52.50 %) of mass media exposure followed by medium (26.67 %) and high (20.83 %).

2.1.5 Extension contact

Anitha (2005) reported that 35.50 per cent of input dealers had low level of extension contact followed by 36.25 per cent medium and 26.25 per cent high.

Sangamesh Ganiger (2012) revealed that nearly half of the input dealers had medium level (41.65%) of extension contact followed by high (32.48%) and low (25.87%).

Srinivas (2013) found that majority of DAESI dealers had high level of extension contact (46.70%) followed by medium (40.00%) and low (13.30%). Where as in case of non DAESI dealers, 53.40 per cent of respondents had medium level of extension contact followed by high (26.60%) and low (20.00%).

Mithun Kumar Anand (2016) reported that more than half of the respondents belong to medium level (51.67%) of extension contact followed by low (39.44%) and high (8.89%).

A study on Effectiveness of Training Programmes through Perception of KVK Trainees in Imphal East District of Manipur by Deepa Thangjam *et al.* (2017) evident that

38.67 per cent of trainees had medium level of extension contact followed by 32.00 per cent high and 29.33 per cent low.

2.1.6 Extension participation

Nagaraja (2002) reported that 79.19 per cent of respondents not participated in any extension activities. While, 8.33 per cent of respondents were found participating in field days followed by training (5.41%), Krishimela (4.99%), and extension tours (3.35%).

Sunil Kharatmol (2006) conduct a Study on impact of trainings conducted on vermicompost by Krishi Vigyan Kendra Bijapur. In this study, he reveals that 46.66 per cent of trained respondents had high level of extension participation followed by low (28.33 %) and medium (25.00 %). While, untrained respondents had 45.00 per cent of medium level of extension participation followed by low (38.33 %) and high (16.66 %).

A study on Evaluation of training programmes organized by Karnataka State Department of Horticulture by Appu Halasangi (2009). In this study, he reported that 56.25 per cent of trained and 25.00 per cent of untrained respondents belong to high level of extension participation followed by 18.75 per cent of trained and 43.75 per cent of untrained respondents had medium level of extension participation and 25.00 per cent of trained and 31.25 per cent of untrained had low level of extension participation.

Rudragouda Patil (2009) found that more than half of the KMF trainees had high level (56.67 %) of extension participation followed by medium (23.33 %) and low (20.00 %).

Chithra (2015) evident that nearly half of the respondents (40.84 %) had medium level of extension participation followed by low (30.83 %) and high (28.33).

2.1.7 Achievement motivation

Anitha (2005) revealed that nearly half of the input dealers had high level of achievement motivation (42.50%) followed by medium (40.00 %) and low (17.50 %).

Daya Ram *et al.* (2014) found that more than two third of the pesticide dealers had medium level of achievement motivation (67.00 %) followed by high (17.40%) and low (15.6 %).

Harshitha (2014) evident that 42.50 per cent of bakery trainees belong to high level of achievement motivation whereas medium and low 14.67 per cent and 10.83 per cent respectively.

Chithra (2015) reported that two third of the respondents (63.33 %) belong to high level of achievement motivation followed by medium (20.00 %) and low (16.33 %).

A study on Impact of personal attributes of Programme Co-ordinators (PCs) of Krishi Vigyan Kendras on their managerial skills by Prajapathi Poonam and Rathore Surya (2016). The results of the study revealed that majority of Programme Co-ordinators had medium level of achievement motivation (72.38 %) followed by low (14.76 %) and high (12.86%).

Kaushal Chanda Sharma (2017) reported that 47.50 per cent of input dealers had high level of achievement motivation followed by 43.33 per cent medium and only 9.17 per cent of agri-input retailers had low level of achievement motivation.

2.1.8 Management orientation

Sahana (2002) with regard to management orientation (46.67%) of the respondents had medium level of management orientation followed by nearly one third of the respondents (32.50%) had high level of management orientation and remaining (20.83%) of the respondents had low level management orientation.

Chauhan and Patel (2003) in their study on entrepreneurial characteristics of poultry entrepreneurs reported that 71.25 per cent of the poultry entrepreneurs had medium to high level of management orientation.

Srinivas (2013) found that majority of DAESI dealers had medium level of management orientation (51.60%) followed by high (31.70%) and low (16.70%). In case

of non DAESI dealers, nearly half of the respondents had medium level of management orientation (48.30%) followed by high (26.70%) and low (25.00%).

Daya Ram *et al.* (2014) revealed that half of the pesticide retailers had medium level of managerial ability (49.5 %) followed by high (30.3 %) and low (20.2 %).

Chithra (2015) conducted A Study on Entrepreneurial Behaviour of Seed Production Farmers in Raichur District of Karnataka. Findings of this study revealed that 61.66 per cent of respondents belong to high level of management orientation whereas 20.83 per cent medium and 17.50 per cent low.

2.1.9 Social participation

Anitha (2005) revealed that more than one third of input dealers had low level of social participation (38.75%) followed by medium (31.25%) and high (30.00%).

Appu Halasangi (2009) reported that half of the trained respondents (50.00%) belonged to high and medium level of social participation. While, nearly half of the untrained respondents belonged to medium level (40.62%) of social participation followed by low (37.50%) and high (21.87%).

Rudragouda Patil (2009) evident that majority of KMF trainees had high level (76.67 %) of social participation followed by medium (15.00 %) and low (8.33 %).

Leelavani Madem (2011) found that 56.67 per cent of input dealers had medium level of social participation followed by 26.67 per cent low and 16.67 per cent high.

A study on impact of training programmes on the ornamental fish culture on the empowerment status of the trainees by Yarrakula Mahesh Babu (2011). In this study he found that more than two third of trainees (69.17 %) had medium level of social participation followed by high (15.83 %) and low (15.00 %).

Sangamesh Ganiger (2012) revealed that majority of input dealers had low level (42.49%) of social participation followed by medium (29.16%) and high (28.35%).

2.1.10 Scientific orientation

Anitha (2005) revealed that half of the input dealers (50.00%) had high level of scientific orientation followed by low (25.00%) and medium (25.00%).

Sunil Kharatmol (2006) revealed that majority of trained respondents belongs to medium level of scientific orientation (43.33%) followed by high (35.00%) and low (21.67%). In case of untrained respondents nearly half of the respondents belong to medium level of scientific orientation (43.33%) followed by high (28.33%) and low (28.33%).

Appu Halasangi (2009) reported that more than half of the trained respondents had high level (53.12%) of scientific orientation followed by medium (28.12%) and low (18.755). while, nearly half of the untrained respondents had low level (43.75%) of scientific orientation followed by medium (31.25%) and high (25.00%).

Rudragouda Patil (2009) evident that 60. 00 per cent of respondents had high level of scientific orientation followed by 25.00 per cent medium and 15.00 per cent low.

Yarrakula Mahesh Babu (2011) found that more than two third of trainees (79.16 %) had medium level of scientific orientation followed by high (14.17 %) and low (6.67 %).

Sangamesh Ganiger (2012) found that more than half of the input dealers had high level (53.36%) of scientific orientation followed by low (24.98%) and medium (53.36%).

Harshitha (2014) identified that more than one third of the bakery trainees belong to low level (36.67 %) of scientific orientation followed by medium (35.00 %) and high (28.33 %).

2.1.11 Risk orientation

Sunil Kharatmol (2006) reported that 43.33 per cent of trained respondents belongs to medium risk orientation followed by 28.33 per cent of trained respondents belong to high and low level of risk orientation. Where as in case of untrained respondents, 41.66 per

cent of respondents had medium level of risk orientation followed by 31.67 per cent low and 26.33 per cent high.

Yarrakula Mahesh Babu (2011) evident that majority of trainees (42.50 %) had medium level of risk orientation followed by low (35 %) and high (22.50 %).

Srinivas (2013) reveals that nearly half of the DAESI dealers had medium (41.70%) and high (40.00%) level of risk orientation and 18.30 per cent respondents had low level of risk orientation. While, majority of the non DAESI dealers had medium level of risk orientation (43.30%) followed by high (36.70%) and low (20.00%).

Daya Ram *et al.* (2014) found that more than two third of the pesticide dealers had medium level of risk orientation (67.9 %) followed by low (18.3 %) and high (13.8 %).

Harshitha (2014) reported that nearly half of the bakery trainees belong to high level (42.50 %) of risk orientation followed by medium (30.00 %) and low (27.50 %).

Kaushal Chandra Sharma (2017) identified that more than two third of agri-input retailers had medium level (68.34%) of risk orientation followed by high (15.83%) and low (15.83%).

2.2 Knowledge of agricultural input dealers regarding farm inputs

A study on impact of training on Agricultural Technology for Women extension functionaries by Meenasandhya *et al.* (2002) revealed that the pre-entry knowledge of participants was only 22.97 per cent which was increased by 72.12 per cent with a significant gain of 51.17 per cent after completion of training course in the area of crop production, animal husbandry and horticulture.

Vijayaragavan *et al.* (2002) measured the knowledge level of respondents and the result showed that pre-training knowledge level of the participants on different area of management ranged from 10 to 22.5. The mean knowledge score for all the areas put together was only 18 out of obtained score of 100. After the training, the knowledge level

of participants increased in all the areas ranging from 45.8 to 69.1. Mean knowledge score of all the areas put together was 58.60 out of maximum obtainable score of 100.

Hanumanaikar *et al.* (2004) carried out a study to know the impact of training programme on cotton pest management conducted by KVK. The results revealed that majority of extension workers perceived that the training programme was useful and they acquired additional knowledge in various areas of integrated pest management in cotton, followed by cotton hybrids.

Anitha (2005) stated that more than one third (37.50%) of input dealers had high level of knowledge on agricultural input dealership, while, about one third (33.75%) had medium level of knowledge and remaining (28.75%) had low level of knowledge on agricultural input dealership.

A study on Impact of KVK training programme on socio-economic status and knowledge of trainees in Allahabad district by Dubey *et al*. (2008) revealed that majority of the on-campus trainees 74.67 per cent respondents had high level of knowledge followed by medium level of knowledge (24 %) and low level of knowledge (1.33 %), whereas in case of off-campus trainees 75.34 per cent respondents had medium level of knowledge followed by high level of knowledge (15.33 %) and low level of knowledge (9.33 %).

Appu Halasangi (2009) evident that more than half of the trained trainees (59.35 %) had high level of knowledge on horticulture technology followed by medium (25.00 %) and low (15.62 %). Whereas, majority of untrained trainees (53.12 %) had low level of knowledge on horticulture technology followed by medium (34.37 %) and high (12.50 %).

A study on training needs of farm input dealers for transfer of agricultural technology by Mande and Darade. (2011) revealed that majority of the farm input dealers had medium level of knowledge (75.83%) followed by 15.00 per cent had low level of knowledge and very few 09.17 per cent had high level of knowledge related to farm inputs like seeds, fertilizers and pesticides.

Sangamesh Ganiger (2012) revealed that 41.68 per cent of the respondents had high and very high knowledge level, followed by medium knowledge level (31.69%), very low and low knowledge level (26.63%) on different major crops like Sorghum, Perlmillet, Paddy and Maize.

Srinivas (2013) conducted the study on Critical analysis of effectiveness of DAESI programme in Andhra Pradesh, he revealed that majority of DAESI dealers had medium level of knowledge on production technology of cotton (41.7 %) and high level of knowledge on paddy production technology (43.3 %). And while, majority of Non DAESI dealers had medium level of knowledge on production technology of cotton (48.3%) and medium level of knowledge on paddy production technology (45.0 %).

Kaushal Chandra Sharma (2017) revealed that majority 73.34 per cent of the respondents had medium level knowledge about basic crop production practices followed by 15.83 per cent of the respondents had low level of knowledge and only 10.83 per cent of the respondents had high level of knowledge about basic crop production practices.

2.3 Diagnostic skills of agricultural input dealers

Pennobaliswamy (1995) conduct study on Impact of Training Programmes of Krishi Vigyan Kendra on Knowledge and Adoption level of Farmers. The result of the study revealed that cent per cent of trained cardamom growers had fully learnt skill of identifying katte disease in cardamom and more than ninety per cent of growers had fully learnt skill of identification of rhizome rot disease (98.00 %), mulching (96.00 %), method of fertilizer application and identification of stem borer (95.00 %), identification of thrips damage and nursery techniques (93.00 %) and planting method (90.00 %). Whereas, cent per cent of trained banana growers had fully learnt skill of identification of bunchy top disease, identification of matured bunch and harvesting and desuckering and more than ninety per cent of growers had fully learnt skill of selection of suckers and method of fertilizer application (98.00 %), dressing of suckers (95.00 %).

Prabukumar (1996) conduct a study on A critical analysis of the Training Programmes conducted by Krishi Vigyan Kendra. In this study he reported that majority

of the trainees had medium level (70.00%) of skill before training followed by low (28.00%) and high (2.00%). While, after training 58.00 per cent of trainees had medium level of skill followed by 31.00 per cent high and 11.00 per cent low.

A study on Knowledge level of extension personnel under ATMA regarding their Facilitation Skills by Barman and Kumar (2012) revealed that most of the respondents (95.0%) had low level of knowledge on facilitation skills followed by medium level (5.0%). There was not a single respondent having high level of knowledge on facilitation skills.

Shankara *et al.* (2014) describes KVKs organise trainings to work closely with trainees in developing a more skilled and educated workforce. Pre- and post-evaluation of the trainees was done to find out the level of change in their knowledge and skills after undergoing training. Cent per cent of trainees agreed that they did not have any knowledge on importance of micronutrients in plants, recommended dosages of micronutrients to plants, information on integrated nutrient management, differentiation of incidences of pests and diseases and differentiating between beneficial and harmful insects. Cent per cent of trainees had good knowledge and could develop skill in the area mentioned above. It shows that the training programmes conducted by KVKs are more effective in changing the knowledge and skill of the trainees (Bhuchethana facilitators).

Mithun Kumar Anand (2016) found that more than half of the trainees had medium level (50.00%) of skill about heat detection followed by high (24.44%) and low (20.56%). While, nearly two third of trainees had medium level (61.11%) of skill about preparation of balanced ration followed by low (32.78%) and high (6.11%). Whereas, two third of trained respondents had medium level (63.89%) of skill about caring and feeding of new-born followed by low (22.22%) and high (13.89%) and in case of preventive measures against disease 68.33 per cent of trainees had medium level of skill followed by 23.89 per cent high and 7.78 per cent low.

2.4 Relationship between Personal, Psychological and Socio-economic characteristic of agricultural input dealers with their dependent variables

Knowledge

Age and knowledge

Anitha (2005) identified that input dealers had non-significant relationship with age and knowledge.

Srinivas (2013) revealed that DAESI and non DAESI dealers had non-significant relationship with age and knowledge on cotton production technology.

Harshitha (2014) evident that bakery trainees had negative significant relationship with age and knowledge.

Naveenkumar *et al.* (2017) found that respondents had negative non-significant relationship with age and knowledge on eco-friendly farm technologies.

Education and Knowledge

Anitha (2005) identified that input dealers had significant relationship with education and knowledge.

Appu Halasangi (2009) revealed that trained trainees and untrained trainees had significant relationship with education and knowledge.

Srinivas (2013) evident that DAESI dealers had significant relationship with education and knowledge on cotton production technology. Whereas, non DAESI dealers had non-significant relationship with education and knowledge on cotton production technology.

Naveenkumar *et al.* (2017) found that respondents had significant relationship with education and knowledge on eco-friendly farm technologies.

Annual turnover and Knowledge

Anitha (2005) identified that input dealers had non-significant relationship with annual income and knowledge.

Sunil (2006) revealed that trained and untrained respondents had non-significant relationship with annual income and knowledge.

Appu Halasangi (2009) reported that trained and untrained respondents had non-significant relationship with annual income and knowledge.

Mass media use and Knowledge

Anitha (2005) identified that input dealers had significant relationship with mass media participation and knowledge.

Appu Halasangi (2009) identified that trained trainees there is a significant relationship with mass media utilization and knowledge. While, untrained trainees had non-significant relationship with mass media utilization and knowledge.

Harshitha (2014) reported that bakery trainees had significant relationship with mass media exposure and knowledge.

Naveenkumar *et al.* (2017) found that respondents had significant relationship with mass media utilization and knowledge on eco-friendly farm technologies.

Extension contact and Knowledge

Anitha (2005) identified that input dealers had significant relationship with extension contact and knowledge.

Srinivas (2013) revealed that DAESI dealers had positive significant relationship with extension contact and knowledge on cotton production technology. While, non DAESI dealers had non-significant relationship with extension contact and knowledge on cotton production technology.

Extension participation and Knowledge

Sunil Kharatmol (2006) reported that trained and untrained respondents had significant relationship with extension participation and knowledge.

Appu Halasangi (2009) revealed that trained trainees had significant relationship with extension participation and knowledge. Whereas, untrained trainees had non-significant relationship with extension participation and knowledge.

Naveenkumar *et al.* (2017) found that respondents had significant relationship with extension participation and knowledge on eco-friendly farm technologies.

Achievement motivation and Knowledge

Anitha (2005) identified that input dealers had significant relationship with achievement motivation and knowledge.

Harshitha (2014) revealed that bakery trainees had significant relationship between achievement motivation and knowledge.

