ADOPTION GAP IN GROUNDNUT PRODUCTION IN NORTHERN TRANSITION ZONE OF KARNATAKA

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1. INTRODUCTION

Oilseeds constitute the principal commercial crop of India. Oil and fats form an essential part of human diet, serve as an important material for manufacture of soaps, paints, varnishes, hair oils, lubricants, textiles auxiliaries', and pharmaceuticals *etc.* Groundnut contains on an average 40.1 per cent of fat and 25.3 per cent of protein and is a rich source of calcium, iron and vitamin B complex like thiamine, riboflavin, niacin and vitamin A.

Oilseeds are the second largest agri-commodity after cereals and value about 5 per cent of gross national product and nearly 10 percent value of all agricultural products put together. An important producer, importer and also exporter of oilseeds and vegetable oil, our country now occupies the fourth position in the vegetable oil economies of the world following U.S.A, China and Brazil. After the country initiated the Technology Mission on Oilseeds (TMO) in 1986, there has been a steady increase in oilseed production. The total oilseed production rose from 18.4 mt in 2000-01 to a high 24.4 mt in 2004-05 and a record 28.2 mt in 2007-08 and 28.8 mt of oilseeds or 8.6 mt of oil production in 2008-09 (Rai, 2009).

Groundnut or peanut is one of the important oilseeds in the world today. The major groundnut-producing countries of the world are India, China, Nigeria, Senegal, Sudan, Burma and the USA. Out of the total area of 18.9 million hectares and the total production of 17.8 million tonnes in the world, these countries account for 69 per cent of the area and 70 per cent of the production. Groundnut is a major oilseed crop in India accounting for 45 per cent of oilseed area and 55 per cent of oilseed production in the country. India has been producing groundnut since it was introduced in Asia in the 16th century. The weather in the Indian subcontinent suited well to the crop and India transformed into an important contributor to the world production.

Groundnut is the single largest source of edible oils in India and constitutes roughly about 50 per cent of the total oilseeds production. India occupies the first place in acreage and second in production of groundnut. Seventy per cent of the area and 75 per cent of the production are concentrated in the four states of Gujarat, Andhra Pradesh, Tamil Nadu and Karnataka. Andhra Pradesh, Tamil Nadu, Karnataka and Orissa have irrigated area which forms about 6 per cent of the total groundnut area in India. In India, groundnut is grown over an area of 6.41 million hectares with total production of 9.36 million tonnes. From 5 million tonnes in the year 1980-81 the production has increased to 8.06 million tonnes during the year 1994-95 and the production in the year 2007-08 was 9.36 million tonnes. The area under groundnut was 4.49 million ha during 1950-51 which has increased to 6.41 million ha in 2007-08. It is one of the major oilseed crops grown in Karnataka covering an area of 0.76 million hectares and contributed about 13.52 per cent to all India in area while the production was 0.38 million tonnes and contributed 7.82 per cent to all India in production in the year 2006-07 (Anon., 2008). The sizeable increase in groundnut production over the years was possible through extension efforts of ICAR and State Department of Agriculture. In order to bring groundnut production to the forefront and to achieve even higher level of production, frontline demonstrations play the most pivotal role in terms of providing viable technological inputs.

Concept of frontline demonstrations

Front Line Demonstration (FLD) is the extension management practice adopted in a block of two to four hectares in the farmers field under the close supervision of the scientists of the National Agricultural Research system comprising of ICAR Institute, National Research Centres, Project Directorates, Krishi Vigyan Kendras, State Agricultural Universities and its Regional Research Stations. Only critical inputs and training for this demonstration are provided by organizing institution. In FLD both farmers and extension functionaries are target audience. From the FLD, it is possible to generate data related to factors contributing to higher yield and also constraints of production under field demonstration conducted under the close supervision of the scientists. Here, the technologies are demonstrated for the first time by the scientists themselves before being fed into the main extension system of the state department of Agriculture in that particular area. In this method newly released crop production and protection technologies are demonstrated on various farming situations. Front

Line Demonstration is conducted in a particular area after thorough discussion and consultation with the farmers of that locality. Generally a field day is observed in the demonstration field when the crop is at maturity stage and interaction between the scientists, farmers and extension functionaries takes place in the field. The crop is harvested in the presence of the interested group of farmers so that they can visualize the importance of new technology easily and effectively.

Frontline demonstration continues to play an important role in convincing farmers on efficacy of new technology. This is reflected in terms of increased productivity of groundnut in the recent years. In the frontline demonstrations conducted (between 1996-97 to 2006-07) in the farmers fields, the yields increased by following improved technology over that of the farmers practises followed have been recorded to the tune of 22 percent in groundnut. The data generated by a very large number of frontline demonstrations (FLD's) conducted in the farmers fields indicate that there exist a commercially exploitable yield reservoir to the extent of 51 percent of the existing national average which could be achieved through the adoption of presently suggested improved production technology (Thamaraikannan *et al*., 2009).

In spite of the technology breakthrough in the field of agriculture in India which has resulted in increasing productivity, there are ample observations to show that not even 25 per cent of the available technology is adopted in the farmers' field. Though the frontline demonstrations are conducted by the scientists themselves, only critical inputs and training are provided from the scheme budget, remaining inputs are supplied by the farmers themselves. Therefore there is every possibility of adoption gap even in the demonstration fields. Moreover a close look at the demonstration reveals an awesome gap between the yields obtained on the demonstration plots and farmers field. Even though large scale verification trials and demonstrations are conducted to promote the spread of crop production technology, there still exists adoption gap which leads to lower yields. The yield of groundnut in farmers' field is 900kg/ha as against the potential yield of 3000kg/ha. This is a clear indication of the fact that though India has competent agricultural research and extension systems, yet the adoption of technologies by farmers are far from satisfactory. In this direction, an attempt has been made to study the adoption gap in groundnut production in Northern Transition Zone of Karnataka with the following objectives:

Objectives

1. To ascertain the adoption gaps in demonstration fields and farmers' field.

2. To assess the yield gap in groundnut.

3. To study the socio-psychological characteristics of groundnut demonstrator farmers as well as other farmers in relation to their adoption gap.

4. To identify the constraints in adoption of groundnut production technology.

Significance of the study

The results of this study are expected to be useful to extension and research wings of the State Agriculture Department for the transfer of technology and to chalk out future extension strategies and decide priorities research. The research Institutes will also be benefitted by the study as it would throw light on why there still exist adoption gap at the farmers field even after concerted efforts given by these institutions in developing new technologies. The information will also be helpful to local extension agencies, commercial organisations to extend their efforts in helping the farmers in adopting the recommended practices of groundnut on a large scale. It will also provide an insight into a wide variety of growers' problem which can be worked upon on scientific lines and analyse the factors which are responsible for low production. This in turn will provide necessary feedback for the selection of location specific technologies for further refinement and feedback to the researchers.

Limitation of the study

The researcher had limited time at her disposal. The study was confined only to the Northern Transition Zone of Karnataka comprising of four districts. Hence, generalisation made in this study, may have to be reinforced by a comprehensive study.

2. REVIEW OF LITERATURE

An acquaintance with related literature of past studies is a must for any researcher for formulating a sound methodology. Very few studies have been conducted on adoption gap in groundnut crop, therefore a brief review of previous studies on adoption gap and yield gap in respect of other crops has been presented. The information is presented in this chapter under the following heads.