Management orientation and Knowledge

Srinivas (2013) found that DAESI dealers had positive significant relationship with management orientation and knowledge on cotton production technology. Whereas, non DAESI dealers had non-significance relationship with management orientation and knowledge on cotton production technology.

Social participation and Knowledge

Prabukumar (1996) revealed that trainees had significant relationship with social participation and knowledge.

Anitha (2005) identified that input dealers had significant relationship with social participation and knowledge.

Appu Halasangi (2009) reported that trained trainees had significant relationship with social participation and knowledge. In case of untrained trainees, there is a non-significant relationship with social participation and knowledge.

Scientific orientation and Knowledge

Anitha (2005) identified that input dealers had significant relationship with scientific orientation and knowledge.

Appu Halasangi (2009) revealed that trained trainees had significant relationship with scientific orientation and knowledge. Whereas, untrained trainees had non-significant relationship with scientific orientation and knowledge.

Harshitha (2014) reported that bakery trainees had significant relationship between scientific orientation and knowledge.

Naveenkumar *et al.* (2017) found that respondents had significant relationship with scientific orientation and knowledge on eco-friendly farm technologies.

Risk orientation and Knowledge

Sunil Kharatmol (2006) identified that there is a non-significant relationship with risk orientation and knowledge in case of trained and untrained respondents.

Srinivas (2013) revealed that DAESI and non DAESI dealers had non-significant relationship with risk orientation and knowledge on cotton production technology.

Harshitha (2014) found that bakery trainees had negative significant relationship between risk orientation and knowledge.

Naveenkumar *et al.* (2017) found that respondents had non-significant relationship with risk orientation and knowledge on eco-friendly farm technologies.

Diagnostic skills

Age and Diagnostic skills

Prabukumar (1996) reported that trainees had negative significant relationship between age and skill.

Prajapathi Poonam and Rathore Surya (2016) observed that programme coordinators (PCs) had non-significant relationship with age and managerial skills.

Education and Diagnostic skills

Prabukumar (1996) reported that trainees had significant relationship between knowledge and skill.

Prajapathi Poonam and Rathore Surya (2016) observed that programme coordinators (PCs) had non-significant relationship with education and managerial skills.

Mass media use and Diagnostic skills

Pennobaliswamy (1995) found that trained farmers had significant relationship with mass media use and skill and untrained farmers had non-significant relationship.

Prabukumar (1996) reported that trainees had non-significant relationship between mass media participation and skill.

Extension contact and Diagnostic skills

Pennobaliswamy (1995) reported that trained and untrained farmers had non-significant relationship with extension contact and skill.

Extension participation and Diagnostic skills

Pennobaliswamy (1995) identified that trained farmers had significant relationship with extension participation and skill and untrained farmers had non-significant relationship with skill and extension participation.

Achievement motivation and Diagnostic skills

Pennobaliswamy (1995) reported that trained and untrained farmers had non-significant relationship with achievement motivation and skill.

Prajapathi Poonam and Rathore Surya (2016) observed that programme coordinators (PCs) had non-significant relationship with achievement motivation and managerial skills.

Social participation and Diagnostic skills

Pennobaliswamy (1995) reported that trained farmers had significant relationship with social participation and skill and untrained farmers had non-significant relationship with social participation and skill.

Prabukumar (1996) reported that trainees had significant relationship between Social participation and skill.

Risk orientation and Diagnostic skills

Pennobaliswamy (1995) reported that trained and untrained farmers had non-significant relationship with risk orientation and skill.

2.5 Opinion of respondents regarding training programmes

Pennobaliswamy (1995) reported that majority of the trained cardamom growers express their opinion as good with respect to training methodology (53.00 %) and facilities (55.00 %) and 20.00 per cent of growers expressed that the facilities in KVK were poor. Whereas, trained banana growers express their opinion as good with respect to training content (77.00 %), training methodology (73.00 %) and facilities (60.00 %).

Meena and Bhati (2010) conduct a study on Impact of Krishi Vigyan Kendra's trainings on knowledge and adoption of cotton production technologies. In this study they revealed that 58.33 per cent of trainees fully satisfied with training methodology followed by 29.16 per cent satisfied and 12.50 per cent unsatisfied. Regarding course content, more than two third of trainees (70.83%) fully satisfied followed by satisfied (19.16 %) and

unsatisfied (10.00%). In case of physical facilities 70.83 per cent of trainees fully satisfied followed by satisfied (24.36 %) and unsatisfied (9.16%) and regarding field visits majority of trainees (72.50%) fully satisfied followed by satisfied (18.33 %) and unsatisfied (9.16%).

A study on Perceptions of in-service personnel on Integrated Pest Management (IPM) training by Ramakant Sharma *et al.* (2013). In this study he found that 63.66 per cent of respondents perceived the course content was excellent while 36.66% respondents reported that it was good. 68.16 per cent of respondents perceived the classroom facilities was excellent while 31.81 per cent respondents reported that it was good. 34.09 per cent of respondents perceived the participation involvement was excellent followed by good (34.09%), fair (22.72%) and poor (9.09%).

2.6 Suggestions given by the trainees for improving the training

Pennobaliswamy (1995) revealed that 37.00 per cent of the trained cardamom growers have suggested provision of farmers hostel at KVK followed by establishing demonstration units for different crops (30.00 %), conduct more number of off campus training programmes (17.00 %), provide transportation facilities to attend training programme (17.00 %), conducting study tour, more practical classes, conducting impact studies and provide more information about different Govt. schemes (15.00 %). Whereas trained banana growers have suggested provision of farmers hostel at KVK (25.00 %) followed by providing transportation facilities to attend training programme and giving more publicity to KVK activities (20.00 %), more field visits to farmers field (17.00 %), providing information on local banana verities and bulletin on different crops of the region should be prepared (12.00 %).

Sharma *et al.* (2004) conducted a study on Perception of trainees about Integrated Pest Management training. In this study 87.5 per cent of trained respondents suggested, each training programme must start with field visit followed by other suggestions are during training programme KVK must distribute printed information / material about the subject matter (68.75 %), training programme in KVK should be conducted by external

experts on the subject together with regular trainers for better exposure and experiences (37.50 %) and each training programme must start with skill training (34.37 %).

Rudragouda Patil (2009) suggestions are reported that fixing of some minimum qualification for trainees (53.33 %) followed by discussion with trainees at the end of training programme (30.00 %), trainees should be motivated to attend class in time (26.66 %), trainers to use local language for better understanding of trainees (16.66 %) and providing sufficient allowance to trainees for better participation (10.00 %).

Sangamesh Ganiger (2012) reported that majority of input dealers suggested that Specific training programmes should be conducted regarding diagnostic skills, communication skills, climate change, computer knowledge etc. (89.99 %) followed by Department of agriculture should conduct exposure visits and encourage input dealers in activities of FIG's and rural institutions (86.66 %), Department of agriculture and SAU's should provide adequate timely information material about new farm practices for updating the knowledge of input dealers in agro-advisory services (85.83 %) and Research scientists should develop package of agro-advisory services suitable to specific regions of dry zone (73.33 %).

Ramakant Sharma *et al.* (2013) reported that 98.00 per cent of respondents suggested, training must be of 5 to 7 days long duration on this type of subject followed by another suggestions are Training programme must follow field visit (90.00%), Sufficient funds should be made available for lodging facility in KVK (70.00%), During training programme, practical session should be incorporated (50.00%) and Trainers must use live samples of disease and insect infested crops, specimen of damage during the training programme to make the training session interesting and effective (20.00%).

Harshitha (2014) suggestions are reported by bakery trainees are conduct training need assessment before finalizing the programme schedule (84.20 %) followed by include more demonstration (83.30 %), programmes of Bakery and Value Addition Center should include more experiences of progressive bakery entrepreneur and success stories (72.50 %), include more live specimens (72.50 %), provide more training to facilitators/ trainees (70.80 %) and conduct quiz competition for trainees once in a month (67.50 %).

CHAPTER III

METHODOLOGY

This chapter has been listed with detailed study area, variables and their empirical measures, procedure for selection samples, collection of data and statistical tools used for analysing data with the following headings:

3.1 Locale of study

3.2 Selection of respondents

3.3 Research design

3.4 Variables for the study

3.5 Operationalization and measurements of dependent variables

3.6 Operationalization and measurements of independent variables

3.7 Opinion of trained input dealers regarding DAESI training

3.8 Suggestions of the trained input dealers for further improvement of DAESI training

3.9 Data collection

3.10 Statistical tools used in the study

3.11 Conceptual model of the study

3.1 Locale of study:

Brief description of the study area:

Davanagere district is situated on the slope of the Western Ghats. It lies in the plain region on the Deccan plateau. The district is bounded by Chitradurga district (east), Bellary district (north) Chikmagalur district (south) and Shimoga district and Haveri district (west). The district situated in the center of Karnataka between the longitudes 75°30' and 76°30' E and between the latitudes 13°5' and 14°50' N and rises 602.5 meter above sea level. The western and southern parts of the district are irrigated by the Bhadra reservoir. It has the Asia's 2nd largest irrigation tank called Shanti sagar which is a major water source for

farmers in the district. This district receives average annual rainfall of 644 mm. Temperature range from 32^{o}C-40^{o}C during summer.

As per the 2011 census, Davanagere had a population of 435,125 of which includes 52 per cent and 48 per cent male and female population, respectively. It has an average literacy rate of 85 per cent with male literacy at 89 per cent and female literacy at 81 per cent.

Total Geographical area of this district is 5975.97 Sq. Km and sixth largest city in the state. This district comprises of six taluks viz., Davanagere, Chennagiri, Jagaluru, Harihara, Harapanahalli and Honnahalli. Major food crops grown in districts are Paddy, Maize and Ragi and commercial crops are Cotton, Onion, Chilli and plantation crops are Arecanut and Banana.

Selection of District:

The present study was conducted in Davanagere district of Karnataka. Diploma in Agricultural Extension Services for Input Dealers (DAESI) training programme conducted in Four Nodal Training Institutes (NTI) in Davanagere district under SAMETI (S), UAS, Hebbal, Bengaluru viz., ICAR Taralabalu KVK, Davanagere, District Agricultural Training Center (DATC), Kadajji, Institution of Agricultural Technologists (IAT), Shamanur Road, Davangere, Agricultural and Horticultural Research Station (AHRS), Kattalagere, Chennagiri, Davangere Dist. UHAS, Shivamogga. Totally 160 Input Dealers were trained at the rate of 40 per batch per NTI during a year 2015-16.

3.2 Selection of respondents:

For the study Ten trained DAESI dealers (n_1) from each Nodal Training Institute (NTIs) were randomly selected thus making total sample of 40 to the match 40 untrained input dealers (n_2) were selected who are selling Seeds, Fertilizers and Plant Protection Chemicals.

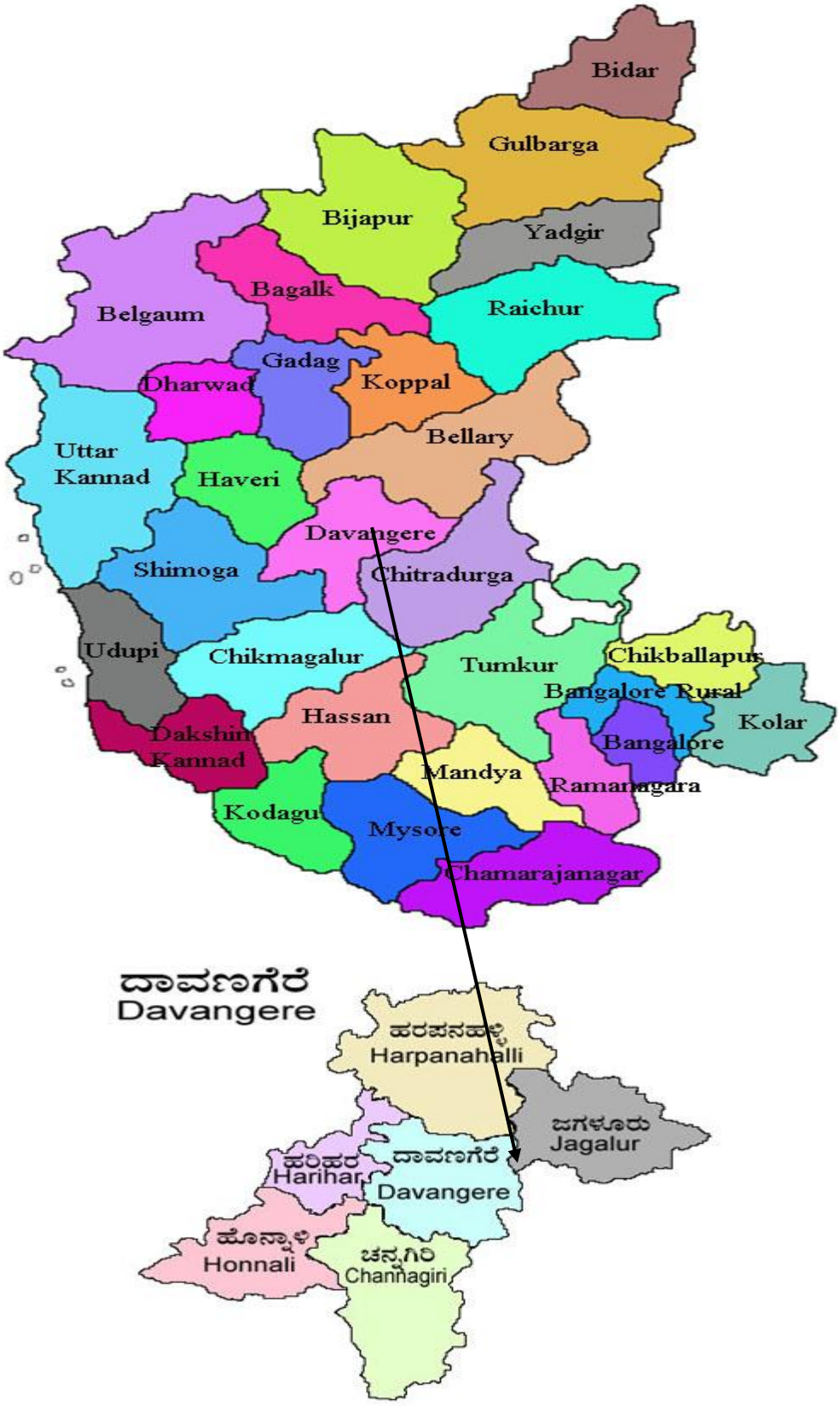

Fig. 1: Map showing study area

3.3 Research design:

Ex post-facto research design was employed for conducting study. This research design is considered appropriate because phenomenon is already occurred and investigator does not have any direct control on independent variables. According to Kerlinger (1983) "ex-post facto is a systematic, empirical inquiry in which the researcher did not had direct control of independent variables because their manifestations had already occurred".

3.4 Variables and their measurements:

Two dependent and eleven independent variables were selected for the study. These variables selected based on the objective of the study and available literature. The selected variables and their empirical measurements are presented below.

Sl. No.	Variables	Empirical measurements
	Dependent variables	
1.	Knowledge	Teacher made test developed
2.	Diagnostic skills	Schedule developed
	Independent variables	
1.	Age	Chronological years completed
2.	Education	Actual qualification is considered
3.	Annual turnover	Schedule developed
4.	Mass media use	Procedure followed by Trivedi (1963) with suitable modification
5.	Extension contact	Scale developed by Krishnamurthy (1993) with suitable modification.
6.	Extension participation	Procedure followed by Nagesh (2006) with suitable modification
7.	Achievement motivation	Procedure followed by Nagesha (2005) with suitable modification
8.	Management orientation	Procedure followed by Samantha (1977) with suitable modifications
9.	Social participation	Procedure followed by Chandrashekar (1995) with suitable modifications
10.	Scientific orientation	Scale developed by Supe (1969) with suitable modifications
11.	Risk orientation	Scale developed by Supe (1969) with suitable modifications

3.5 Operationalization and measurement of dependent variables

3.5.1 Knowledge

Knowledge was defined as the things known to an individual and represented cognitive domain. Knowledge level operationalized in the study as the equation of scientific information known to the respondents about the seeds, fertilizers and plant protection chemicals.

Construction of teacher made knowledge test

The teacher made test was developed to measure the knowledge level of input dealers about the farm inputs. Based on the topics covered during DAESI training. A list of knowledge items were developed (9 items in seeds, 16 items in fertilizers and 14 items in plant protection chemicals). A set of knowledge items were converted into question with Yes/No type, open end type and multiple choice type questions. Each knowledge item was credited with one score for correct answer and zero score for incorrect answer. The maximum score one can get was thirty nine and minimum score was zero.

Based on the total score, the respondents were classified into three categories viz., low, medium and high level of knowledge by using mean and standard deviation.

Sl. No.	Criteria	Mean score	
		Trained	Untrained
1.	Low (< mean - ½ SD)	<30.29	<19.38
2.	Medium (mean ± ½ SD)	30.29-33.75	19.38-22.66
3.	High (> mean +½ SD)	>33.75	>22.66

3.5.2 Diagnostic skills

Diagnostic skill is operationalized as the ability of the input dealers to identify the specimens of seeds, fertilizers, specific nutrient deficiency, disease and pest symptoms to manage them in the field.

To assess the diagnostic skill level of respondents schedule is developed. It consist of five sub components viz., identification of seeds (7 skill items), fertilizers (8 skill items), nutrient deficiency symptoms (5 skill items), insect damage (4 skill items) and disease symptoms (4 skill items) of maize and paddy. Specimens were displayed to each input dealer to identify each specimen and write their names or characteristics.

Each diagnostic skill item assessed one score for identified specimen and zero score for not identified the specimen. The maximum score one could obtain was twenty eight and minimum score was zero. Based on the total score on diagnostic skills for each individual assessed and classified into three categories viz., low, medium and high level of diagnostic skills acquired by using mean and standard deviation.

Sl. No.	Criteria	Mean score	
		Trained	Untrained
1.	Low (< mean - ½ SD)	<24.11	>13.99
2.	Medium (mean ± ½ SD)	24.11-26.33	13.99-16.05
3.	High (> mean +½ SD)	>26.33	>16.05

3.6 Operationalization and measurements of independent variables

3.6.1 Age

Age is operationalized by considering the chronological age of input dealers in completed years at the time of investigation. The respondents categorized into three categories based on the number years completed.

Sl. No.	Category	Age in years
1.	Young	30 and below
2.	Middle	31 to 50
3.	Old	More than 50

3.6.2 Education

Education is operationalized as the number of years of formal education obtained by the input dealers. The respondents were grouped into different categories based on actual qualification and scores was given for each categories as follows

Sl. No.	Category	Scores
1.	SSLC	1
2.	PUC	2
3.	Graduate	3
4.	Post-Graduate	4
5.	Any other	5

3.6.3 Annual turnover

Annual turnover is operationalized as the return obtained by input dealers from input dealership business per annum. The respondents were grouped into three categories based on the turnover in rupees per annum and scores was given for each categories as follows.

Sl. No.	Category	Scores
1.	Rs. < 50lakh	1
2.	Rs. 50 lakh to 1crore	2
3.	Rs. > 1 crore	3

3.6.4 Mass media use

It refers to the degree to which different mass media were used by input dealers for acquiring information. The procedure followed by Trivedi (1963) was used for empirical quantification of this variable. Scores was given for each mass media selected items like ‘two’ score for regular use, ‘one’ for occasional use and ‘zero’ for never use. Based on the total score obtained the respondents are grouped into three categories by using mean and standard deviation.

Sl. No.	Criteria	Mean score	
		Trained	Untrained
1.	Low (< mean - ½ SD)	<10.63	<9.49
2.	Medium (mean ± ½ SD)	10.63-11.91	9.49-10.80
3.	High (> mean +½ SD)	>11.91	>10.80

3.6.5 Extension contact

It was operationalized as the frequency of contacts made by the input dealers with various extension personnel like AAO, AO, ADA, JDA and KVK Scientist etc.

This variable was measured with the help of scale developed by Krishnamurthy (1993) with suitable modification. The response obtained for the each statement were rated on four point continuum.

Frequency of contact	Score
Very often	3
Often	2
Occasionally	1
Never	0

Total score of the each respondents is obtained by summing up of all the scores of various score of contact. The total score of the respondents indicate the frequency of contact they had with extension personnel. Total score range from 0 to 30. Based on the total score obtained by input dealers, they were categorized as low, medium and high by using mean and standard deviation.

Sl. No.	Criteria	Mean score	
		Trained	Untrained
1.	Low (< mean - ½ SD)	<12.05	<7.25
2.	Medium (mean ± ½ SD)	12.05-15.74	7.25-9.84
3.	High (> mean +½ SD)	>15.74	>9.84

3.6.6 Extension participation

It refers to the awareness of respondents about various extension activities like demonstration, training programme, field day, exhibition, field visit etc. and their extent of participation in them. The procedure followed by Nagesh (2006) was used for empirical quantification of this variable with suitable modification.

Extent of participation	Score
Regular	4
Occasional	2
Never	0

Further, respondents are grouped into three categories on the basis of mean and standard deviation as follows.

Sl. No.	Criteria	Mean score	
		Trained	Untrained
1.	Low (< mean - ½ SD)	<19.23	<13.88
2.	Medium (mean ± ½ SD)	19.23-22.26	13.88-17.31
3.	High (> mean +½ SD)	>22.26	>17.31

3.6.7 Achievement motivation

It was operationalized as the desire for excellence to attain a sense of personal accomplishment. Quantification of this variable done with the help of procedure adopted by Nagesha (2005). This instrument consist of six statements and responses obtained on five point continuum namely 'strongly agree', 'agree', 'undecided', 'disagree' and 'strongly disagree'. The statements 1, 3, 4, 5, and 6 are positive and 2 statement is negative. A weightage of 5, 4, 3, 2 and 1 scoring was assigned to the response categories in case of positive statements and scoring was reversed for negative statements.

The total score of the respondents obtained by summing of all scores of different statements. The total scores of the respondents indicate the level of achievement motivation they had. The total score ranged from 6 to 30. Based on the total score obtained by input

dealers, they were categorized as low, medium and high based on mean and standard deviation as a measure of check.

Sl. No.	Criteria	Mean score	
		Trained	Untrained
1.	Low (< mean - ½ SD)	<21.92	<21.46
2.	Medium (mean ± ½ SD)	21.92-23.37	21.46-22.99
3.	High (> mean +½ SD)	>23.37	>22.99

3.6.8 Management orientation

Management orientation is operationalised as degree to which an input dealers are oriented towards the systematic business management includes planning, marketing and profit function of business enterprise. Quantification of this variable done with the help of procedure adopted by Samantha (1977). It consist of six statements and responses obtained on five point continuum namely 'strongly agree', 'agree', 'undecided', 'disagree' and 'strongly disagree'. The statements 1, 4 and 6 are positive and 2, 3 and 5 statements are negative. A weightage of 5, 4, 3, 2 and 1 scoring was assigned to the response categories in case of positive statements and scoring was reversed for negative statements.

The total score of the respondents obtained by summing of all scores of different statements. The total scores of the respondents indicate the level of achievement motivation they had. The total score ranged from 6 to 30. Based on the total score obtained by input dealers are categorized into three categories by using mean and standard deviation.

Sl. No.	Criteria	Mean score	
		Trained	Untrained
1.	Low (< mean - ½ SD)	<23.59	<21.65
2.	Medium (mean ± ½ SD)	23.59-24.75	21.65-24.29
3.	High (> mean +½ SD)	>24.75	>24.29

3.6.9 Social participation

It was operationalized as the input dealers participating in local organizations which might had impact on his access to information, motivation to change and exposure to new ideas. This variable is quantified with the help of adopting procedure followed by Chandrashekar (1995) with suitable modification in the items and scores were given as follows.

Category	Score
Office bearer	2
Member	1
Non office bearer	0

Total score of the each respondents is obtained by summing up of all the scores of various score of participation. Total score range from 0 to 16. Based on the total score obtained by input dealers, they were categorized into three categories viz, low, medium and high by using mean and standard deviation.

Sl. No.	Criteria	Mean score	
		Trained	Untrained
1.	Low (< mean - ½ SD)	<4.74	<2.49
2.	Medium (mean ± ½ SD)	4.74-5.65	2.49-3.45
3.	High (> mean +½ SD)	>5.65	>3.45

3.6.10 Scientific orientation

Scientific orientation is operationalised as degree to which an input dealers are oriented towards the use of scientific procedures, methods and information during selling of agriculture inputs to the farmers. Quantification of this variable done with the help of procedure adopted by Supe (1969). It consist of six statements and all statements are positive and responses obtained on five point continuum namely ‘strongly agree’, ‘agree’, ‘undecided’, ‘disagree’ and ‘strongly disagree’. A weightage of 5, 4, 3, 2 and 1 scoring was assigned to the response categories of positive statements.

The total scores of the respondents indicate the level of achievement motivation they had. The total score of the respondents on their scientific orientation was arrived summing up the weights of responses for each statement. The total score ranged from 6 to 30. Based on the total score input dealers grouped into three categories by using mean and standard deviation.

Sl. No.	Criteria	Mean score	
		Trained	Untrained
1.	Low (< mean - ½ SD)	<24.96	<21.18
2.	Medium (mean ± ½ SD)	24.96-26.28	21.18-23.51
3.	High (> mean +½ SD)	>26.28	>23.51

3.6.11 Risk orientation

Risk orientation is operationalised as degree to which an input dealers are oriented towards risk and uncertainty in para-extension profession and input dealership business. It was measured with the help of scale developed by Supe (1969) with slight modification. This scale consist of six statements and responses obtained on five point continuum namely 'strongly agree', 'agree', 'undecided', 'disagree' and 'strongly disagree'. . The statements 1, 2, 3, 5, and 6 are positive and 4 statement is negative. A weightage of 5, 4, 3, 2 and 1 scoring was assigned to the response categories in case of positive statements and scoring was reversed for negative statements.

The scores were added to get total score of the respondents. Total score of respondents depict the level of risk orientation they had. The total score ranged from 6 to 30**.** Based on the total score obtained by input dealers, they were categorized as low, medium and high by using mean and standard deviation as a measure of check.

Sl. No.	Criteria	Mean score	
		Trained	Untrained
1.	Low (< mean - ½ SD)	<21.79	<19.49
2.	Medium (mean ± ½ SD)	21.79-23.15	19.49-21.30
3.	High (> mean +½ SD)	>23.15	>21.03

3.7 Opinion of trained input dealers regarding DAESI training

To ascertain the opinion of trained input dealers regarding DAESI training schedule is developed. It consist of five response categories and responses obtained on five point continuum namely 'Very good', 'Good', 'Average', 'Poor' and 'Very poor'. A weightage of 5, 4, 3, 2 and 1 scoring was assigned to the response categories and they are quantified in terms of frequency and percentage.

3.8 Suggestions of the trained input dealers for further improvement of DAESI training

Suggestions are the ideas put forth by the trainees based on their experience for effective organization of training programme. They were asked to give suggestions and were recorded. Obtained suggestions were expressed in terms of frequency and percentage.

3.9 Data collection

The structured questionnaire was developed in line with the objectives of the research study. It was distributed by the researcher personally to the input dealers at four Nodal Training Institutes (NTI) in Davanagere. The researcher explained the purpose of the investigation to the input dealers and clarified the doubts of the input dealers while filling the questionnaire.

3.10 Statistical tools used

The data collected from the respondents for the purpose of the study were scored, tabulated and analysed by using frequency, mean, percentage, standard deviation, multiple regression analysis and correlation.

Frequency

Frequency was employed to know the distribution pattern of the input dealers into the different categories of a variable. It was measured as the number of respondents or responses in a particular category.

Plate 1(a)

Plate 1(b): Researcher interviewing the agriculture input dealers at the time of data collection

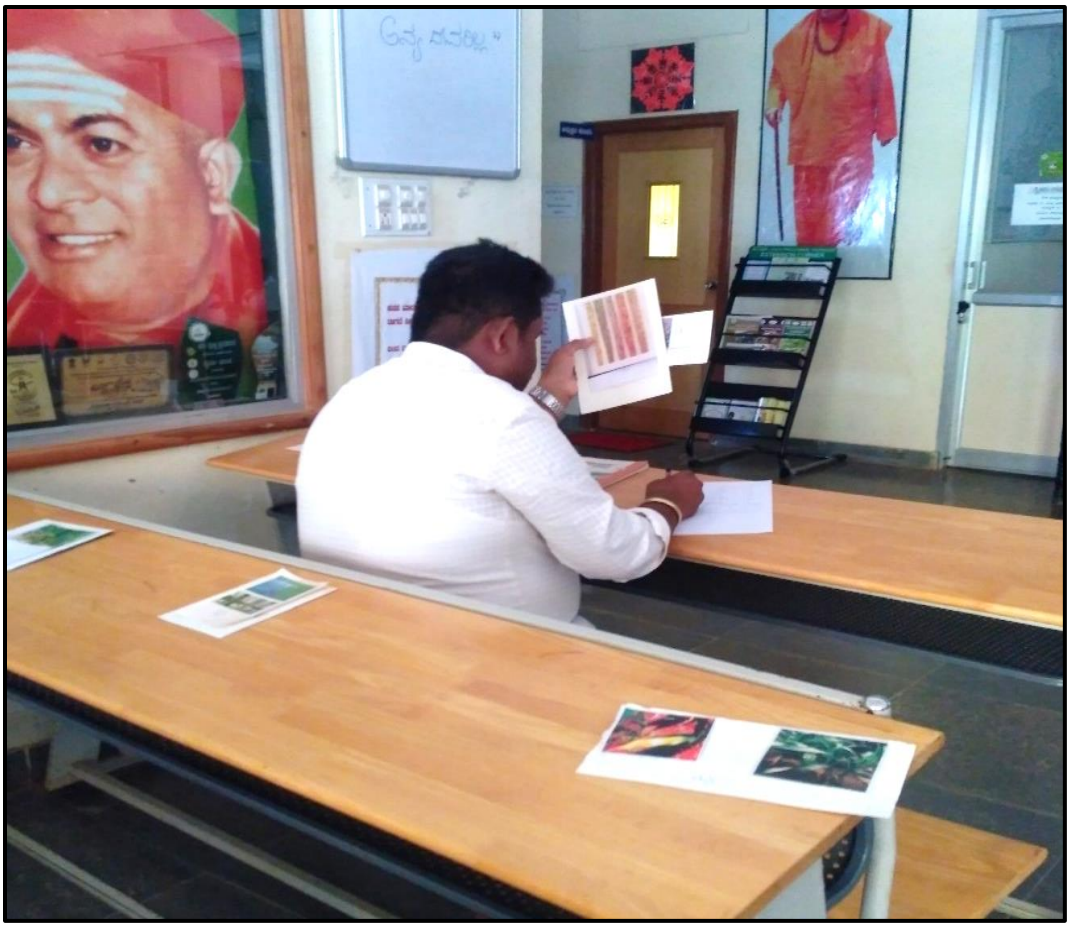

Plate 2(a)

Plate 2(b): Identification of diagnostic skills by the agricultural input dealers at the time of data collection

Arthematic mean

It is defined as the sum of all values of the observations divided by the total number of observations. It was used for the categorization of respondents on all the variables of the study.

Percentage

Percentage was used for standardization of size of responses per hundred of such measurement.

$$\text{Percentage} = \frac{\text{Score obtained}}{\text{Total obtainable score}} \times 100$$

Standard deviation (SD)

It is the positive square root of the squared deviations taken from the arithmetic mean. It was used to find out the variation in the scores on variables and categorization of respondents. Both mean and standard deviation were used to classify the respondents into low, medium and high level as follows.

Category	Criteria
Low	<(Mean - $^1/_2$ SD)
Medium	(Mean ± $^1/_2$ SD)
High	>(Mean + $^1/_2$ SD)

Correlation

To assess the relationship between dependent and independent variables of respondents.