2.1 Adoption gap of recommended cultivation practices of crops

2.2 Yield gap of crops

2.3 Socio-psychological characteristics of farmers

2.4 Constraints in adoption of crop production technology

2.1 Adoption gap of recommended cultivation practices of crops

Sarda and Khurana (1993) in their study on adoption gap in recommended rice technology found that all the respondents had adoption gap of 10.00 per cent, while 14.29 per cent of small, 9.53 per cent of medium and 7.94 per cent of large farmers were having very high gap of 40.00 to 50.00 per cent.

Singh *et al.* (1996) investigated correlates of knowledge, attitude and risk performance of farmers towards dry farming technology and reported that there was 54.50 per cent technology gap in case of recommended mustard production technology. The gap was highest in case of seed treatment (90.00%) followed by plant protection measure (68.00%) and fertilizer application (54.00%).

Waris and Reddy (1999) conducted a study on technological gap in adoption of groundnut production technology and opined that 60.00 per cent of farm women fell in the low to medium technological gap category of 20.00 to 60.00 per cent.

Satyanarayan and Kurmvanshi (1999) conducted a study entitled adoption pattern of soybean cultivation in Sagar district of Madhya Pradesh and revealed that in the overall adoption of modern agricultural technologies, only 13.33 per cent of the respondents (45) adopted while the remaining soybean producers adopted at low or partial levels.

Shriram and Chauhan (2000) in their study entitled adoption gap in improved practices of wheat cultivation among tribal and non-tribal farmers inferred that adoption gap was higher in tribal respondents (48.76%) than non-tribal (38.42%) in all major areas.

Dubolia and Jaiswal (2000) in their study on technological gap of groundnut cultivation among groundnut growers found that the overall technological gap was 75.29 per cent.

Kapse *et al.* (2000) conducted a study on technological gap in summer groundnut cultivation observed that the mean composite technological gap was to the tune of 25.26 per cent.

Singh and Gajja (2002) in their study on adoption gap in improved practices of bajra, til and gaur crops in arid zone found that the overall adoption gap was 39.45, 44.40 and 45.65 per cent among beneficiary farmers and 60.92, 65.34 and 66.94 per cent among non-beneficiary farmers respectively.

Gupta and Srivastava (2002) investigated technological gap in soybean cultivation and reported that the maximum technological gap was found in the use of seed treatment (94.50%) whereas the lowest was found in irrigation management at 43.42 per cent.

The generalization that can be drawn from the above studies is that there exists a gap in adoption of recommended package of practices. These studies have given a base to study the adoption gap of farmers with respect to recommended groundnut cultivation practices.

2.2 Yield gap of crops

Christopher *et al.* (1996) in their study on production technology on groundnut yield and net returns inferred that the demonstration plots gave higher yield in all 16 locations and the magnitude of the increase ranged from 18.8 to 56.50 per cent, the average being 33.00 per cent.

Patil *et al.* (1997) in their study on yield gap analysis in groundnut production reported that the actual yield of groundnut on farmers field was less than the potential farm yield by 24.24 per cent.

Patil and Kunal (1998) conducted a study on yield gaps and constraints in groundnut production in Karnataka and indicated that a very high gap of 50.22 per cent was observed between the research station yield and demonstration plot yield (yield gap I), while the yield gap between the demonstration plot and the farmers field (yield gap II) was found to be 26.12 per cent.

Rai *et al.* (1999) in their study on role of front line demonstration in transfer of linseed technology found that the average yield at the farmers fields was 705 kg/ha while the average yield of the demonstration plots was 1795 kg/ha.

Behera *et al.* (1999) in their study on bridging yield gap of wheat through frontline demonstration observed that 29 per cent higher grain yield was obtained with the same variety LOK-I under improved management practices compared to farmer's conventional practices.

Basavaraj (2000) in his study on crop yield potentials and constraints in production of major crops in Northern Dry Zone of Karnataka revealed that the magnitude of yield gap-I ranged from 24.00 per cent in sunflower to 33.00 per cent in groundnut and yield gap II was highest for groundnut *i.e.*, 41.00 per cent.

Verma *et al.* (2002) in their study on groundnut productivity and yield gap analysis of groundnut production opined that an average of 36.22 per cent yield gap was observed between frontline demonstration yields and yields obtained by farmers.

Rajaratnam and Reddy (2003) studied impact of sunflower on-farm extension demonstrations (OFEDs) and observed that 61.84 per cent of beneficiaries had medium increase in yield, 21.05 percent had high increase and 17.11 per cent of respondents had low increase in yield after the implementation of on-farm extension demonstrations.

Sharma *et al.* (2005) in their study on adoption pattern and constraints of soybean production technology in Malwa plateau of Andhra Pradesh revealed that there was a considerable yield gap of 60.03 per cent between potential yield and actual yield.

Sananse *et al.* (2007) conducted a study on yield gap analysis of rice based cropping system in North Konkan Coastal Agro-Ecological System of Maharashtra and observed that the overall yield gap of groundnut was 25.46 per cent. The yield gap II was more than the yield gap-I.

Das *et al.* (2008) in their study on diffusion and adoption of mustard production technology found that the yield performance of mustard was 431.00 kg/ha at the farmers field and 937.00 kg/ha at the demonstration plots in the year 1998-99.

Thus, the studies reviewed above indicated that considerable yield gaps were observed both in demonstration and farmers fields. It could be witnessed from some of the above studies that yield gap between demonstrated and fellow farmers was more than the yield gap between research station and demonstration fields.

2.3 Socio-psychological characteristics

2.3.1 Age

Kokate *et al.* (1996) in their study on diffusion of mustard technology among farmers of Arid Region: An action research found that 38.00 per cent of the farmers were above the age of 41 years and almost identical member of farmers were in the age groups of 20 to 30 years and 31 to 40 years.

Kapse *et al.* (2000) in their study on technological gap in summer groundnut cultivation found that majority (55.83%) of the respondents were of middle age.

Karpagam (2000) conducted a study on knowledge and adoption behaviour of turmeric growers in Erode district of Tamil Nadu state and indicated that majority (70.83%) of the turmeric growing farmers belonged to middle aged group.

Govindagowda and Anand (2001) in their study on profile of groundnut growers found that 32.00 per cent of big and 54.00 per cent of small farmers belonged to medium aged group.

Keshavaiah *et al.* (2003) in their study on the characteristics of frontline demonstration farmers and their opinion on hybrid rice technology found that majority (58.00%) of the farmers fell in the age group of 31 to 50 years, followed by farmers of age above 50 years (27.70%).

Chandrashekar (2007) while analysing the onion production and marketing behavior of farmers in Gadag district of Karnataka, revealed that majority (63.34%) of the respondents belonged to middle age group, followed by equal per cent (18.33%) in both in young and old age groups.

Kumar (2009) in his study on technological gap in adoption of the improved cultivation practices by the soybean growers found that majority (62.00%) of the respondents belonged to middle age.

2.3.2 Education

Hanumanaikar (1995) in his study on knowledge and adoption and marketing behaviour of sunflower growers conducted in Dharwad district reported that 9.50 per cent of the respondents were illiterate, 38.00 per cent received primary education, 35.00 per cent studied up to SSLC and 17.50 per cent had college education.