Independent t test

Independent t test was analysed to test the difference between the two populations mean on the basis of two sample mean. Let be a sample of size n_1 drawn from population with mean μ_1 and n_2 be another independent sample with mean μ_2 and samples were drawn from trained and untrained dealers.

$$t = \frac{(\overline{x_1} - \overline{x_2}) - (\mu_1 - \mu_2)}{\sqrt{\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}}}$$

Where,

$\overline{x_1}$ - Mean of first sample

$\overline{x_2}$ - Mean of second sample

s_1^2 - Variance of first sample

s_2^2 - Variance of second sample

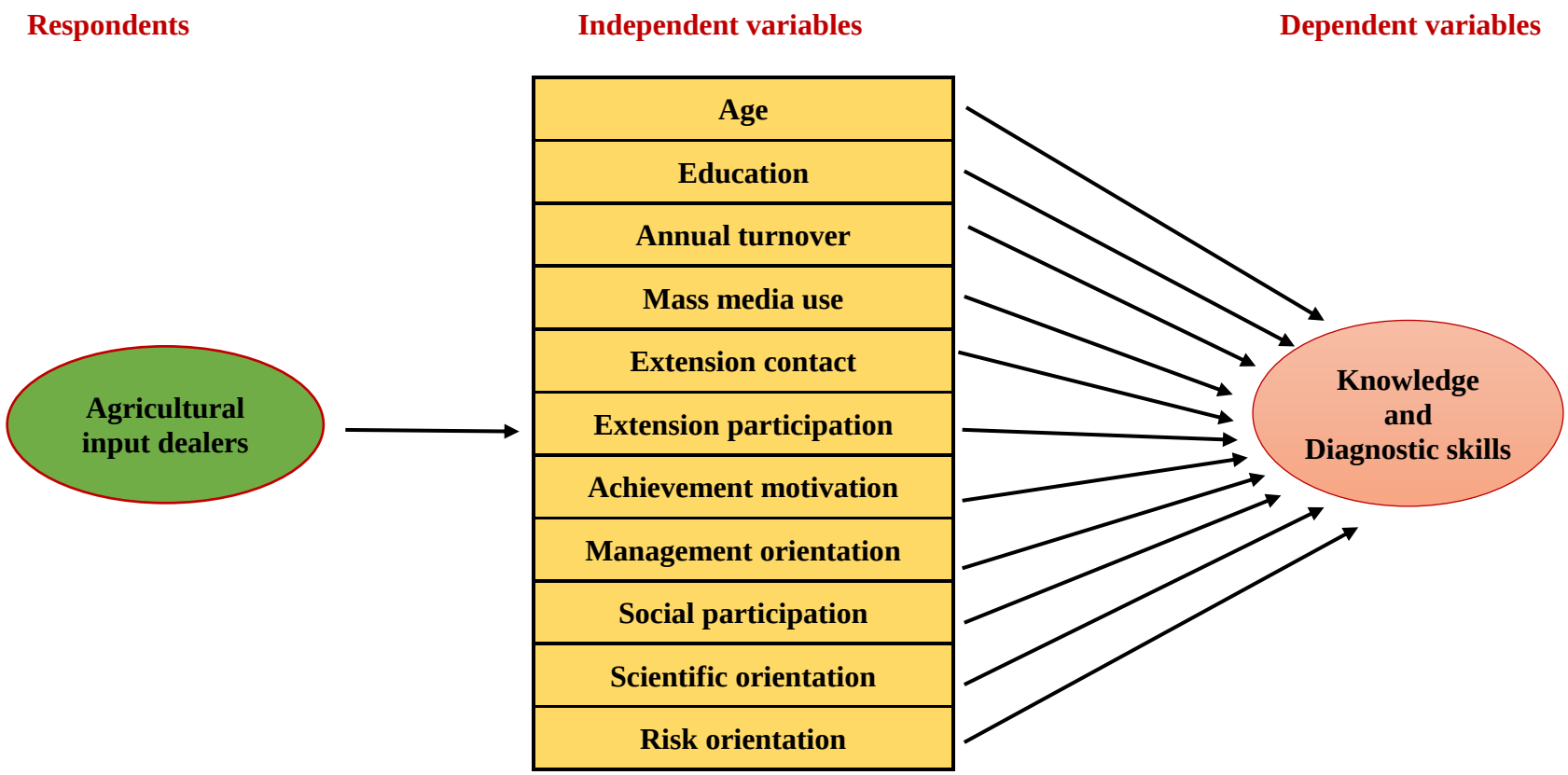

Fig. 2: Conceptual model of the study

CHAPTER IV
RESULT AND DISCUSSION

The results of the study are presented in this chapter on the following sub-heads:

4.1 Profile characteristics of agricultural input dealers.

4.2 Knowledge level of the agricultural input dealers.

4.3 Diagnostic skills level of the agricultural input dealers.

4.4 Relationship between Personal, Psychological and Socio-economic characteristic of agricultural input dealers with their dependent variables

4.5 Opinion and suggestions indicated by the trained input dealers for further improvement of DAESI training

4.6 Successful case studies of Extension Services provided by Agricultural Input Dealers.

4.1 Profile characteristics of agricultural input dealers.

4.1.1 Age

Data presented in the Table 1 shows that majority of trained input dealers belonged to middle age (62.50%) category followed by young (25.00%) and old age (12.50%). While, 80.00 per cent of untrained dealers belong to middle age category followed by young (12.50%) and old age (7.50%).

The findings indicate that majority of respondents belong to middle age group followed by young. The middle age group of input dealers are much involved in agri-input dealership followed by young and old age groups. The reason might be physical strength and work efficiency is more in case of middle and young age group compared to old age group. The similar findings were also reported by Anitha (2005), Sangamesh Ganiger (2012) and Srinivas (2013).

Table 1: Distribution of agricultural input dealers according to their age

(N=80)

Sl. No.	Category	Trained dealers (n_1=40)		Untrained dealers (n_2=40)	
		Frequency	Percentage	Frequency	percentage
1.	Young (< 35 years)	10	25.00	5	12.50
2.	Middle (35-50 years)	25	62.50	32	80.00
3.	Old (> 50 years)	5	12.50	3	7.50

4.1.2 Education

From the Table 2 evident that nearly half of the trained dealers (40.00%) were having graduation followed by PUC (30.00%), SSLC (17.50%) and post-graduation (12.50%). Whereas, in case of untrained dealers 35.00 per cent of respondents were having PUC followed by SSLC (30.00%), graduation (27.50%) and post-graduation (7.50%).

For the study actual qualification of the agricultural input dealers is considered. The probable reason is that the minimum eligibility education qualification 10th standard to get admission in DAESI training programme. This finding is in consistent with Leelavani Madem (2011), Sangamesh Ganiger (2012) and Srinivas (2013).

Table 2: Distribution of agricultural input dealers according to their education

(N=80)

Sl. No.	Category	Trained dealers (n_1=40)		Untrained dealers (n_2=40)	
		Frequency	Percentage	Frequency	percentage
1.	SSLC	7	17.50	12	30.00
2.	PUC	12	30.00	14	35.00
3.	Graduation	16	40.00	11	27.50
4.	Post-Graduation	5	12.50	3	7.50

4.1.3 Annual turnover

The findings regarding annual turnover are presented in Table 3 revealed that 40.00 per cent of trained input dealers belonged to annual turnover of Rs. 50 lakh to 1 crore followed by Rs. < 50 lakh (35.00%) and Rs. > 1 crore (25.00%). While, 42.50 per cent of untrained dealers belonged to annual turnover of Rs. 50 lakh to 1 crore followed by Rs. < 50 lakh (37.50%) and Rs. > 1 crore (20.00%).

Findings of the study clearly indicate that majority of the trained and untrained dealers earn Rs. 50 lakh to 1 crore turnover per annum. The probable reason might be due to big size of the business firm selling seeds, fertilizers and plant protection chemicals.

Table 3: Distribution of agricultural input dealers according to their annual turnover (N=80)

Sl. No.	Category	Trained dealers (n_1=40)		Untrained dealers (n_2=40)	
		Frequency	Percentage	Frequency	percentage
1.	Rs. < 50 lakh	14	35.00	15	37.50
2.	Rs. 50 lakh to 1 crore	16	40.00	17	42.50
3.	Rs. > 1 crore	10	25.00	8	20.00

4.1.4 Mass media use

Data presented in Table 4 revealed that nearly half of the trained input dealers (42.50%) belonged to high level of mass media use followed by medium (35.00) and low (22.50%). In case of untrained dealers, 40.00 per cent of the respondents belonged to medium level of mass media use (40.00%) followed by high (32.50%) and low (27.50%).

The results of the study depicted that trained dealers belong to high level of mass media use and untrained dealers belong to medium level of mass media use. It might be due to the high level of education and interest to update the latest agricultural technologies from different mass media sources. This finding is in consistent with findings of Appu Halasangi (2009).

Table 4: Distribution of agricultural input dealers according to their mass media use

(N=80)

Sl. No.	Category	Trained dealers (n_1=40)		Untrained dealers (n_2=40)	
		Frequency	**Percentage**	**Frequency**	**percentage**
1.	Low	9	22.50	11	27.50
2.	Medium	14	35.00	16	40.00
3.	High	17	42.50	13	32.50
Mean		11.25		10.15	
SD		1.50		1.54	

4.1.5 Extension contact

From the Table 5 it was evident that 52.50 per cent of trained dealers had high level of extension contact followed by medium (30.00%) and low (17.50%). Whereas, nearly half of the untrained dealers (47.50%) belonged to medium level of extension contact followed by high (27.50%) and low (25.00%) categories.

Findings of the study clearly indicate that trained dealers belonged to high level of extension contact and untrained dealers belonged to medium level of extension contact. The probable reason might be due to their education had connected KVK scientists, Agriculture/Horticulture officers and extension agencies. The DAESI training might have provided opportunity to high extension contact for trained dealers. This finding is in consistent with findings of Srinivas (2013).

4.1.6 Extension participation

The findings from the Table 6 showed that, more than half of the trained input dealers (57.50%) belonged to the high level of extension participation followed by medium (25.00%) and low (17.50%). Whereas in case of untrained dealers, more than half of respondents (52.50%) belonged to medium level of extension participation followed by low (27.50%) and high (20.00%).

The probable reason for trained dealers had high level of extension participation and untrained dealers had medium level of extension participation might be due to their interest in participating extension activities like training programmes, field days, exposure visits, exhibition etc. The results are in accordance with the findings of Sunil Kharatmol (2006) and Appu Halasangi (2009).

Table 5: Distribution of agricultural input dealers according to their extension contact

(N=80)

Sl. No.	Category	Trained dealers (n_1=40)		Untrained dealers (n_2=40)	
		Frequency	Percentage	Frequency	percentage
1.	Low	7	17.50	10	25.00
2.	Medium	12	30.00	19	47.50
3.	High	21	52.50	11	27.50
Mean		13.90		8.55	
SD		4.34		3.03	

Table 6: Distribution of agricultural input dealers according to their extension participation

(N=80)

Sl. No.	Category	Trained dealers (n_1=40)		Untrained dealers (n_2=40)	
		Frequency	Percentage	Frequency	percentage
1.	Low	7	17.50	11	27.50
2.	Medium	10	25.00	21	52.50
3.	High	23	57.50	8	20.00
Mean		20.75		15.60	
SD		3.55		4.03	

4.1.7 Achievement motivation

It is evident from the Table 7 nearly two third of the trained input dealers (60.00%) belonged to high level of achievement motivation followed by medium (25.00%) and low (15.00%). While, half of the untrained dealers (50.00%) belonged to medium level of achievement motivation followed by equal per cent of respondents belonged to high and low category of achievement motivation (25.00%).

The findings of the study depicted that majority of trained input dealers had high category of achievement motivation and untrained dealers had medium category of achievement motivation. The reason might be due to achievement motivation forces an individual towards reaching some goals, which he/she has to set himself. Higher the motivation of the individual, higher will be his/her effort. The findings are in agreement with the studies conducted by Harshitha (2014) and Kaushal Chandra Sharma (2017).

Table 7: Distribution of agricultural input dealers according to their achievement motivation

(N=80)

Sl. No.	Category	Trained dealers (n_1=40)		Untrained dealers (n_2=40)	
		Frequency	Percentage	Frequency	percentage
1.	Low	6	15.00	10	25.00
2.	Medium	10	25.00	20	50.00
3.	High	24	60.00	10	25.00
Mean		22.65		22.22	
SD		1.70		1.80	

4.1.8 Management orientation

Data presented from the Table 8 half of the trained dealers (50.00%) belonged to medium level of management orientation followed by high (32.50%) and low (17.50%). While, 47.50 per cent of untrained dealers had medium level of management orientation followed by high (27.50%) and low (25.00%).

It was clear from the table 8 that majority of trained and untrained dealers belonged to medium to high level of management orientation. The probable reason might be due to implementation of updated businesses rules and latest marketing techniques to gain profits. This finding is in consistent with Srinivas (2013).

Table 8: Distribution of agricultural input dealers according to their management orientation

(N=80)

Sl. No.	Category	Trained dealers (n_1=40)		Untrained dealers (n_2=40)	
		Frequency	Percentage	Frequency	percentage
1.	Low	7	17.50	10	25.00
2.	Medium	20	50.00	19	47.50
3.	High	13	32.50	11	27.50
Mean		24.17		22.97	
SD		1.35		3.10	

4.1.9 Social participation

The findings from the Table 9 revealed that 57.50 per cent of trained dealers belonged medium level of social participation followed by high (25.00%) and low (17.50%). In case of untrained dealers, 42.50 per cent of respondents belonged to medium level of social participation followed by low (37.50%) and high (20.00%).

The findings of the study clearly indicated that trained and untrained dealers belonged to medium category of social participation. The reasons could be due to lack of interest and benefits by participation activities. This finding is in line with the findings of Appu Halasangi (2009).

4.1.10 Scientific orientation

Data presented from the Table 10 evident that half of the trained dealers (50.00%) belonged to high level of scientific orientation followed by medium (30.00%) and low

(20.00%). In case of untrained dealers, 40.00 per cent of respondents belonged to low level of scientific orientation followed by medium (32.50%) and low (27.50%).

Table 9: Distribution of agricultural input dealers according to their social participation

(N=80)

Sl. No.	Category	Trained dealers (n_1=40)		Untrained dealers (n_2=40)	
		Frequency	**Percentage**	**Frequency**	**percentage**
1.	Low	7	17.50	15	37.50
2.	Medium	23	57.50	17	42.50
3.	High	10	25.00	8	20.00
Mean		5.2		2.97	
SD		1.06		1.12	

Table 10: Distribution of agricultural input dealers according to their scientific orientation

(N=80)

Sl. No.	Category	Trained dealers (n_1=40)		Untrained dealers (n_2=40)	
		Frequency	**Percentage**	**Frequency**	**percentage**
1.	Low	8	20.00	16	40.00
2.	Medium	12	30.00	13	32.50
3.	High	20	50.00	11	27.50
Mean		25.62		22.35	
SD		1.56		2.75	

Findings of the study clearly shows that trained dealers had high category of scientific orientation it is might be due to their high level of extension contact, extension participation and education updated knowledge on new technologies. Whereas, untrained

dealers had low level of scientific orientation might be due to medium level of extension contact and participation. This similar findings are reported by Appu Halasangi (2009).

4.1.11 Risk orientation

From the Table 11 evident that nearly half of the trained dealers (47.50%) belonged to medium level of risk orientation followed by high (27.50%) and low (25.00%). Whereas, more than one third of the untrained dealers (37.50%) belonged to medium level of risk orientation followed by high (32.00%) and low (30.00%).

The risk bearing capacity of individual depends on the personal, psychological and socio-economic characteristics. The findings of the study clearly indicated that trained and untrained dealers had medium to high categories of risk orientation. The probable reason might be the business itself is challenging job, the dealers have to always vigilant about market fluctuation and they have to face the risk to sustain in the market. This finding was in line with the findings of Srinivas (2013).

Table 11: Distribution of respondents according to their risk orientation

(N=80)

Sl. No.	Category	Trained dealers (n_1=40)		Untrained dealers (n_2=40)	
		Frequency	Percentage	Frequency	percentage
1.	Low	10	25.00	12	30.00
2.	Medium	19	47.50	15	37.50
3.	High	11	27.50	13	32.00
Mean		22.47		20.40	
SD		1.60		2.13	

4.2 Knowledge level of the agricultural input dealers

4.2.1 Statement wise knowledge level of the agricultural input dealers

From the Table 12 evident that cent per cent of trained input dealers level of knowledge items related to seeds such as reason for conducting seed germination test

(100%) followed by Seed is a fertilized mature ovule (97.50%), popular hybrid maize (95.00%) and red gram variety (92.50%) grown in your area, blast resistance paddy variety and chemical used for seed treatment in maize (85.00%). Whereas, in case of untrained dealers equal per cent of them had knowledge on Seed is a fertilized mature ovule and popular maize hybrid grown in your area (75.00%). Further, 62.50 per cent of them had knowledge on chemical used for conducting seed germination test and optimum seed rate recommended for paddy (55.00%).

Findings of the study clearly indicated that trainees had gained knowledge on seed, seed germination test, chemicals used for seed treatment, hybrid varieties and disease resistance varieties. But gained low knowledge on optimum seed rate for different crops and colours used to indicate the different classification of seeds.

In case of fertilizers, 97.50 per cent of trained dealers had knowledge on main source of K followed by name of straight fertilizer (95.00%), reclamation of alkaline soils and recommended dose of fertilizer required for paddy per acre (92.50%), cause for white bud in maize (90.00%), expire period of bio-fertilizers and usage of pesticides after of the expiry date causes (72.50%), Whereas, 87.50 per cent of untrained dealers had knowledge on name of straight fertilizer followed by main source of K (82.50%), recommended dose of fertiliser required for paddy per acre and recommended dose of fertilizer requires for one acre maize (70.00%), reclamation of alkaline soils (65.00%), quantity of Urea, DAP and MOP required for one acre of maize as per the recommended dose of NPK and widely used bio-fertilizer in paddy (35.00%).

The findings are clearly indicated that trained input dealers gained knowledge on classification of fertilizers with example, nutrient content in fertilizer, recommended dose of fertilizer for different crops and nutrient deficiency in different crops but they are had comparatively less knowledge on bio-fertilizers, fertilizer calculation and which type of fertilizer suitable for which type of soil.

Table 12: Statement wise knowledge level of the agricultural input dealers

(N=80)

Sl. No.	Knowledge items	Trained (n_1=40)		Untrained (n_2=40)	
A.	**Seeds**	**F**	**%**	**F**	**%**
1	Seed is a mature fertilized ovule	39	97.50	30	75.00
2	Colour used to indicate the Certified Seed	19	47.50	11	27.50
3	Optimum seed rate recommended for paddy	28	70.00	22	55.00
4	Blast resistant paddy variety	34	85.00	11	27.50
5	Reason for conduct seed germination test	40	100	23	57.00
6	Recommended seed rate for ragi per acre	28	70.00	10	25.00
7	Popular maize hybrid grown in your area	38	95.00	30	75.00
8	Popular red gram variety grown in your area	37	92.50	21	52.50
9	Popular field bean variety grown in your area	35	87.50	21	52.50
B.	**Fertilizers**				
1	Name of straight fertilizer	38	95.00	35	87.50
2	Main source of K	39	97.50	33	82.50
3	NPK content in Urea, SSP and MOP	35	87.50	23	57.50
4	In acid soil, commonly used Phosphatic fertilizer	28	70.00	15	37.50
5	Reclamation of Alkaline soils	37	92.50	26	65.00
6	Banned chemical for usage in agriculture	30	75.00	23	57.50
7	Usage of pesticides after of the expiry date	29	72.50	9	22.50
8	Bio-fertilizers	31	77.50	6	15.00
9	Quantity of sand required to be mixed with 8-10 kg of granular weedicides	33	82.50	25	62.50
10	Recommended dose of fertiliser required for paddy per acre	37	92.50	28	70.00
11	Quantity of Urea, DAP and MOP required for one acre of paddy as per the recommended dose of NPK	25	62.50	13	32.50
12	Widely used bio-fertilizer in paddy	32	80.00	14	35.00
13	Recommended dose of fertilizer requires for one acre maize	34	85.00	28	70.00
14	Quantity of Urea, DAP and MOP required for one acre of maize as per the recommended dose of NPK	23	57.50	14	35.00
15	Cause for white bud in maize	36	90.00	21	52.50
16	Expire period of bio-fertilizers	29	72.50	9	22.50

Sl. No.	Knowledge items	Trained (n_1=40)		Untrained (n_2=40)	
C.	**Plant Protection Chemicals**				
1	Name of contact pesticide	37	92.50	31	77.50
2	Name of systemic pesticide	36	90.00	30	75.00
3	Colour of the label on the container indicates extremely toxic nature of chemical	37	92.50	28	70.00
4	Colour of the label on the container indicates the safest to use	39	97.50	28	70.00
5	Meaning of Integrated pest management	30	75.00	6	15.00
6	Pesticides not only kill pest but also kills benefited/non targeted organisms	36	90.00	32	80.00
7	Name of the chemical used to control mites	14	35.00	4	10.00
8	Pest occurring during milking stage of paddy	29	72.50	17	42.50
9	Best chemical used to control stem borer in paddy	35	87.50	33	82.50
10	Disease came only at ear head stage of paddy	27	67.50	14	35.00
11	Fungicide used to control Downy mildew in maize	37	92.50	29	72.50
12	Essential information known before mixing fungicides and insecticides	39	97.50	20	50.00
13	Stem borer of paddy eats only xylem and phloem tissue	38	95.00	33	82.50
14	Chemical used for seed treatment in maize	34	85.00	25	62.50

In case of plant protection chemicals, 97.50 per cent of trained dealers had knowledge on colour of the label on the container indicates the safest to use and Essential information known before mixing fungicides and insecticides followed by stem borer of paddy eats only xylem and phloem tissue (95.00%), name of contact pesticide, colour of the label on the container indicates extremely toxic nature of chemical and fungicide used to control downy mildew in maize (92.50%), Best chemical used to control stem borer in paddy (87.50%) and meaning of integrated pest management (75.00%). whereas, 92.50 per cent of untrained dealers had knowledge on colour of the label on the container indicates the safest to use followed by best chemical used to control stem borer in paddy and stem borer of paddy eats only xylem and phloem tissue (82.50%), pesticides not only kill pest but also kills benefited/non targeted organisms (80.00%) and name of contact pesticide (77.50%).

Findings are clearly indicated that trained input dealers gained knowledge on classification of pesticides with example, colour used to indicate the toxic nature of chemicals, compatibility and recommendation of chemical to the particular field problem but they are had comparatively low knowledge on integrated pest management, pest/disease occur in which stage of crop and different chemicals name on pest.

4.2.2 Component wise knowledge level of the agricultural input dealers

Data presented from the Table 13 and Fig. 3 revealed that half of the trained dealers (50.00%) had high level of knowledge group followed by medium (27.50%) and low (22.50%) categories on seed aspects. While, more than one third of untrained dealers (35.00%) belonged to medium level of knowledge category followed by equal per cent of them belonged to low (32.50%) and high (35.00%) knowledge categories on seed aspects. In case of fertilizers aspects, 37.50 per cent of trained dealers belonged high level of knowledge category followed by medium (32.50%) and low (30.00%). Whereas, nearly half of the untrained dealers (42.50%) belonged to medium level of knowledge category followed by low (37.50%) and high (20.00%). With regarding plant protection chemicals more than two third of trained dealers (67.50%) belonged to high knowledge category followed by medium (20.00%) and low (12.50%) categories.

Table 13: Component wise knowledge level of the agricultural input dealers

(N=80)

Sl. No.	Level of Knowledge	Components					
		Seeds		Fertilizers		Plant Protection Chemicals	
		Trained (n_1=40)	Untrained (n_2=40)	Trained (n_1=40)	Untrained (n_2=40)	Trained (n_1=40)	Untrained (n_2=40)
1.	Low	22.50	32.50	30.00	37.50	12.50	27.50
2.	Medium	27.50	35.00	32.50	42.50	20.00	40.00
3.	High	50.00	32.50	37.50	20.00	67.50	32.50
Mean		8.30	5.10	12.87	8.05	10.85	7.87
SD		1.01	1.67	2.70	1.81	1.35	2.06

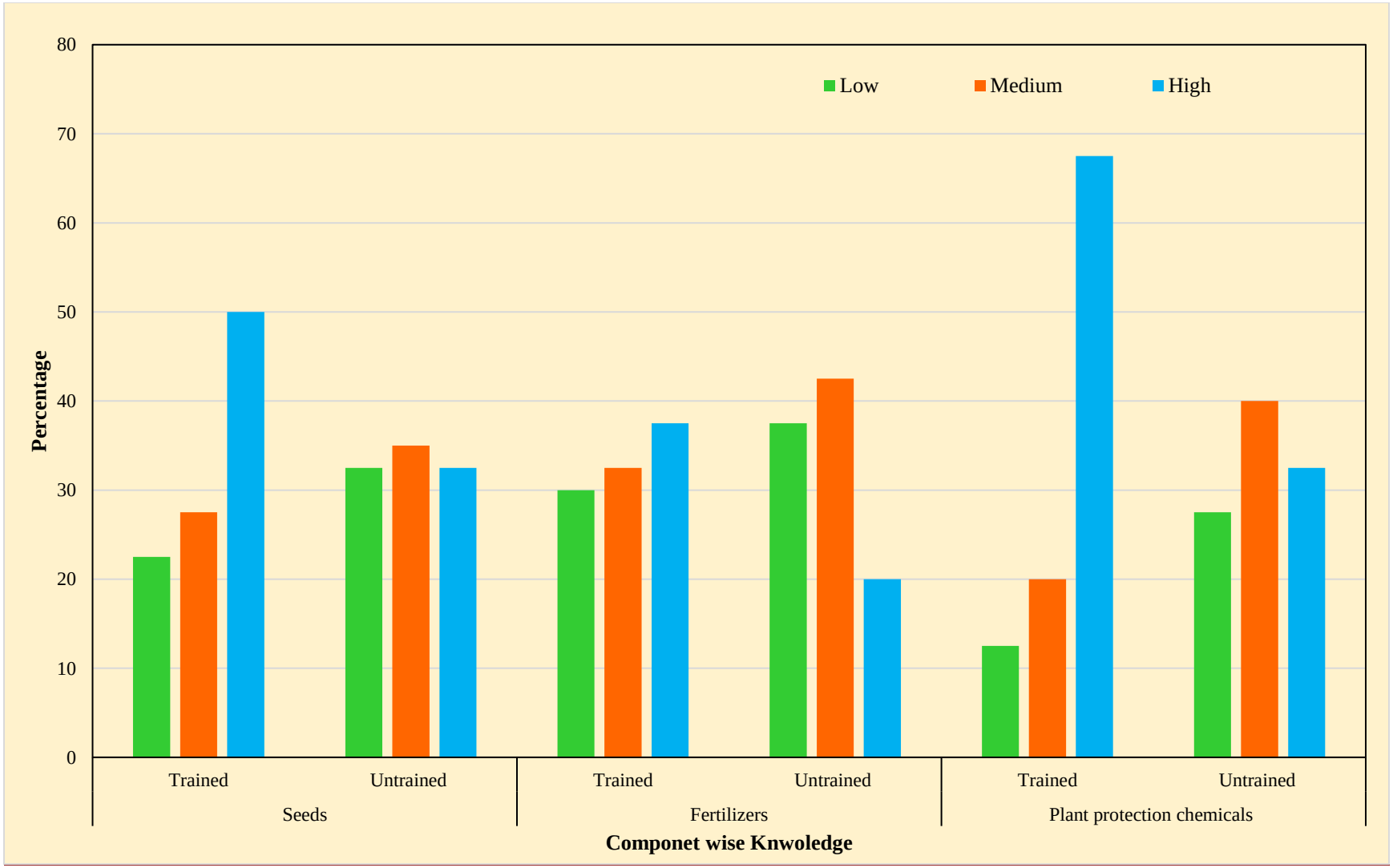

Fig. 3: Component wise knowledge level of the agricultural input dealers

While, 40.00 per cent of untrained dealers belonged to medium level of knowledge category followed by high (32.50%) and low (27.50%).

Findings of the study clearly depicted that trained dealers had high knowledge on all knowledge items like seeds, fertilizers and plant protection chemicals followed by medium but in case of untrained dealers no one possess high level of knowledge on knowledge items are mentioned above. Compered to all three components trained dealers gained high level of knowledge on plant protection chemicals.

4.2.3 Overall knowledge level of the agricultural input dealers

From the Table 14 and Fig. 4 evident that nearly half of the trained dealers (45.00%) belonged to high level of knowledge group followed by medium (27.50%) and low (27.50%) groups. Whereas, half of the untrained dealers (50.00%) belonged to medium level of knowledge group followed by low (30.00%) and high (20.00%) groups.

The findings of the study clearly indicate that trained dealers had high level of knowledge followed by medium and untrained dealers had medium level of knowledge followed by low. The probable reason might be due to trained dealers had undergone capacity building programme on farm inputs and about location specific technologies through DAESI programme. And another reason is high level of education, mass media use, extension contact, extension participation and achievement motivation compared to untrained dealers. This similar finding is in line with the findings of Anitha (2005) and Srinivas (2013).

4.2.4 Difference in knowledge of trained and untrained input dealers

The data in Table 15 revealed that mean source of the trained dealers was 32.02 and untrained dealers was 21.02 with increase the mean score of 11.00. The t value 12.41 indicates the statistically significance difference in the mean value of knowledge score of the trained and untrained dealers. Hence, null hypothesis is rejected and concluded that there is a significant difference between the knowledge level of the trained and untrained dealers. DAESI programme enhances the knowledge level of respondents in production technology of location specific crops.

Table 14: Overall knowledge level of the agricultural input dealers

(N=80)

Sl. No.	Category	Trained dealers (n_1=40)		Untrained dealers (n_2=40)	
		Frequency	**Percentage**	**Frequency**	**percentage**
1.	Low	11	27.50	12	30.00
2.	Medium	11	27.50	20	50.00
3.	High	18	45.00	8	20.00
Mean		32.02		21.02	
SD		4.06		3.85	

Table 15: Difference in knowledge of trained and untrained input dealers

(N=80)

Sl. No.	Knowledge	Number	Mean	t value
1.	**Trained**	40	32.02	12.41**
2.	**Untrained**	40	21.02	

Significance at 0.01 per cent of probability.

4.3 Diagnostic skills level of the agricultural input dealers.

4.3.1 Statement wise diagnostic skills level of the agricultural input dealers

From the Table 16 revealed that cent per cent of trained dealers were identified cowpea and red gram followed by cotton (97.50%), tomato (92.50%), carrot (70.00%), Diancha (50.00%) and cabbage (30.00%). Whereas, cent per cent of untrained dealers were identified cowpea followed by cotton and red gram (97.50%), tomato (85.00%), carrot (15.00%), cabbage (12.50%) and Diancha (5.00%). It shows that respondents had diagnostic skill on cereals, pulses and commercial crop seeds compared to green manuring seeds, cole crop seeds and root crop seeds the reason might marketing more cereals and pulse crop seeds compare to other crop seeds.

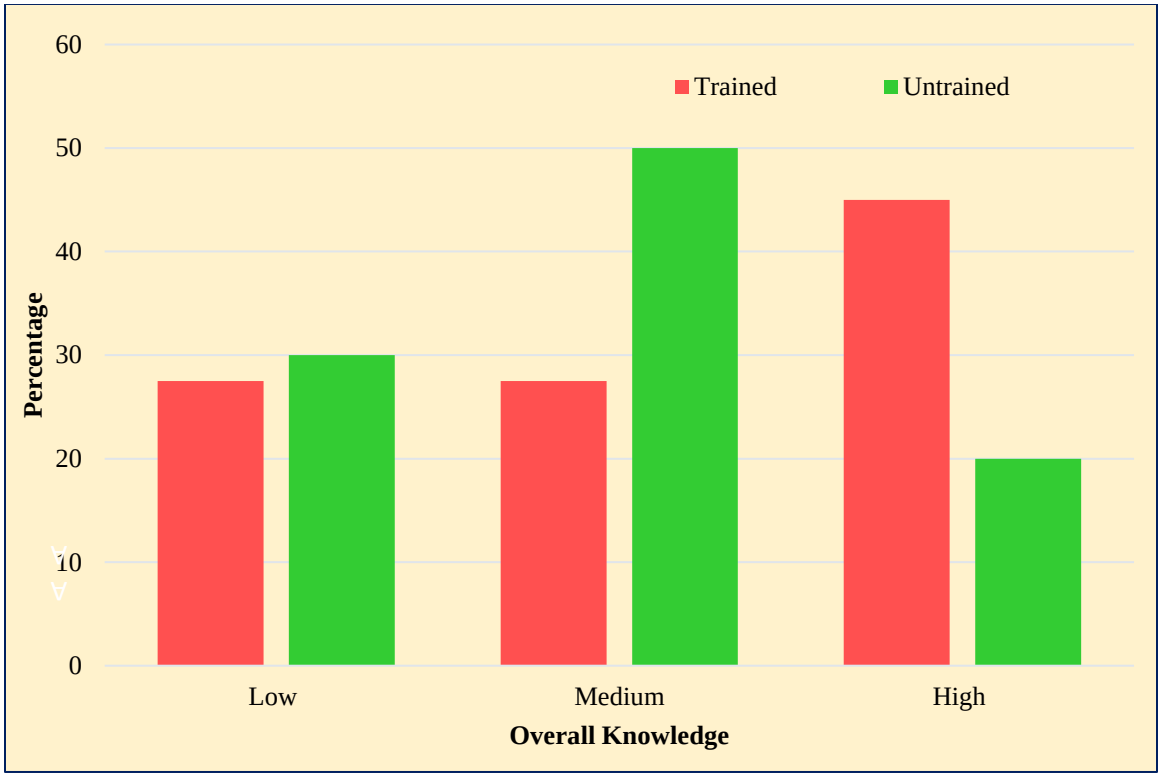

Fig. 4: Overall knowledge level of the agricultural input dealers

Table 16: Statement wise diagnostic skills level of the agricultural input dealers

(N=80)

Specimen	Trained dealers (n_1=40)		Untrained dealers (n_2=40)	
1. Identification of Seeds	**Frequency**	**Percentage**	**Frequency**	**Percentage**
a. Cowpea	40	100	40	100
b. Cotton	39	97.50	39	97.50
c. Diancha	20	50.00	2	5.00
d. Red gram	40	100	39	97.50
e. Cabbage	12	30.00	5	12.50
f. Tomato	37	92.50	34	85.00
g. Carrot	28	70.00	6	15.00
2. Identification of Fertilizers				
a. Urea	40	100	40	100
b. DAP	40	100	40	100
c. MOP	40	100	40	100
d. Gypsum	30	75.00	15	37.50
e. Zinc sulphate	31	77.50	10	25.00
f. Magnesium sulphate	35	87.50	26	65.00
g. Boron	29	72.50	13	32.50
h. 20:20:0:13	36	90.00	24	60.00
3. Deficiency symptoms				
a. Nitrogen in paddy	35	87.50	22	55.00
b. Zink in paddy	30	75.00	14	35.00
c. Boron in paddy	31	77.50	11	27.50
d. Potash in maize	34	85.00	18	45.00
e. Phosphorus in maize	32	80.00	17	42.50
4. Insect damage				
a. Stem borer in paddy	35	87.50	25	62.50
b. Stem borer in maize	37	92.50	19	47.50
c. Gundhi bug in paddy	38	95.00	28	70.00
d. Leaf cutting caterpillar in maize	34	85.00	10	25.00
5. Disease symptoms				
a. Leaf spot in paddy	37	92.50	16	40.00
b. Blast in paddy	36	90.00	25	62.50
c. Udbatta in paddy	35	87.50	12	30.00
d. Downy mildew of maize	32	80.00	25	62.50

In case of fertilizers, cent per cent of trained dealers were identified Urea, DAP and MOP followed by 20:20:0:13 (90.00%), magnesium sulphate (87.50%), zinc sulphate (77.50%), gypsum (75.00%) and boron (72.50%). While, cent per cent of untrained dealers were identified Urea, DAP and MOP followed by magnesium sulphate (65.00%), 20:20:0:13 (60.00%), gypsum (37.50%), boron (32.50%) and zinc sulphate (25.00%). It shows that respondents had diagnostic skill on macro nutrients compare to the micro nutrient and soil amendments the reason might be they sell more macro nutrients to famers compared to micro nutrient and soil amendments.