Kokate *et al.* (1996) observed that 65.00 per cent of the respondents were literate, and majority (49.00 %) of the respondents had middle school education.

Yaligar (1997) conducted an analytical study on soybean cultivation by farmers of Belgaum district and reported that 13.90 per cent were illiterate, 45.83 per cent studied up to primary and middle school, 31.94 per cent studied up to high school and PUC level and 8.33 per cent of respondents had education above PUC.

Kapse *et al.* (2000) in their study on technological gap in summer groundnut cultivation found that majority (22.50%) of the respondents were educated up to higher secondary level.

Govindagowda and Anand (2001) in their study on profile of groundnut growers observed that majority (52.00%) of big farmers and 48.00 per cent of small farmers had medium level of education.

Keshavaiah *et al.* (2003) found that majority of the demonstration farmers were well educated (73.60 per cent farmers had either high school or college) while only 2.20 per cent farmers were illiterate.

Chandrashekhar (2007) reported that 43.33 per cent of the respondents had high school level of education, followed by 26.67 per cent up to middle school, 13.33 per cent up to primary school, 7.50 per cent illiterate, 1.67 per cent of the respondents were able to read and write and 0.83 per cent belonged to post-graduate category.

Kumar (2009) in his study reported that majority of the respondents had high school education (31.33%), while 25.33 per cent were illiterate.

2.3.3 Farming experience

Sakharkar *et al.* (1992) carried out a study on correlates of knowledge and adoption behavior of soybean growers and reported that 50.00 per cent of respondents had farming experience of four to six years, while 27.33 per cent of respondents were cultivating soybean for more than seven years.

Sakharkar (1995) carried out a study on knowledge, fertilizer use pattern and constraints in cultivation of soybean by farmers of Nagpur district, Maharashtra and reported that majority of the respondents (67.34%) were cultivating soybean from the last five to eight years.

Yaligar (1997) reported that majority (74.31%) were cultivating soybean from the last three to five years, nine per cent of the growers had two years and remaining 16.67 per cent had more than five years experience in cultivation of soybean.

Thiranjanagowda (2005) carried out a study on cultivation and marketing pattern of selected flowers in Belgaum district of Karnataka and noticed that 40.62 per cent of the respondents had high farming experience, while 35.93 and 23.45 per cent of the respondents belonged to medium and low farming experience category, respectively.

Lekshmi *et al.* (2006) in their study on yield gap analysis among rice growers in Northeast Zone of Tamil Nadu inferred that 30.00 per cent of the farmers fell under low category followed by 31.67 per cent in medium category and 38.33 per cent in high category of farming experience.

Sidram (2008) carried out a study on analysis of organic farming practices in pigeonpea in Gulbarga district of Karnataka state and reported that, nearly one third farmers (30.83%) had high experience in farming whereas majority (69.17%) had low experience.

Kumar (2009) in his study indicated that majority (58.67%) of the respondents had medium farming experience (10 to 20 years), while (30.66%) of the respondents had high farming experience (more than 20 years) and 10.66 per cent of respondents had low farming experience.

2.3.4 Land holding

Naik (1993) in his study on awareness, attitude and use pattern of seed supplying agencies by farmers in Dharwad district of Karnataka observed that 40.00 per cent of the respondents had big land holding followed by small land holders (30.00%) and marginal land holders (26.00%).

Sakharkar (1995) reported that one-third of the soybean growers had land holding of 10.01 to 25 acres while 14.00 per cent of respondents had more than 25 acres of land.

Nagaraj (1996) conducted a study on knowledge and adoption pattern of improved cultivation practices of groundnut in Tumkur district and reported that 48.00 per cent of the participant farmers were found in medium land holding category followed by 30.67 per cent in small land holding category while only 8.00 per cent of the participants were big farmers.

Kokate *et al.* (1996) found that about 64.00 per cent of farmers had land below 7.5 ha and remaining had about 7.5 ha.

Yaligar (1997) in a study noticed that majority of the respondents were small farmers (53.47%) while the big farmers constituted 46.53 per cent of the total respondents.

Kapse *et al.* (2000) revealed that majority (49.17%) of the respondents were medium land holders.

Kumar (2009) found that majority of the farmers (45.33%) belonged to medium land holding category, 22.67 per cent of them belonged to semi-medium land holding category, whereas 16.67 per cent of them were small farmers, 10.66 per cent were marginal farmers and 4.67 per cent belonged to big land holding capacity.

2.3.5 Innovative Proneness

Gandhi (2002) carried out a study on knowledge and adoption behaviour of vegetable growers with respect to IPM of tomato crop in Kolar district of Karnataka revealed that majority of the beneficiaries belonged to medium level innovativeness category.

Shashidhara (2003) in his study on socio-economic profile of drip irrigation farmers in Shimoga and Davanegere districts of Karnataka inferred that majority (47.50%) of the farmers belonged to medium innovativeness category followed by low (31.66%) and high (20.83%) innovativeness category.

Nagesha (2005) from his study on entrepreneurial behavior of vegetable seed production farmers in Haveri district of Karnataka reported that majority of the respondents (63.30%) had medium innovativeness, followed by 18.33 per cent each with high and low innovativeness in vegetable seed production.

Raghavendra (2005) conducted a study on knowledge and adoption of recommended cultivation practices of cauliflower in Belgaum district of Karnataka and noticed that majority (45.00%) of the respondents belonged to medium level of innovativeness category, while 29.16 and 25.83 per cent of respondents belonged to low and high level of innovativeness category, respectively.

Reddy (2006) in his study on knowledge, adoption and marketing behavior of chilli growers in Guntur district of Andhra Pradesh reported that majority (72.50%) of respondents had medium innovativeness while lesser percentages of respondents were noticed in high innovativeness (15.60%) and low innovativeness (12.50%) categories.

Manjunath (2007) carried out a study on rehabitant farmers in Upper Krishna Project area of Bagalkot district and observed that majority of the respondents (56.25%) were found in medium innovative category, while 27.25 and 16.25 per cent of the respondents belonged to low and high innovativeness, respectively.

Sidram (2008) indicated that majority of the respondents (45.00%) belonged to medium innovativeness category while 32.50 and 22.50 per cent of the respondents belonged to low and high innovativeness category, respectively.

Kumar (2009) in his study observed that 52.00 per cent of the respondents belonged to medium innovativeness, followed by high (32.67%) and low (15.33%) innovativeness respectively.

2.3.6 Mass media utilization

Gupta (1999) reported that all the respondents possessed radio, of which 72.00 per cent were regularly listening to agricultural programmes and 64.67 per cent were listening to other programmes. As high as 86.66 per cent of respondents possessed television, 48.00 and 41.00 per cent of which were regularly viewing agricultural and general programmes respectively.

Kanavi (2000) conducted a study on knowledge and adoption behaviour of sugarcane growers in Belgaum district of Karnataka and reported that 82.00 per cent of respondents possessed radio, whereas television was owned by 72.66 per cent followed by 16.66 per cent and 2.00 per cent subscribing to newspapers and agricultural magazines respectively. As far as radio was concerned, 19.33 and 6.00 per cent listened to agricultural programmes regularly and occasionally, respectively. In case of television, 13.33 per cent viewed regularly the agricultural programmes followed by news (38.66%) and general programmes (15.33%).