In case of deficiency symptoms, 87.50 per cent of input dealers were identified nitrogen in paddy followed by potash in maize (85.00%), phosphorus in maize (80.00%), boron in paddy (77.50%) and zinc in paddy (75.00%). Whereas, 55.00 per cent of trained dealers were identified nitrogen in paddy, potash in maize (45.00%), phosphorus in maize (42.50%), zinc in paddy (35.00%) and boron in paddy (27.50%). It shows that respondents had diagnostic skill on the macro nutrient deficiency symptoms compared to micro nutrient deficiency symptoms.

In case of insect damage, 95.00 per cent of trained dealers were identified Gundhibug in paddy followed by stem borer in maize (92.50%), stem borer in paddy (80.00%) and leaf cutting caterpillar in maize (85.00%). While, 70.00 per cent of untrained dealers were identified Gundhibug in paddy followed by stem borer in paddy (62.50%), stem borer in maize (47.50%) and leaf cutting caterpillar in maize (25.00%).

And in case of disease symptoms, majority of trained dealers identified leaf spot in paddy (92.50%) followed by blast in paddy (90.00%), Udbatta in paddy (87.50%) and downy mildew of maize (80.00%). Whereas, nearly two third of the untrained dealers were identified blast in paddy and downy mildew of maize followed by leaf spot in paddy (40.00%) and Udbatta in paddy (30.00%).

4.3.2 Component wise diagnostic skills level of the agricultural input dealers

Findings from the Table 17 and Fig. 5 depicted that more than half of the trained dealers (52.00%) had high level of diagnostic skill on seeds followed by medium (35.00%)

and low (12.50%). More than two third of untrained dealers (65.00%) possess medium level of diagnostic skill on seeds followed by high (22.50%) and low (12.50%). In case of fertilizers, more than half of the trained dealers (55.00%) had high level of diagnostic skill followed by medium (27.50%) and low (17.50%) and 52.50 per cent of untrained dealers had medium level of diagnostic skill followed by high (30.00%) and low (17.50%). While, nearly half of the trained dealers (45.00%) had high level of diagnostic skill on deficiency symptoms followed by equal per cent of trained dealers (27.50%) had medium and low level of diagnostic skill on deficiency symptoms and 47.50 per cent of untrained dealers had medium level of diagnostic skill followed by high (37.50%) and low (15.00%). Whereas, nearly two third of the trained and untrained dealers (62.50%) acquired high and medium level of diagnostic skill on insect damage followed by 20.00 per cent and 17.50 per cent of trained dealers had medium and low level of diagnostic skill and 22.50 per cent and 15.00 per cent of untrained dealers possess high and low level of diagnostic skill in insect damage. With respect to disease symptoms, more than two third of the trained dealers (68.00%) had high level of diagnostic skill followed by medium (23.50%) and low (7.50%) and nearly half of untrained dealers (45.00%) acquired low level of diagnostic skill on disease symptoms followed by high (37.50) and medium (17.50%).

Findings of the table clearly indicated that majority of the trained dealers acquired high level of diagnostic skill in case of identification of seeds, fertilisers, nutrient deficiency symptoms, insect damage and disease symptoms of major crops paddy and maize. In case of untrained dealers comparatively very less percentage of respondents possess high level of diagnostic skill in case of identification of seeds, fertilisers, nutrient deficiency symptoms, insect damage and disease symptoms of major crops paddy and maize. It shows that DAESI programme have very good impact in enhancing diagnostic skills of the trainees with respect to all diagnostic skill items mentioned above. And there is a further scope to concentrate more on nutrient deficiency symptoms, micro and complex fertilizers.

Table 17: Component wise diagnostic skills level of the agricultural input dealers

(N=80)

Sl. No.	Level of Diagnostic skills acquired	Components									
		Seeds		Fertilizers		Deficiency symptoms		Insect damage		Disease symptoms	
		Trained (n_1=40)	Untrained (n_2=40)	Trained (n_1=40)	Untrained (n_2=40)	Trained (n_1=40)	Untrained (n_2=40)	Trained (n_1=40)	Untrained (n_2=40)	Trained (n_1=40)	Untrained (n_2=40)
1.	Low	12.50	12.50	17.50	17.50	27.50	15.00	17.50	15.00	7.50	45.00
2.	Medium	35.00	65.00	27.50	52.50	27.50	47.50	20.00	62.50	23.50	17.50
3.	High	52.00	22.50	55.00	30.00	45.00	37.50	62.50	22.50	68.00	37.50
Mean		5.57	4.12	7.15	5.20	4.05	2.05	3.60	2.05	3.90	1.95
SD		1.00	0.64	1.25	0.82	1.08	1.28	0.54	0.67	0.933	1.23

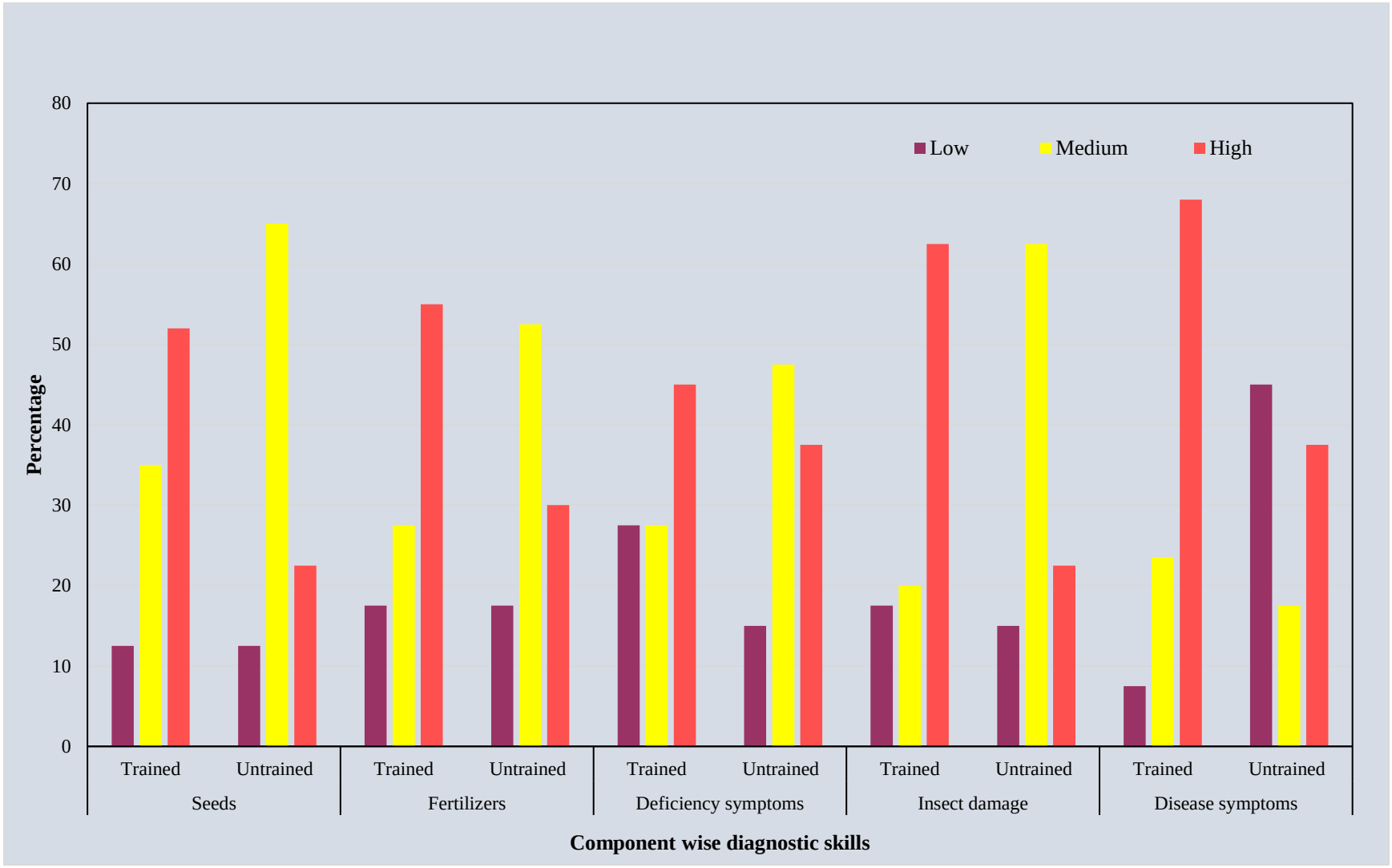

Fig. 5: Component wise diagnostic skills level of the agricultural input dealers

4.3.3 Overall Diagnostic skills level of Agricultural Input Dealers

Data presented from the Table 18 and Fig. 6 revealed that nearly two third of the trained dealers (57.50%) had high level of diagnostic skills followed by medium (30.00%) and low (12.50%). Whereas, more than half of the untrained dealers possess (55.00%) medium level of diagnostic skills followed by high (30.00%) and low (15.00%).

Table 18: Overall Diagnostic skills level of Agricultural Input Dealers

(N=80)

Sl. No.	Category	Trained dealers (n_1=40)		Untrained dealers (n_2=40)	
		Frequency	**Percentage**	**Frequency**	**percentage**
1.	Low	5	12.50	6	15.00
2.	Medium	12	30.00	22	55.00
3.	High	23	57.50	12	30.00
Mean		25.22		15.02	
SD		2.60		2.41	

The findings from the study clearly indicated that majority of trained dealers acquired high to medium level of diagnostic skills. But untrained dealers possess medium to high level of diagnostic skills. It is might be due to high level of education, mass media use, extension contact, extension participation and achievement motivation of trained dealers compared to untrained dealers. And another reason is that trained dealers had undergone capacity building programme on farm inputs and about location specific technologies through DAESI programme.

4.3.4 Difference in diagnostic skills of the trained and untrained input dealers

The data in Table 19 revealed that mean source of the trained dealers was 25.22 and untrained dealers was 15.02 with increase the mean score of 10.2. The t value 18.16 shows statistically significance difference in the mean value of diagnostic skill score of the trained and untrained dealers. Hence, null hypothesis is rejected and concluded that there is a significant difference between the diagnostic skill of the trained and untrained dealers.

DAESI programme enhances the diagnostic skill of respondents with respect to location specific crops.

Table 19: Difference in diagnostic skills of the trained and untrained input dealers

(n=80)

Sl. No.	Knowledge	Number	Mean	t value
1.	**Trained**	40	25.22	18.16**
2.	**Untrained**	40	15.02	

Significance at 0.01 per cent of probability.

4.4 Relationship between Personal, Psychological and Socio-economic characteristic of agricultural input dealers with their dependent variables

4.4.1 Relationship between Personal, Psychological and Socio-economic characteristic of agricultural input dealers with their knowledge

From the Table 20 revealed that the characteristics such as education, mass media use, extension contact, extension participation, achievement motivation, management orientation, social participation and scientific orientation had significant relationship with knowledge level of trained dealers. In case of untrained dealers education, mass media use, extension contact, achievement motivation and social participation had significant relationship with knowledge level.

Education and knowledge

Education found to be significantly related to the knowledge level of trained and untrained dealers. It is a known fact that education is one of the most important component to gain knowledge and widens the horizons of an individual. The literate people are more receptive and always in a search for new information and technologies, which helps to improve their socio-economic conditions. The results are in conformity with Anitha (2005), Appu Halasangi (2009) and Naveenkumar *et al.* (2017).

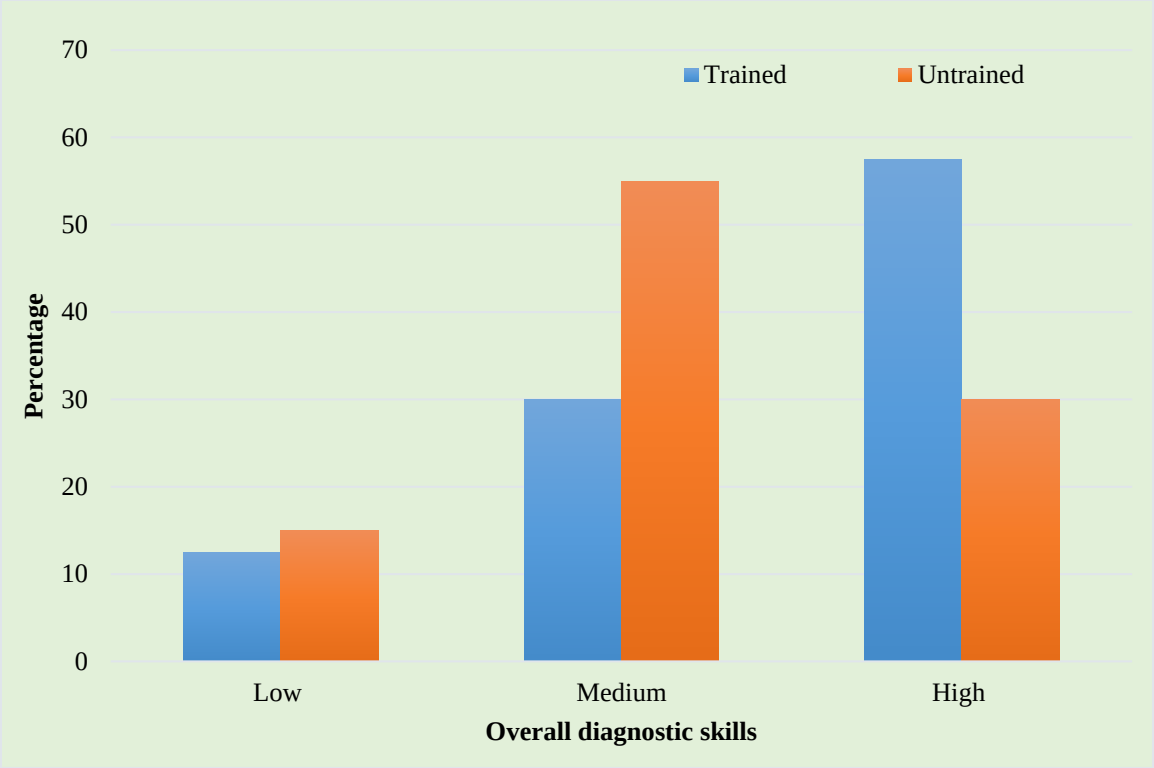

Fig. 6: Overall diagnostic skills level of the agricultural input dealers

Mass media use and knowledge

Mass media use found to be positive and significant relationship with knowledge level of trained and untrained dealers. Exposure of different mass media sources like newspaper, television, internet and farm magazines etc. might have helped the respondents to access and gain recent information. The advent of mass media provide enormous opportunities for respondents to expose new technologies and motivated them to take further interest to learn about them. Hence, it can inferred that the knowledge level of individual increase with the increase in mass media use. The results are in conformity with Anitha (2005) and Harshitha (2014).

Table 20: Zero order correlation between knowledge level of agricultural input dealers with their independent variables.

(N=80)

Sl. No.	Independent variables	Trained dealers (r value) (n_1=40)	Untrained dealers (r value) (n_2=40)
1.	Age	0.053^{NS}	0.061^{NS}
2.	Education	0.572**	0.299*
3.	Annual turnover	0.082^{NS}	0.064^{NS}
4.	Mass media use	0.321*	0.302*
5.	Extension contact	0.392*	0.353*
6.	Extension participation	0.513**	0.018^{NS}
7.	Achievement motivation	0.353*	0.252*
8.	Management orientation	0.288*	0.074^{NS}
9.	Social participation	0.468**	0.320*
10.	Scientific orientation	0.390*	0.033^{NS}
11.	Risk orientation	0.098^{NS}	0.057^{NS}

NS- Non significance * significance at 5% level ** significance at 1% level

Extension contact and knowledge

Extension contact were found to be positive and significant relationship with knowledge level of trained and untrained dealers. The probable reason might be respondents had regular contact with extension officers of agricultural department and getting updated knowledge from them. . Hence, it can inferred that the knowledge level of individual increase with the increase in extension contact. The results are in conformity with Anitha (2005) and Srinivas (2013).

Extension participation and knowledge

Extension participation were found to be positive significant relationship with knowledge level of trained dealers. The probable reason might be respondents regularly participated in extension activities like trainings, demonstrations, field days and field visits etc. It provides opportunity for the respondents to direct interact with scientists and subject matter specialists regarding modern cultivation practices. Which in turn enriches their knowledge. The results are in conformity with Sunil Kharatmol (2006), Appu Halasangi (2009) and Naveenkumar *et al.* (2017).

Achievement motivation and knowledge

Achievement motivation were found to be positive and significant relationship with knowledge level of trained and untrained dealers. Achievement motivation forces the individual to reach a goal and motive to do something. Hence, respondents with higher achievement orientation would try to acquire more knowledge. The results are in conformity with Anitha (2005) and Harshitha (2014).

Management orientation and knowledge

Management orientation were found to be positive and significant relationship with knowledge level of trained input dealers. Management orientation is an important factor to acquire knowledge, better management orientation ability enhances the knowledge in selection of inputs based on the onset of the season, purchase of inputs required for service area, preparation of business plan, stock and maintaince of inputs in shop. The results are in conformity with Srinivas (2013).

Social participation and Knowledge

Social participation was found positive and significant relationship with knowledge level of trained and untrained dealers. Through social participation, the individual exposure to different organizations, officials, input dealers association, voluntary organizations, dealers what's app group, farmers interest groups etc. This exposure helps him to come in contact with new type of farm technologies. The results are in conformity with Prabukumar (1996), Anitha (2005) and Appu Halasangi (2009).