Ramanna *et al.* (2000) revealed that 48.00 per cent of the hybrid sunflower growers had medium level of mass media exposure while 12.00 and 10.00 per cent of respondents had low and high level of mass media exposure, respectively.

Govindagowda and Anand (2001) in the study on profile of groundnut growers found that the mass media utilization pattern was high in case of big farmers (48.00%) and 42.00 per cent of small farmers had low mass media utilization pattern.

Hinge (2009) conducted a study entitled diffusion and adoption of wine grape production in Maharashtra and noticed that majority of the respondents (83.75%) subscribed newspaper, 30.62 per cent subscribed farm magazines, and 96.25 per cent possessed radio and 98.75 per cent possessed television.

2.3.7 Cropping intensity

Kokate *et al.* (1996) found that majority of the farmers (51.98%) belonged to low category of cropping intensity.

Kanavi (2000) inferred that 58.00 per cent of sugarcane growers were under low category of cropping intensity and 42.00 per cent of farmers under high category.

Nagaraj (2002) carried out a study on knowledge of improved cultivation practices of sugarcane and their extent of adoption by farmers in Bhadra command area in Davanagere district and reported that 90.00 per cent of sugarcane growers fell under low category of cropping intensity and 10.0 per cent were found in high category.

2.3.8 Cosmopoliteness

Kumbar (1983) in his study on adoption behaviour and consultancy pattern of grape growers of Bijapur district in Karnataka indicated that a large majority (63.27%) of the respondents were found to in high category of cosmopoliteness, while 36.73 per cent of the respondents belonged to low category of cosmopoliteness.

Shashidhara (2004) conducted a study on influencing factors and constraints in drip irrigation by horticultural farmers of Bijapur district of Karnataka and found that 41.50 per cent of farmers visited the nearest town occasionally, followed by 37.50 per cent once in 15 days, while respondents who visited town for personal or domestic purpose were 54.10 per cent followed by 35.00 per cent for new technology or agriculture purpose.

Raghavendra (2005) conducted a study on cauliflower growers of Belgaum district and observed that 4.50 per cent of the respondents visited the nearest town once in a fortnight, followed by 30.33 and 18.84 per cent who visited the town once in a month and once in a week, respectively. Respondents who visited the town for personal or domestic purpose were 50.83 per cent, followed by 48.84 per cent who visited for want of new technology or information related to agriculture.

Govindagowda and Narayanagowda (2006) conducted a study in Bijapur and Bangalore Rural districts and observed that more number of Thompson seedless grapes growers had medium (41.00%) and low (43.00%) cosmopoliteness. In case of Bangalore Blue grape growers, majority (62.00%) of them had high cosmopoliteness.

Hinge (2009) in his study found that 46.25 per cent of the respondents belonged to high category of cosmopoliteness followed by 28.75 and 25.00 per cent belonged to medium and low category of cosmopoliteness, respectively.

2.3.9 Extension Contact

Naik (1993) conducted a study in Dharwad district of Karnataka state and revealed that majority of the respondents (97.00%) had high level of contact with extension agencies.

Hanumanaikar (1995) in his study noticed that 79.50 per cent of the respondents contacted one or more extension agencies like Agricultural Assistants, Assistant Agricultural officers, Subject Matter Specialists and Extension Guides.

Malagi (1995) studied on Adoption behaviour and value orientation of adopters and non adopters of soybean in Kalaghatagi taluka of Dharwad district and reported that 40.00 per cent of sugarcane growers belonged to high level of extension contact while 33.00 and 27.00 per cent belonged to medium and low level of extension contact, respectively.

Belligeri (1996) conducted a study in Hanagal taluk of Dharwad district on Agro-Forestry practices and revealed that majority of the respondents were aware of Agriculture Assistants (85.00%), followed by Agricultural Assistant Officer (64.00%), Subject Matter Specialists (41.00%), Assistant Director of Agriculture (18.00%), Forest Motivator (26.60%) and Range Forest Officers (14.00%).

Kapse *et al.* (2000) found that majority (64.17%) of respondents had medium level of extension contact.

Swami (2006) in his study on technological gap and constraints of bidi tobacco cultivation in Belgaum district of Karnataka revealed that 30.67 per cent of respondents contacted Agricultural Assistants regularly while Assistant Agricultural Officer (50.00%) and Private Company Staff (40.67%) were occasionally contacted by the farmers.

2.3.10 Risk orientation

Sakharkar (1995) conducted a study on soybean growers in Nagpur district of Maharashtra state and observed that 64.00 per cent of farmers showed medium risk taking ability, whereas 16.00 and 20.00 per cent of farmers had low and high risk taking ability, respectively.

Gupta (1999) conducted a study on knowledge and adoption behaviour of rice growers in Jammu district of Jammu and Kashmir and observed that majority (64.00%) of the respondents were average risk bearers, followed by low (24.67%) and high (11.33%) risk bearers, respectively.

Meeran and Jayaseelan (1999) carried out a study on socio-personal, socio-economic and socio-psychological profile of shrimp farmers and reported high risk orientation (72.00%) among shrimp farmers followed by medium (26.00%) and low (20.00%) risk orientation.

Budihal (2002) conducted a study on utilization pattern of cotton production technology by farmers of Karnataka and revealed that majority of the farmers belonged to medium level of risk orientation category.

Nagaraja (2002) reported that majority (74.85%) of respondents were found to possess medium risk, whereas 15.83 and 9.58 per cent of the respondents belonged to high and low level of risk orientation, respectively.

Shashidhara (2004) in his study revealed that majority of farmers (70.83%) had medium risk bearing ability while 15.00 per cent low level of risk orientation.

Raghavendra (2005) reported that majority (55.00%) of the respondents had medium level of risk bearing ability, whereas 35.00 and 10.00 per cent of them had low and high risk bearing ability, respectively.

Girish (2006) carried out an analysis of sustainable cultivation practices followed by sugarcane growers in Karnataka and observed that, high level of risk orientation was noticed in 18.89 per cent of sugarcane growers, whereas medium level of risk orientation was possessed by 48.89 per cent and remaining 32.22 per cent of them had low risk orientation.

Sidram (2008) noticed that majority of the respondents (46.67%) belonged to low level of risk orientation, while 29.17 and 24.17 per cent of respondents belonged to medium and high risk orientation category, respectively.

Kumar (2009) witnessed that majority (58.67%) of respondents belonged to medium level of risk orientation category, followed by high (20.00%) and low (21.33%) level of risk orientation.

The above studies reveal that majority of the respondents were of middle age, literate, possessed radio, had low cropping intensity, belonged to medium innovative proneness category, had high cosmopoliteness and medium risk orientation.

There were variations in number of years of farming experience and areas of land holding. In some studies, respondents had high extension contact while in some respondents had medium extension contact.

2.3.11 Relationship between independent variables of respondents and their adoption gap

Independent variables	Year	Respondents	Nature of relationship
Age			
Bhaskaran and Thampi	1986	Paddy growers	Non-significant
Patil	1995	Paddy grower	Non-significant
Kiran	2003	Mango growers	Non- significant
Santosh	2006	Tobacco growers	Negative and non-significant
Rajshekar	2009	Papaya growers	Non-significant
Education			
Patil	1995	Paddy growers	Significant
Naghabhushanam and Kartikeyan	1998	Paddy growers	Significant
Kiran	2003	Mango growers	Non-significant
Santosh	2006	Tobacco growers	Negative and non-significant
Rajshekar	2009	Papaya growers	Negative and non-significant
Land holding			
Patil	1995	Paddy growers	Non-significant
Swami	2006	Tobacco growers	Negative and highly significant
Farming Experience			
Bheemappa	2001	Paddy and cotton	Negative and significant
Kiran	2003	Mango growers	Non-significant
Extension Contact			
Kubde *et al.*	2000	Cotton growers	Negative and significant
Santosh	2006	Tobacco growers	Negative and highly significant
Mass Media Utilization			
Sujatha and Annamalai	1998	Paddy growers	Positive and significant

Venkatesh *et al* Santosh	1999 2006	Paddy growers Tobacco growers	Positive and significant Negative and highly significant
Cosmopoliteness			
Kadam and Borse Rajashekar	1993 2009	Banana growers Papaya growers	Non- significant Non- significant
Cropping Intensity			
Ali Sharma *et al*	2008 2005	Rice growers Soybean	Negative and significant Negative and highly significant.
Innovative Proneness			
Nikhade *et al.*	1997	Paddy growers	Negative and significant
Nagabhushanam and Kartikeyan	1998	Paddy growers	Negative and significant
Santosh	2006	Tobacco growers	Negative and significant
Rajshekar	2009	Papaya growers	Negative and non-significant
Risk Orientation			
Gupta	1999	Paddy growers	Negative and significant
Kiran	2003	Mango growers	Non -significant
Swami	2006	Tobacco growers	Negative and significant
Rajashekar	2009	Papaya growers	Positive and significant

It could be witnessed from the above studies that variables like land holding, farming experience, extension contact, cropping intensity, innovative proneness and risk orientation had negative and significant relationship with the adoption gap. Age and cosmopoliteness had non-significant relationship while education had significant relationship with the adoption gap.

2.4 Constraints in adoption of crop production technology

Author name and year	Place of study and crops	Problems		Rank or %
Patil and Kunnal (1998)	Dharwad, Groundnut	1. Untimely rainfall		61.25
		2. Non-availability of quality seeds		64.87
		3. Problematic soil.		63.62
		4. Use of insufficient fertilizer		15.00
		5. Diseases and pests		40.00
		6. Labour problem		81.50
		7. Shortage of funds		17.50
		8. Lack of technical knowledge		45.00
Thakur *et al.* (1998)	Seoni, Madhya Pradesh Rice		Big farmers	Small farmers
		i) Non-availability of labour	84	88
		ii) Problems of insects and diseases	72	84
		iii) Low price for produce	68	90
		iv) Lack of improved implements	66	76
		v) High cost of inputs	54	72
		vi) Lack of technical guidance	52	94
Author name and year	Place of study and crops	Problems		Rank or %
		vii) Non-availability of assured irrigation and uncertainty of rains	50	96
		viii) Non-availability of improved seed	50	78

		ix) Undulated soil topography	44	56
		x) Lack of knowledge of technology	40	86
Basavaraj (2000)	Northern Dry Zone of Karnataka (2000), Groundnut.	1. Moisture problem		63.21
		2. Labour problem		75.86
		3. Pest and disease incidence		77.01
		4. Funds problem		62.07
		5. Inadequate dose of seeds		71.26
		6. Inadequate dose of fertilizers		97.70
		7. Non-adoption of recommended variety		62.21
		8. Soil problem		54.02
Ranish *et al.* (2001)	Hisar, Haryana, Rapeseed and Mustard	i) Inadequate irrigation facility		I
		ii) High cost of chemical and fertilizers		II
		iii) Poor transfer of technology		III
		iv) Lack of demonstrations and training of recommended practices		IV
		v) Lack of technical know-how		V
		vi) Poor credit facilities		VI
		vii) Poor availability of inputs in the market		VII
		viii) High cost of inadequate availability of quality goods		VIII
		ix) Adulteration in pesticides and fertilizers		IX
		x) Exploitation of farmers by commission agents		X
Venkataramana *et al.* (2005)	Kolar district, Karnataka, Kharif	1. Erratic/scattered rainfall		90.0

	Groundnut		
		2. Soil and agronomic practices	26.30
		3. Seeds	95.40
		4. Fertilizers	91.40
		5. Seed rate of sowing	64.80
		6. Weed control	77.80
		7. Plant protection measures	77.50
		8. Harvest and post-harvest	63.00
		9. Marketing	84.00
		10. Economic constraints	68.00
		11. Extension constraints	71.00
		12. Non-availability of labour during peak season	84.40

Dhandhalya and Shiyani (2006)	Saurashtra, Maharashtra, Cotton.	1. Poor irrigation facilities	I
		2. High cost of inputs	II
		3. Poor transfer of technology	III
		4. Poor storage facilities	IV
		5. Poor marketing facilities	V
		6. Lack of awareness about improved technology	VI

It could be witnessed from the above reviews that the farmers have expressed several problems in adoption of recommended cultivation practices of crops.

3. METHODOLOGY

In this chapter, the general typology and description of the research methods and procedures adopted in the present investigation are explained under the following heads:

3.1 Research design

3.2 Locale of the study

3.3 Brief description of the study area

3.4 Selection of taluks and villages

3.5 Selection of respondents

3.6 Operationalization and measurement of variables

3.7 Quantification of problems of groundnut growers

3.8 Procedure followed for data collection

3.9 Statistical tools used

3.1 Research design

The research design adopted for the study was 'Ex post-facto' since the phenomenon had already occurred and the design was considered appropriate.

3.2 Locale of the study

The study was conducted in the Northern Transition Zone of Karnataka. All the districts falling under this Zone *i.e.*, Dharwad, Belgaum, Gadag and Haveri were considered for the study.

3.3 Brief description of the study area

The area spreads from Belgaum district to Haveri District. The Zone lies between the Northern Dry Zone (Zone 3) in the east and the Hilly zone (Zone 9) in the west. It is lesser in width than length (Fig. 1 and 2). The area under this zone is 12.11 lakh hectares, out of which 9.45 lakh hectares is being cultivated. Out of the cultivated area, 0.82 lakh hectare has irrigation facility.

Crops are grown both in *Kharif* and *Rabi* season. The districts and taluks falling under Northern Transition Zone of Karnataka are as follows:

Districts	Taluks
Dharwad	Dharwad, Hubli, Kundagol, Navalgund, Kalaghatagi
Haveri	Byadgi, Haveri, Hirekerur, Ranebennur, Savanur, Shiggaon, Hangal
Belgaum	Belgaum, Chikkodi, Hukkeri, Bailhongal, Athani, Gokak, Khanapur, Raybag, Ramdurg, Saundatti
Gadag	Shirahatti, Ron, Gadag, Naragund, Mundaragi

Physiography

The Zone lies between $14^0$1' to $16^0$41N latitude and $74^0$32' to $75^0$38' longitude with the altitude ranging from 557.4 to 769.9 m, the lowest being Haveri taluk and the highest being Dharwad taluk. In general, the topography of the zone is undulating in parts of Hirekerur, Hubli, Dharwad, Hukkeri and Belgaum taluks and fairly level in the rest of the area. The zone is blessed with both Southwest and Northeast monsoons, spread over from May to November, which facilitate growing of both *kharif* and *rabi* crops. Different cropping systems and intercropping practices are followed in this zone which is unique in the state. The major rivers flowing through this zone are Ghataprabha, Malaprabha, Bhadra and Varada. The irrigated area in this zone is less as compared to other zones.