Scientific orientation and knowledge

Scientific orientation was found to be positive and significant relationship with their knowledge level of trained dealers. This may be due to fact that the respondents with higher scientific orientation would try to gather more information which could be applied at the field level and also technical information helps in increasing production. Whereas, scientific orientation was found to be non-significantly related with the knowledge of untrained dealers. The results are in conformity with Anitha (2005), Appu Halasangi (2009), Harshitha (2014) and Naveenkumar *et al.* (2017).

4.4.2 Relationship between Personal, Psychological and Socio-economic characteristic of agricultural input dealers with their diagnostic skill

Data from the Table 21 evident that the characteristics such as education, mass media use, extension contact, extension participation, social participation and scientific orientation had positive and significant relationship with diagnostic skills. Whereas, in case of untrained dealers the characteristics such as education, mass media use, extension contact and social participation had positive and significant relationship with diagnostic skills.

Education and Diagnostic skill

Education was having positive and significant relationship with diagnostic skill of the trained and untrained dealers. The educational level goes up, the individual tends to shine in all fields of his life and he was having more tendency to learn the skill at a faster rate. Hence, as educational level increases the skill level also increases. The results are in

conformity with Prabukumar (1996). This finding is in consistent with findings of Prabukumar (1996).

Mass media use and Diagnostic skill

Mass media use was having positive and significant relationship with diagnostic skill of the trained and untrained dealers. Exposure of different mass media sources like newspaper, television, internet and farm magazines etc. might have helped the respondents to access and gain recent information about particular symptoms of disease and nutrient deficiency and insect damage by seeing their features in different mass media sources. Hence, the mass media use increases the skill level also increases. This finding is in consistent with findings of Pennobaliswamy (1995).

Table 21: Zero order correlation between diagnostic skills level of agricultural input dealers with their independent variables

(N=80)

Sl. No.	Independent variables	Trained dealers (r value) (n_1=40)	Untrained dealers (r value) (n_2=40)
1.	Age	0.034^{NS}	0.019^{NS}
2.	Education	0.445**	0.310*
3.	Annual turnover	0.020^{NS}	0.088^{NS}
4.	Mass media use	0.385*	0.259*
5.	Extension contact	0.274*	0.286*
6.	Extension participation	0.315*	0.043^{NS}
7.	Achievement motivation	0.038^{NS}	0.067^{NS}
8.	Management orientation	0.053^{NS}	0.023^{NS}
9.	Social participation	0.389*	0.299*
10.	Scientific orientation	0.365*	0.032^{NS}
11.	Risk orientation	0.056^{NS}	0.065^{NS}

NS- Non significance * significance at 5% level ** significance at 1% level

Extension contact and Diagnostic skill

Extension contact was having positive and significant relationship with diagnostic skill of the trained and untrained dealers. The probable reason might be respondents had regular contact with extension officers of agricultural department and getting updated about recent technologies regarding farm practices. Hence, the extension contact increases the skill level also increases. This finding is in consistent with findings of Pennobaliswamy (1995).

Extension participation and Diagnostic skill

Extension participation was having positive and significant relationship with diagnostic skill of trained dealers. The probable reason might be respondents had regular participating in extension activities like training programmes, demonstrations, field days and field visits etc. it provides opportunity for the respondents to direct interact with scientists and subject matter specialists regarding particular diseases, pest and nutrient deficiency symptoms and also gain knowledge about the modern technologies to control them. Hence, the extension participation increases the skill level also increases. This finding is in consistent with findings of Pennobaliswamy (1995).

Social participation and Diagnostic skill

Social participation was found positive and significant relationship with diagnostic skill of trained dealers. Through social participation, the individual exposure to different organizations, officials, input dealers association, voluntary organizations, dealers what's app group, farmers interest groups etc. This exposure helps him to come in contact with new type of farm practices and forces him to try them out. Whenever opportunity arises, he tries the new practices which require new skills and thereby improving his skill. Hence, it can inferred that the diagnostic skill of individual increase with the increase in social participation. Whereas, untrained dealers was found non-significant relationship with social participation and diagnostic skill. This finding is in consistent with findings of Pennobaliswamy (1995) and Prabukumar (1996).

Scientific orientation and Diagnostic skill

Scientific orientation was found to be positive and significant relationship with their diagnostic skill of trained dealers. This might be due to fact that the respondents with higher scientific orientation would try to gather more information which could be applied at the field level and also technical information helps in increasing production through by providing appropriate suggestion to the farmers based on their field problems.

4.5 Opinion and suggestions indicated by the trained input dealers for further improvement of DAESI training

Findings from the Table 22 and Fig. 7 depicted that majority of the trained dealers opinioned training content is very good (92.50 %) followed by training methodology (85.00%) and facilities (80.00%).

Findings from the study clearly indicate that trainees are express their opinion regarding training content, training methodology and facilities provided during training period is very good and followed by good. None of trainees expressed their opinion its average, poor and very poor. This finding is in consistent with findings of Pennobaliswamy (1995), Meena *et al.* (2010) and Ramakant Sharma *et al.* (2013).

Table 22: Distribution of trained dealers according to their opinion of DAESI training programme

(n_1=40)

Sl. No.	Opinion	Very good		Good	
		F	%	F	%
1.	**Training content**	37	92.50	3	7.50
2.	**Training methodology**	34	85.00	6	15.00
3.	**Facilities**	32	80.00	8	20.00

From the Table 23 reported that suggestions indicated by the trained dealers for further improvement of DAESI training are increase class room sessions (95.00%) followed by conduct the class more in the field (80.00%), distribute folders, handouts and

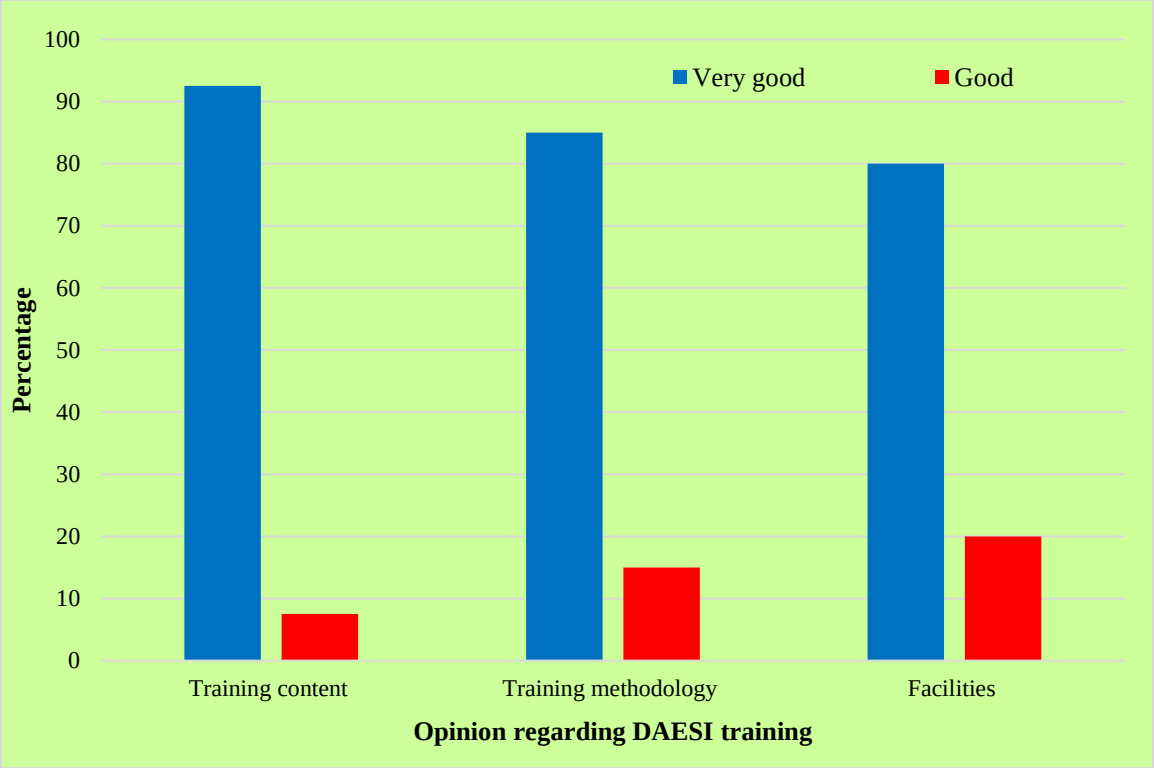

Fig. 7: Opinion of trained input dealers regarding DAESI training programme

other extension literature immediately after class (72.50%), to give more importance to display the specimens charts related to nutrient deficiency, insect damage and disease symptoms in the training hall (70.00%) and include more demonstrations (62.50%).

Table 23: Suggestions indicated by the trained input dealers for further improvement of DAESI training

(n_1=40)

Sl. No.	Suggestions	F	%	Rank
1.	Increase the class room sessions	38	95.00	I
2.	Conduct the classes more in the field	32	80.00	II
3.	Distribute folders, handouts and other extension literature immediately before class	29	72.50	III
4.	To give more importance to display the specimens charts related to nutrient deficiency, insect damage and disease symptoms in the training hall	28	70.00	IV
5.	Include more method demonstrations	25	62.50	V

Findings from the table clearly indicated that majority of the trained dealers suggested that increase classroom sessions because under this programme 80 classroom session spread over 52 weeks. They are not satisfy with getting information from 80 classroom sessions, if increases the number of classroom session help to get more information and enhancing knowledge about the location specific technologies. Next suggestions are conduct the class more in the field rather than class room sessions the probable reason that practical knowledge gives long lasting memory and complete understanding of particular concept and include more method demonstrations it facilities trainees learning the things from seeing and believing and learning by doing and it helps develop some skill among the trainees and also develop confidence about particular technologies. And other suggestion is to give more importance to display the specimens charts related to nutrient deficiency, insect damage and disease symptoms in the training hall by that trainees easily understand the particular symptoms of disease and pest to manage and control them in the field. . This finding is in consistent with findings of Sharma

et al. (2004), Rudragouda Patil (2009), Sangamesh Ganiger (2012) Ramakant Sharma *et al.* (2013) and Harshitha (2014).

4.6 Successful case studies of Extension Services provided by Agricultural Input Dealers

Successful case study: 1

Mr. Raghu, Sri Anjaneya Traders, Malalkere, Davangere (Tq.) and (Dist.). He is one of the successful trained DAESI dealer by Institute of Agriculture Technologies (IAT), Davangere. This dealer selling all the three inputs like seeds, fertilizers and plant protection chemicals.

Before training, Mr. Raghu use to sell fertilizers without the knowledge of integrated nutrient and pest management. Selling more Urea, DAP and Captanphous and least importance was given to Potash fertilizers and micro-nutrients. With respect to plant protection chemicals he was selling one insecticides, one fungicides and harmon for single problem.

Now after training, he was acquired knowledge and diagnostic skills in identifying pest/disease and he is capable of suggesting right chemical to the right problem. As he acquired the knowledge of integrated nutrient management and soil test basis recommendation of fertilizers, now he is selling straight fertilizers like Urea, DAP, SSP, MOP and complex fertilizers like factomphos, 17:17:17 and micro-nutrients like multiplex, Boron, Magnesium sulphate ($MgSo_4$) and Zinc sulphate ($ZnSo_4$). Bio-fertilizers like Azotabacter, Azospirillum and Phosphate Solubilizing Bacteria (PSB) and bio-pesticides like *Trichoderma viridae* etc.

His total annual turnover before training was Rs. 90 lakhs, now there is 15 per cent reduction in the sale of plant protection chemicals and Urea. He is conducting field visits to problematic fields on every Saturday. Consulting scientists who taught him in DAESI training whenever he come across problems in the field. Because of these he was become more popular among the farmers in service area. Now his total annual turnover increased to Rs. 2.1 crore.

Successful case study: 2

Mr. Basavaraj, Shree Sai Agro Traders, Avaragere, Davangere (Tq.) and (Dist.). He is the one of the successful dealer trained by Taralabalu Krishi Vigyan Kendra (TKVK), Davangere. He is selling all the three inputs. Now he is more popular in sale of seeds like maize, green gam, red gram, bengal gram, green manuring seeds like diancha, jute and vegetable seeds like green peas, beans, cucurbits, green leafy vegetables and drumstick.

Before training, Mr. Basavaraj use to sell seeds without the knowledge of the germination, recommended seed rate, seed treatment, methods of sowing and yield level of the different hybrid seeds.

After training, he acquired knowledge on seed germination, seed treatment, method of sowing, yield level of the hybrid seeds and green manuring seeds and their importance in maintain soil health and he capable of suggesting right fertilizer/chemical to the right problem. As he acquired the knowledge of integrated pest management and nutrient management and soil test basis recommendation of fertilizers, micro-nutrients, bio-fertilizers and bio-pesticides to the problematic fields. Insitu cultivation of green manure crops.

This dealer trained by TKVK, DAESI programme. In their regular training they adopted one arecanut and paddy farmer. He introduced insitu cultivation of green manures like diancha in paddy field before transplanting and jute in arecanut garden. He conducted demonstration and field day in Avaragere village. On the day of field day about 500 farmers participated from all over the district. Many farmers indented seeds of diancha and jute for next season.

His total annual turnover before training was 1.5 crore. Now there is a reduction in the sale of plant protection chemicals and urea and increase in the sale of seeds and potash fertilizers. He is also conducting field visits to problematic fields on every Sunday during morning hours. Because of these activities his extension contact increased, now more number of farmers visiting his shop for purchasing green manure seeds and other crop seeds. Now his total annual turnover increased to Rs. 2.7 crore. He is very happy, because this was possible only due to DAESI training.

CHAPTER V

SUMMARY

Agriculture is a backbone of our country. It accounts for 18 per cent of India's Gross Domestic Product (GDP) and provides employment to 54.60 per cent of the countries workforce and it has achieved 275.68 million tons of food grain production in the year 2016-17 (Madhusudan, 2015). Transformation of the Indian agriculture from subsistence to a modern scientific system of farming calls for a continuous strong research, education and extension programme in agriculture. At present there is a wide gap between technical know-how and do-how, particularly to location specific problems in the fields of small farmers and marginal farmers. National Agricultural policy and tenth approach paper stressed the need for reforms in agricultural extension of the country. Ministry of Agriculture and Farmer's Welfare, Government of India emphasized to have multi agency extension services such as multinational companies, corporate bodies, farmers groups and Input dealers. Among all, the input dealer/agencies constituted a large number and spread even in interior areas of the country.

At present, there are about 2.82 lakh practicing agri-input dealers. While purchasing different inputs required for farming operations, the farmer naturally tries to find out from the input dealer about the usage of inputs, both in terms of quality and quantity. However, most of these input dealers do not have formal agricultural education. If these input dealers can be shaped as para-extension professionals by providing requisite knowledge, they can professionalise extension services and contribute to bring a paradigm shift in Indian Agriculture (Anonymous, 2014).

In this context, the National Institute of Agriculture Extension Management (MANAGE) had designed a one-year diploma course titled 'Diploma in Agricultural Extension Services for Input Dealers (DAESI)' programme in the year 2003, which imparts relevant and location-specific agricultural education to equip these input dealers with sufficient knowledge and skills to transform them into para-extension professionals. So as to enable them to address the day-to-day problems being faced by the farmers at field level. Keeping all these facts in view the present investigation was an attempt to analyse the

Impact of Diploma in Agricultural Extension Services for Input Dealers (DAESI) training on Agricultural Input Dealers with the following objectives.

1. To study the profile of Agricultural Input Dealers.
2. To know the level of Knowledge and Diagnostic skills of Agricultural Input Dealers.
3. To measure the relationship between Personal, Psychological and Socio-economic characteristic with their Knowledge and Diagnostic skills level of Agricultural Input Dealers.
4. To document the successful case studies of Extension Services provided by Agricultural Input Dealers.
5. To ascertain the opinion of Trained Agricultural Input Dealers regarding DAESI training and their Suggestions for improvement.

Methodology

The study was conducted in Davangere district of Karnataka. Diploma in Agricultural Extension Services for Input Dealers (DAESI) training programme conducted in Four Nodal Training Institutes (NTI) in Davangere district under SAMETI (S), UAS, Hebbal, Bengaluru viz., ICAR Taralabalu KVK, Davanagere, District Agricultural Training Center (DATC), Kadajji, Institution of Agricultural Technologists (IAT), Shamanur Road, Davangere, Agricultural and Horticultural Research Station (AHRS), Kattalagere, Chennagiri (Tq), Davangere Dist. UAHS, Shivamogga. Totally 160 Input Dealers trained at the rate of 40 per batch per NTI. Ten trained Input Dealers from each batch who are selling Seeds, Fertilizers and Plant protection chemicals selected for the study to match 40 untrained Input Dealers selected who are all selling all the three inputs. The structured questionnaire was prepared to collect the data from the respondent through personal interview method and ex-post facto research design was used.

Major findings of the study

1. Study revealed that majority of trained input dealers belongs to middle age (62.50%) category followed by young (25.00%) and old age (12.50%). While, 80.00 per cent of

untrained dealers belong to middle age category followed by young (10.00%) and old age (7.50%).

2. The results regarding education, nearly half of the trained dealers (40.00%) were having graduation followed by PUC (30.00%), SSLC (17.50%) and post-graduation (12.50%). Whereas, 35.00 per cent of untrained dealers were having PUC followed by SSLC (30.00%), graduation (27.50%) and post-graduation (7.50%).

3. Regarding annual turnover, 40.00 per cent of trained input dealers belonged to Rs. 50 lakh to 1 crore category followed by Rs. < 50 lakh (35.00%) and > 1 crore (25.00%) categories. While, 42.50 per cent of untrained dealers belonged to Rs. 50 lakh to 1 crore category followed by Rs. < 50 lakh (37.50%) and Rs. > 1 crore (20.00%) categories.

4. With regard to the mass media use, nearly half of the trained input dealers (42.50%) belonged to high category of mass media use followed by medium (35.00) and low (22.50%) categories. Whereas, 40.00 per cent of the untrained dealers belongs to medium category of mass media use (40.00%) followed by high (32.50%) and low (27.50%) categories.

5. The results regarding extension contact, 52.50 per cent of trained dealers had high level of extension contact followed by medium (30.00%) and low (17.50%). Whereas, nearly half of the untrained dealers (47.50%) belongs to medium category of extension contact followed by high (27.50%) and low (25.00%) categories.

6. Regarding extension participation, more than half of the trained input dealers (57.50%) belonged to the high level of extension participation followed by medium (25.00%) and low (17.50%). Whereas in case of untrained dealers, more than half of respondents (52.50%) belonged to medium level of extension participation followed by low (27.50%) and high (20.00%).

7. The study revealed that nearly two third of the trained input dealers (60.00%) belonged to high level of achievement motivation followed by medium (25.00%) and low (15.00%). While, half of the untrained dealers (50.00%) belongs to medium level of

achievement motivation followed by equal per cent of respondents belonged to high and low category of achievement motivation (25.00%).

8. With regard to the management orientation, half of the trained dealers (50.00%) belongs to medium level of management orientation followed by high (32.50%) and low (17.50%). While, 47.50 per cent of untrained dealers had medium level of management orientation followed by high (27.50%) and low (25.00%).

9. The results regarding social participation, 57.50 per cent of trained dealers belongs medium level of social participation followed by high (25.00%) and low (17.50%).Whereas, 42.50 per cent of untrained dealers belongs to medium level of social participation followed by low (37.50%) and high (20.00%).

10. Regarding scientific orientation, half of the trained dealers (50.00%) had high level of scientific orientation followed by medium (30.00%) and low (20.00%). In case of untrained dealers, 40.00 per cent of respondents belongs to low level of scientific orientation followed by medium (32.50%) and low (27.50%).

11. With regard risk orientation, nearly half of the trained dealers (47.50%) belongs to medium level of risk orientation followed by high (27.50%) and low (25.00%). Whereas, more than one third of the untrained dealers (37.50%) belonged to medium level of risk orientation followed by high (32.00%) and low (30.00%).

12. The study revealed that nearly half of the trained dealers (45.00%) had high level of knowledge followed by medium (27.50%) and low (27.50%). Whereas, half of the untrained dealers (50.00%) had medium level of knowledge followed by low (30.00%) and high (20.00%).

13. Regarding difference in knowledge of trained and untrained dealers mean source of the trained dealers was 32.02 and untrained dealers was 21.02 with increase the mean score of 11.00. The t value of 12.41 and it was statistically significance difference in the mean value of knowledge score of the trained and untrained dealers.

14. Education, mass media use, extension contact, extension participation, achievement motivation, management orientation, social participation and scientific orientation were found to be significant relationship with knowledge of the trained dealers. In case

of untrained dealers, education, mass media use, extension contact, achievement motivation and social participation were found to be significant relationship with knowledge of the untrained dealers.

15. The study revealed that nearly two third of the trained dealers (57.50%) had high level of diagnostic skills followed by medium (30.00%) and low (12.50%). Whereas, more than half of the untrained dealers possess (55.00%) medium level of diagnostic skills followed by high (30.00%) and low (15.00%).

16. With regarding difference in diagnostic skill of trained and untrained dealers mean source of the trained dealers was 25.22 and untrained dealers was 15.02 with increase the mean score of 10.20. The t value of 18.16 41 and it was statistically significance difference in the mean value of diagnostic skill score of the trained and untrained dealers.

17. Education, mass media use, extension contact, extension participation, social participation and scientific orientation were found to be positive and significant relationship with diagnostic skills of the trained dealers. Whereas, education, mass media use, extension contact and social participation were found to be positive and significant relationship with diagnostic skills of the untrained dealers.

18. Regarding opinion of trained dealers about DAESI programme majority of the trained dealers opinioned training content is very good (92.50 %) followed by training methodology (85.00%) and facilities (80.00%).

19. With regard suggestions indicated by the trained dealers for further improvement of DAESI training programme are increase class room sessions (Rank I) followed by Conduct the class more in the field (Rank II), distribute folders, handouts and other extension literature immediately after class (Rank III), to give more importance to display the specimens charts related to nutrient deficiency, insect damage and disease symptoms in the training hall (Rank VI) and include more method demonstrations (Rank V).

Implications of the Study

1. The higher the level knowledge and diagnostic skills acquired by trained dealers than untrained dealers with regard to the farm inputs and location specific crops that is higher knowledge and diagnostic skills may be attributed to the training component. Thus, there is a need for organizing training programmes effectively for input dealers to reach more number of farmers with adoptable low cost technologies. Thus, DAESI trained input dealers are serving as Para-Extension professionals.
2. Most of the input dealers undergone DAESI training belong to middle age group. Agriculture being vast subject it is very difficult to acquire all the information related location specific technologies with in 50 contact days. Hence, there is a need to increase the number of contact days.

Suggestion for future research

1. The investigation was conducted in only Davangere district of Karnataka. Similar studies may be undertaken in other districts, so that influence can be generalized to a greater extent to know the knowledge gained and diagnostic skills acquired by the agricultural input dealers.
2. The study was confined to small sample of agri-input dealers. The study can be taken up with large sample size covering entire state.
3. The study included only selected independent variables. Further studies may be conducted with some more independent variables to probe their impact on the dependent variable.
4. To study the impact of DAESI training programme the trained and untrained dealers were considered. Further studies may be conducted before and after of DASEI training programme for the same respondents to access their knowledge and skill.

CHAPTER VI

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UNIVERSITY OF AGRICULTURAL SCIENCES
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Interview Schedule for Data Collection

"Impact of Diploma in Agricultural Extension Services for Input Dealers (DAESI) training on Agricultural Input Dealers."

Trained/Untrained respondent No:

Contact No:

PART- A

I. General information

1**. Name and address of the Input Dealer:**

_____

2. Number of years of experience as a dealer: _____ years

3. Name of the Nodal Training Institute: _____

4. Sex : Male/Female

II. Personal, Psychological and Socio-economic characteristics

1. Age of the Respondents (Completed Years): _____

2. Education : SSLC/PUC/Graduate/Post Graduate/Any other

3. Annual Turnover : a) < 50 lakh b) 50 lakh to 1 Crore c) >1 crore

4. Mass media use: Please indicate frequency of media use for learning of new information by rating them from Regular to Never.

Sl. No.	Media	Frequency of use		
		Regular	Occasional	Never
1.	News paper			
2.	Farm Magazines			
3.	Leaflets/folders			
4.	Radio			
5.	Television			

6.	Computer/Laptop			
7.	Internet			
8.	Mobile phone			
9.	Others			

5. Extension contact: How often do you meet the following Extension officers/Extension scientists?

Sl. No.	Extension Personnel	Frequency of contact			
		Very often	Often	Occasionally	Never
1.	VLW				
2.	AO				
3.	ADA				
4.	DDA				
5.	JDA				
6.	KVK Scientists				
7.	Field officers				
8.	Any other				

6. Extension Participation: Please indicate your participation in extension activities

Sl. No.	Extension activity	Extent of participation		
		Regular	Occasional	Never
1.	Training programme			
2.	Demonstration			
3.	Field day			
4.	Field visit			
5.	Group meeting			
6.	Agriculture exhibition			
7.	Krishimela			
8.	Educational tour			

7. Achievement motivation: Please express your feelings about these statements by indicating the degree of your agreement or dis agreement on the five point's continuum.

Sl. No.	Statements	Strongly Agree	Agree	Un-decided	Disagree	Strongly disagree
1.	Work should come first even if one cannot get proper rest in order to achieve ones goals					
2.	It is better to be content with whatever little one has, than to be always struggling for more					
3.	No matter what I have done I always want to do more					
4.	I would like to try hard at something really difficult even if it provides that I cannot do it					
5.	The ways things are now-a-days discourage one to work hard					
6.	The one should succeed in occupation even if one has to neglect his family					

8. Management orientation: Please indicating the degree of your agreement or disagreement for the following statements on the five point's continuum.

Sl. No.	Statements	Strongly Agree	Agree	Un-decided	Disagree	Strongly disagree
1.	Every year one should think afresh about the inputs sold in the Shop					
2.	It is not necessary to make prior decisions about the inputs to be stocked in advance of the season.					
3.	Selection of inputs does not depend upon the onset rainy season					

4.	The amount of inputs such as seeds, fertilizers and plant protection chemicals needed for crops cultivated in the service area should be assessed before the onset of season					
5.	It is not necessary to think in advance about the total investment required for purchase of inputs required from the crops grown in the services area.					
6.	It is possible to increase the profit through preparation of business plan.					

9. Social participation: Please indicate the organization in which you are/were, the member or office bearer.

Sl. No.	Organization	Office held		
		Office bearer	Member	Non office bearer
1.	Panchayat Raj Institutions			
2.	Co-operative Banks & commercial banks			
3.	Voluntary organisation's			
4.	Dealers discussion group			
5.	Dealers What's groups			
6.	Agril. Input Dealers association			
7.	FPOs/CIGs/FIGs			
8.	Any other organisation			

10. Scientific orientation: Please indicating the degree of your agreement or disagreement for the following statements on the five point's continuum.

Sl. No.	Statements	Strongly Agree	Agree	Un-decided	Disagree	Strongly disagree
1.	While supplying NPK fertilizers I will ask the farmers to give soil test results of his farm					

2.	I supply seed as per recommended seed rate					
3.	I supply fertilizers to farmers based on recommended dose to crops grow in my service area					
4.	I supply Plant Protection Chemicals (PPC's) to farmers based on the field problems of the farmers					
5.	I supply micro-nutrient as per nutrient deficiency of the crops					
6.	I suggest the farmers to treat the seeds with bio-fertilizers and bio-pesticides before sowing in the main field					

11. Risk orientation: Please indicating the degree of your agreement or disagreement for the following statements on the five point's continuum.

Sl. No.	Statements	Strongly Agree	Agree	Un-decided	Disagree	Strongly disagree
1.	An Agril. input dealer should rather take more of chance in making a big profit than to be content with a smaller but less risky profits					
2.	An Agril. input dealers, who is willing to take greater risks than the average dealer usually does better financially					
3.	It is good for a dealers to take risks when he knowns is chance of success is fairly high					
4.	It is better for a dealers to try new methods, techniques unless most others have used them with success					

5.	Trying an entirely new methods of marketing inputs involves risk but it is worth					
6.	An input dealers should go for expansion of business activity to avoid greater risks					

PART-B

I. Knowledge of Agricultural Inputs sold by Trained/Untrained Input Dealers in Davangere (Dist.)

A. SEEDS

1. Seed is a _____

   a) Matured ovule b) Un-matured ovule

   c) Matured fertilized ovule d) Un-matured fertilized ovule

2. Which colour used to indicate the Certified Seed _____

   a) Green b) Blue c) Amber d) White

3. What is the optimum seed rate recommended for paddy _____

   a) 35-40 kg b) 30-40Kg c) 25-30 Kg d) 15-25 Kg

4. Name the Blast resistant Paddy variety _____

   a) Jaya b) IR-20 c) Mandya Vijaya d) None of these

5. Do you know why Seed germination test is conducted _____

   a) To know seed borne diseases b) To known soil borne diseases

   c) To know germination percentage d) None of these

6. What is the recommended seed rate of Ragi per acre for red sandy loam soils _____

   a) 5 kg b) 7 kg c) 10 kg d) 12 kg

7. Name the popular hybrid of Maize grown in your area _____

8. Name popular Red gram variety grown in your service area _____

9. Name popular Field bean (Avare) variety grown in your service area _____

B. Fertilizers

1. One example for Straight Fertilizer_____

2. Main Source of K is_____

a) MOP b) DAP c) SSP d) All of these

3. NPK content in Urea, SSP and MOP respectively _____

a) 46,16,60 b) 50,20,65 c) 30,40,50 d) 45,18,65

4. In acid soils, commonly used Phosphatic fertilizer is_____

a) SSP b) Rock phosphate c) Both d) None of these

5. Alkaline soils are reclaimed by applying _____

a) Lime b) Gypsum c) Both d) None of these

6. A banned chemical for usage in agriculture _____

a) DDT b) BHC c) Nuvacron d) Bavistin

7. Usage of pesticides after of the expiry date causes _____

a) No harm b) Toxic effects c) Unsatisfactory control d) Less harm

8. Bio-fertilizers are -

a) Cultured micro-organisms c) Organic manures

b) Green manure d) None of these

10. What is the quantity of sand required to be mixed with 8-10 kg of Granular weedicides before application _____

a) 5-10 kg b) 20-25 kg c) 50-100 kg d) > 100 kg

11. Recommended dose of fertilizer required for Paddy one acre area _____

a) 40:20:20 b) 30:15:15 c) 40:30:20 d) 30:30:20

12. What is the quantity of Urea, DAP and MOP required for 1 acre of Paddy _____ respectively as per the recommended dose of NPK

a) 90:60:40 b) 70:45:33 c) 120:80:60 d) 140:160:100

13. Widely used Bio-fertilizer in Paddy _____

a) Azolla b) Azotobacter c) Azospirillum d) All of theses

14. Recommended dose of fertilizer required for Maize one acre area _____

a) 60:40:10 b) 60:30:16 c) 40:30:20 d) 50:30:20

15. What is the quantity of Urea, DAP and MOP required for 1 acre of Maize _____ respectively as per the recommended dose of NPK

a) 105:70:26 b) 120:80:40 c) 140:100:60 d) 180:200:100

16. White bud in Maize is caused due to deficiency of _____ nutrient

a) Ca b) Zn c) Fe d) None of these

17. Bio- fertilizers expire before _____ days

a) 160 days b) 80 days c) 180 days d) 100 days

C. Plant protection chemicals

1. One example for Contact Pesticide _____

2. One example for Systemic Pesticide _____

3. Which colour of the label on the container indicates the extremely toxic nature of Chemical/ Pesticide _____

a) Yellow b) Green c) Blue d) Red

4. Which colour of the label on the container indicates the safest to use (Chemical/ Pesticide) _____

a) Yellow b) Green c) Blue d) Red

5. Integrated pest management mean_____

a) Completely eradication of the pests

b) Keeping the pest population below Economic Threshold level

c) Leaving the pest without taking any control measures

d) None of these

6. Pesticides not only kill pest but also kills beneficial / non targeted organisms Yes/No

If yes, mention any one of the beneficial / non targeted organism _____

7. The chemical, which is used for control the mites, is known as

a) Acaricides b) Fungicides c) Insecticides d) Mematicides

8. Which is the pest occurring during Milking stage of Paddy _____

a) Gundhi bug b) Stem borer c) Leaf folder d) All of these

9. Which chemical is best for control of stem borer in Paddy _____

a) Roger b) Coragen c) Monocrotophos d) All of these

10. Which is the disease that is expressed only at arid stage _____

a) Blast b) Leaf spot c) Udbatta d) All of these

11. Name the fungicide used for the control of Downy mildew disease in Maize _____

a) Metalaxyl b) Monocrotophos c) Both d) None of these

12. For mixing of fungicides and insecticides it is essential to see weather these chemicals are _____ with each other

a) Compatible b) Adverse effect c) No reaction d) None of theses

13. Stem borer of Paddy eats only Xylem and phloem tissue _____ Yes/No

14. Name the chemical used for Seed treatment in Maize _____

a) Captan b) Chlordane c) Endosulfan d) None of these

II. Diagnostic skills level of Trained/Untrained Agricultural Input Dealers

Respondents are requested to identify the given specimen and right their name in a given column

Specimen	Identified	Not identified
A. Seeds		
a)		
b)		
c)		
d)		
e)		
f)		
g)		
h)		
B. Fertilizers		
a)		
b)		
c)		
d)		
e)		
f)		
g)		
h)		
C. Deficiency symptoms		
a)		
b)		
c)		
d)		
e)		
D. Insect damage		
a)		
b)		
c)		
d)		
e)		

E. Disease symptoms		
a)		
b)		
c)		
d)		

III. Opinion of trained Input Dealers on DAESI training

Sl. No.	Opinion	Very good	Good	Average	Poor	Very poor
1.	Training Content					
2.	Training methodology					
3.	Facilities					

IV. SUGGESTIONS: Please indicate your suggestions regarding DAESI training for further improvement

1.
2.
3.
4.
5.
6.
7.