This zone has soils ranging from shallow red sandy loam to deep black soil.

Climate

i) Rainfall

The area receives rain from both South-Western and North-Eastern winds. The zone receives an average rainfall of 749 mm with minimum of 623 mm in Ranebennur taluk and maximum of 1037 mm in Belgaum taluk. The highest rainfall is received during the month of July to the extent of 315 mm in Belgaum taluk and during the same period lowest rainfall of 94 mm in Shirahatti taluk. . Number of effective rainy days in the zone varies from 66 in Hirekerur taluk to 44 in Bailhongal taluk. This evenly distributed good rainfall helps in getting good yield of crops and offer scope for double cropping.

Out of the total rainfall received during the year, eighty four percent of rainfall is received during May-October. The normal rainfall received during pre season, ie. January to April is around 7.1 percent which helps in the land preparation and no sowing is taken up during this period as normally a long dry spell is experienced.

ii) Temperature and relative humidity

The average maximum temperature of the zone is 30.69^0C with a highest of 36.69^0C during April and lowest during August. The minimum temperature ranges from 14.01^0C to 22.12^0C, with average minimum temperature of 18.61^0C. The relative humidity of the zone varies from 85.36 percent (August) to 51.59 percent (April), with an average relative humidity of 68.49 percent.

Principal crops and cropping systems

The Northern Transition Zone, with a congenial agro-climatic condition and topographic features, is feasible for cultivation of almost all types of crops both under irrigated and rain fed farming.

Among the crops grown, cereals, pulses, oilseeds and commercial crops account for 3.59, 0.90, 2.15 and 2.15 lakh hectares, respectively. Sorghum and paddy are the major cereals. Green gram, red gram and horse gram are the major pulses. Groundnut, sunflower and safflower are the major oilseeds while cotton, tobacco and sugarcane are the major commercial crops grown in the area.

3.4 Selection of taluks and villages

3.4.1 Selection of taluks

Keeping the number of frontline demonstrations conducted in the year 2008-09 as the criterion, the taluks selected were *viz.,* Dharwad, Hubli, Kalaghatagi and Kundagol taluks under Dharwad district, Ron and Shirahatti taluks under Gadag district, Savanur taluk under Haveri district and Bailhongal taluk under Belgaum district.

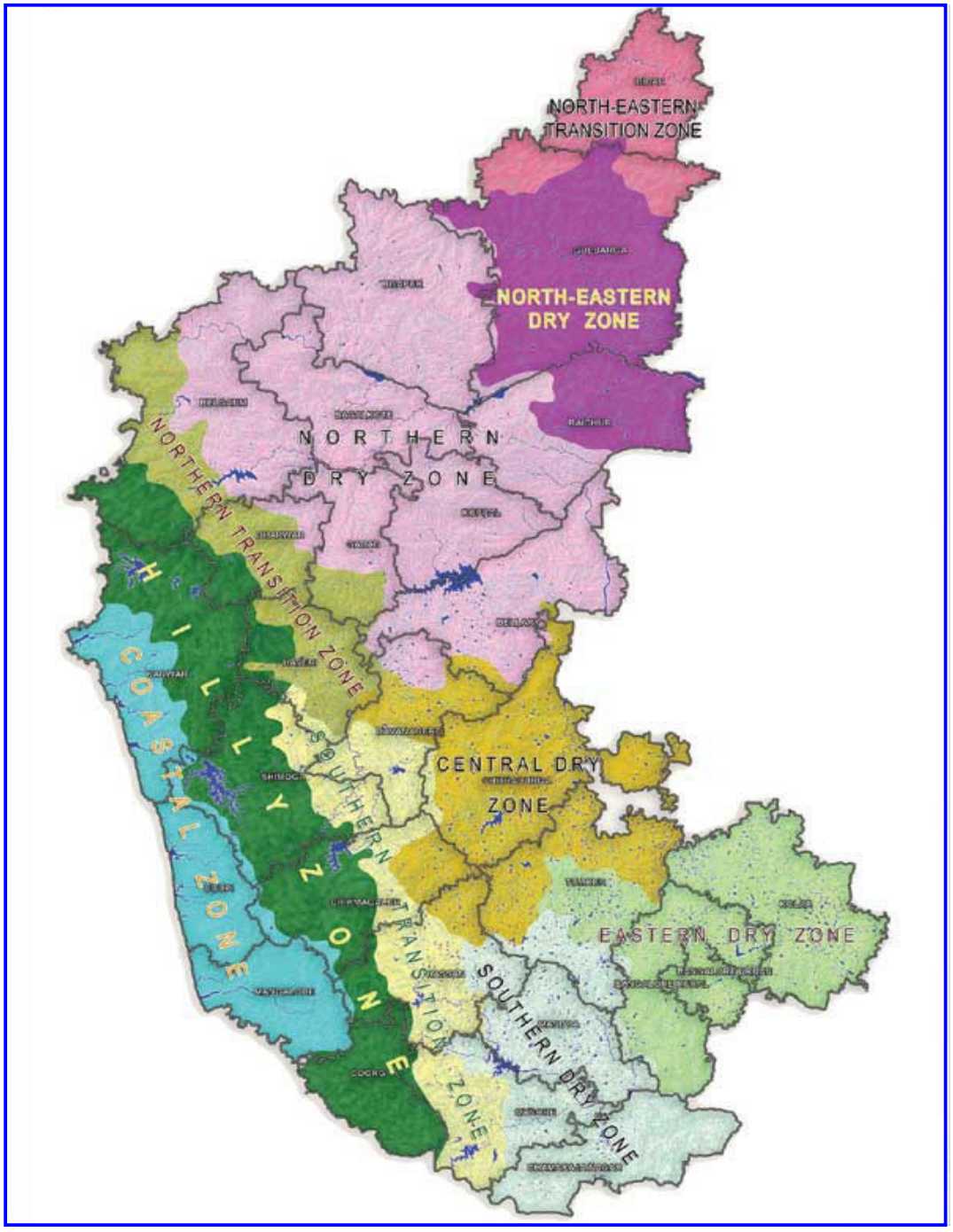

Fig. 1 Map of Karnataka showing the study area (Northern Transition Zone)

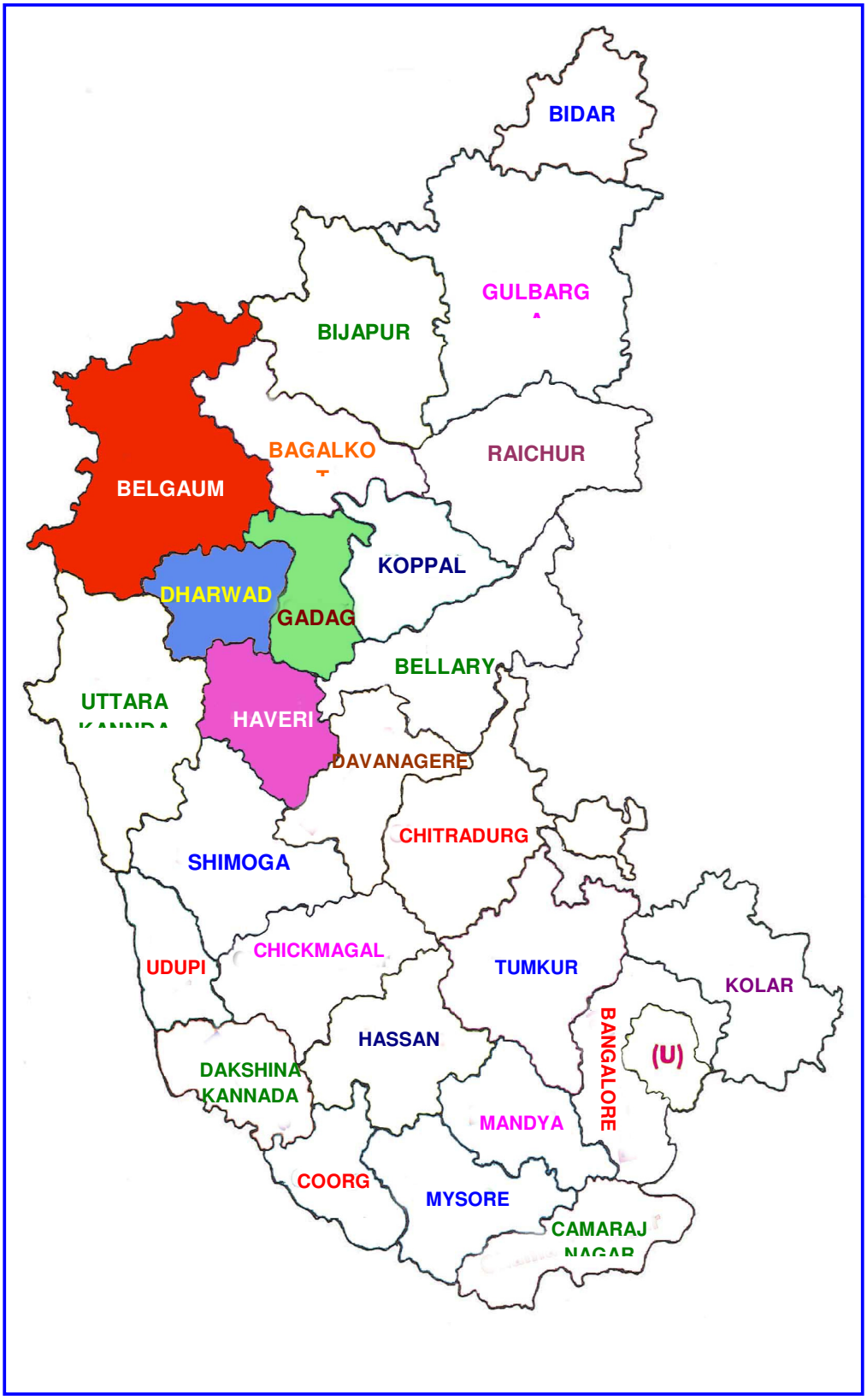

Fig. 2: Map of Karnataka showing the selected districts of the study area

3.4.2 Selection of villages

All the villages under the selected taluks where frontline demonstrations were laid in the year 2008-09 for Groundnut *kharif* were selected for the study. The villages are listed below:

Sl. No.	District	Taluk	Villages
1.	Dharwad	a. Dharwad	i) Yattinagudda ii) Kamalapur iii) Koulageri iv) Shivalli v) Jeerigawad vi) Hosayellapur vii) Hangaraki viii) Garag
		b. Hubli	i) Sulla
		c. Kalaghatagi	i) Dhulikoppa
		d. Kundagol	i) Gudageri
2.	Gadag	a. Ron	i) Benahal
		b. Shirahatti	i) Kadakol
3.	Haveri	a. Savanur	i) Tevarmelli
4.	Belgaum	a. Bailhongal	i) Tigadi

3.5 Selection of respondents

A total of ninety respondents formed the sample of the study, which constituted 30 demonstrator farmers and 60 other farmers.

3.5.1 Selection of demonstrator farmers

All the farmers who had laid the frontline demonstration in the study area were selected for the study (Plate 1 and 2).

Village	No. of demonstrator farmers
1. Yattinaguda	3
2. Kamalapur	1
3. Koulageri	1
4. Shivalli	1
5. Jeerigawad	13
6. Hosayallapur	1
7. Hangaraki	1
8. Garag	2
9. Sulla	1
10. Dhulikoppa	1
11. Gudageri	1
12. Benahal	1
13. Kadagol	1
14. Tevarmelli	1
15. Tigadi	1
Total	30

3.5.2 Selection of fellow farmers

Five villages where more number of frontline demonstrations were conducted were selected. Twelve respondents from each of the five selected villages were selected at random to form a sample of sixty farmers to study the technological gap among other farmers (Plate 3 and 4).

Village	Fellow farmers
1. Yattinagudda	12
2. Kamalapur	12
3. Koulageri	12
4. Shivalli	12
5. Jeerigawad	12
Total	60

Plate 1: Researcher interviewing a demonstration farmers of Kamalapur village

Plate 2: A view of groundnut field

Plate 3: Researcher interviewing fellow farmers

Plate 4: Harvested groundnut

3.6 Operationalization and measurement of variables

3.6.1 Operationalisation and measurement of dependent variable

Considering the objectives of the study, Adoption gap and Yield gap were considered as the dependent variables. The package of practices/ recommendations as given by the University of Agricultural Sciences (UAS) Dharwad was used as the reference to assess the adoption gap. The recommendations of the practices are listed in Appendix I.

3.6.1.1 Adoption gap

Adoption gap is the difference between what is recommended for adoption and what is being actually practiced by the grower in their fields with respect to groundnut cultivation. The adoption gap was measured using adoption gap index expressed in percentage.

$$\text{Adoption gap} = \frac{\text{Maximum score with respect to the technology recommended} - \text{Actual score obtained by the groundnut grower}}{\text{Maximum score with respect to technology recommended}} \times 100$$

3.6.1.2 Yield gap

The difference between potential yield and actual farm yield is referred as yield gap.

Potential Yield: The potential yield is defined as the yield per hectare realized at the research station. This yield is considered to be the absolute production potential of the crop. This is because at the research station, the agronomic and management practices are carried out by the scientists according to the schedule, the experiments are carried out at small size plots and the research station is endowed with all the requisite resources including the technical know-how.

Potential Farm Yield: It is defined as the yield per hectare obtained at the demonstrations plots. The agronomic practices at these plots are supervised by the extension workers and not by the farmers. The demonstration plots represent the conditions of farmers' fields with respect to environment and input availability more closely as compared to Research Station plots. Therefore it is more relevant to consider the demonstration plot yield as the attainable yield.

Actual Farm Yield: It is the yield per hectare realized by the farmers on their own farm and with their own resources and management practices.

The total yield gap can be conceptually divided into two parts, namely Yield gap I and Yield gap II.

Yield gap I is the difference between research station yield and demonstration plot yield (potential farm yield). Yield gap II correspondents to the difference between potential farm yield and actual farm yield.

In this study an attempt has been made to study the yield gap II. The potential yield according to the information procured from the K.V.K, Saidapur was 27.5 q/ha. The yield of the groundnut *kharif* on the growers' field in the year 2008-09 was taken as the actual farm yield. In order to examine the untapped yield potential, the index of yield gap was estimated as follows:

$$\text{Index of yield gap} = \frac{\text{Potential yield} - \text{Actual yield}}{\text{Potential yield}} \times 100$$

$$\text{Yield gap at the demonstration field (Yield gap I)} = \frac{\text{Potential yield} - \text{Yield at the demonstration field}}{\text{Potential yield}} \times 100$$

$$\text{Yield gap at the farmers field (Yield gap II)} = \frac{\text{Yield at the demonstration field} - \text{Actual farm yield}}{\text{Yield at the demonstration field}} \times 100$$

3.6.2 Variables and their empirical measurement

Sl. No.	Variables	Measurement tools
1.	Dependent variables	
	a. Adoption gap	Followed by Chandrasekhara (1999)
	b. Yield gap	Followed by Nithyashree.D.A (1993)
2	Independent variables	
	a. Age	Followed by Hinge (2009)
	b. Education	Followed by Hinge (2009)
	c. Land holding	Followed by Kumar (2009)
	d. Farming experience	Followed by Sidram (2008)
	e. Extension contact	Followed by Gandhi (2002)
	f. Mass media utilization	Followed by Hinge (2009)
	g. Cosmopoliteness	Followed by Hinge (2009)
	h. Cropping intensity	Followed by Nagaraj (2002)
	i. Innovative proneness	Followed by Hinge (2009)
	j. Risk orientation	Followed by Hinge (2009)

3.6.2.1 Measurement of independent variables

Age

Age is operationalized as the chronological age of the groundnut growers in completed years at the time of investigation. The respondents were categorized into three age groups based on the procedure followed by Hinge (2009).

Category	Age (years)
Young	Less than 31 years
Middle	31 to 50 years
Old	More than 50 years

Education

Education refers to the number of years of formal schooling obtained by the groundnut growers. It was quantified by using the items and weights used by Hinge (2009).

Education	Weightages
Illiterate	0
Primary school	1
Middle school	2
High school	3
Pre university / Diploma	4
Graduate	5

Land holding

It refers to the number of acres of land possessed by the farmer. The criterion prescribed by the Karnataka Land Reforms Act 38 of 1966 (Part B), 99, 95-96 under section 2(a) 32 as one acre of irrigated or garden land was equivalent to 3 acres of dry land.

The criterion prescribed by the Ministry of Rural Development, Government of India vide circular No.280-12/16/19 RD-III (Vol.II) dated 15th November 1991 was used and the respondents were grouped into five different categories:

Category	Land holding (acres)
Marginal farmers	Up to 2.50
Small farmers	2.51-5.00
Semi-medium farmers	5.01-10.00
Medium farmers	10.01-25.00
Big farmers	Above 25.00

Farming experience

In this study, it is referred to as the total number of years of experience the farmer has.

Farming experience in groundnut cultivation: The total number of years the farmer has been cultivating groundnut.

The farmers were categorized based on their experiences as followed by Sidram (2008). The categories of farmers are as follows:

Category	Score
Low	Less than ($\bar{X}$ – 0.425 SD)
Medium	Between ($\bar{X}$ ± 0.425 SD)
High	More than ($\bar{X}$ + 0.425 SD)

Frequency and percentage were calculated for each group.

Extension contact

Extension contact has been operationally defined as the frequency of contact of respondents with extension personnel and extension agencies for seeking information about cultivation practices. The procedure followed by Gandhi (2002) was used.

Sl no.	Frequency of contact	Score
1	Contacted once in a week	3
2	Contacted once in a fortnight	2
3	Contacted when problem arose	1
4	Never contacted	0

Mass media utilization

This variable is operationalized as the exposure of an individual to different mass media channels such as newspaper, farm magazine, radio, television and degree of participation in them. The respondent was asked to indicate whether he subscribed to or owned the channel said above. Then, the respondent was asked to indicate his degree of participation in terms of reading habit, listening behavior and viewing habit. This variable was quantified on the basis of the procedure followed by Hinge (2009).

Subscription / Possession	Score
Subscriber / Owned	1
Non-subscriber / Not-owned	0
Reading / Listening / Viewing habit	**Score**
Regular	2
Occasional	1
Never	0

Based on the total scores of mass media participation, the respondents were classified into three categories such as 'low', 'medium' and 'high' by considering mean (X) and standard deviation (SD) as measure of check.

Category	Score
Low	Less than ($\bar{X}$ – 0.425 SD)
Medium	Between ($\bar{X}$ ± 0.425 SD)
High	More than ($\bar{X}$ + 0.425 SD)

The cumulative maximum score obtainable was 10 and minimum was 0. Depending upon total score obtained by each of the respondent, they were grouped into three categories, which were 'low', 'medium' and 'high'. Mean (X) and standard deviations (SD) were used as measure of check.

Cosmopoliteness

Cosmopoliteness is the degree to which an individual is oriented outside to his immediate social system. This variable was measured using the procedure followed by Hinge (2009) .Two dimensions of the variable were considered in this case are

1. The frequency of visit to the nearest town
2. The purpose of visit to the town

The items and scoring pattern followed in quantifying the frequency of visit were as follows:

Item	Score
Twice in a week	5
Once in a week	4
Once in fifteen days	3
Once in a month	2
Seldom	1
Never	0

The items and scoring pattern to quantify the purpose of visit were

Item	Score
All visits relating to agriculture	5
Some visits relating to agriculture	4
Personal / domestic	3
Entertainment	2
Other	1
No response	0

The cumulative maximum score obtainable was 10 and minimum was 0. Depending upon total score obtained by each of the respondent, they were grouped into three categories, which were 'low', 'medium' and 'high'. Mean (X) and standard deviation (SD) were used as measure of check.

Category	Score
Low	Less than $(\overline{X} - 0.425\ SD)$
Medium	Between $(\overline{X} \pm 0.425\ SD)$
High	More than $(\overline{X} + 0.425\ SD)$

Cropping intensity

It is an index of agricultural development which is defined as the ratio of gross cropped area to the net cultivated area.

The cropping intensity was calculated according to the procedure followed by Nagaraj (2002). The index used for calculating the cropping intensity was as follows

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$$\text{Cropping intensity} = \frac{\text{Gross cropped area (in acres)}}{\text{Net cultivated area (acres)}} \times 100$$

Category	Scores
Low	Less than 100
High	More than 100

Innovative Proneness

It refers to the behavior pattern of an individual who has interest and desire to seek changes in farming techniques and ready to introduce such changes when practical and feasible. For quantifying this variable, Moulik's (1965) "Self rating innovative proneness scale" was used. The scale consisted of three sets of statements. Each set of statement contained three sub-statements with weights 3, 2 and 1 indicating high, medium and low degree of innovative proneness. After obtaining the respondents 'most like' and 'least like' responses for each of the three sets of statements, a score of 3 was given to 'most like' response and score 1 for 'least like' response. The final scoring was arrived by summing up the scores of the weights of the 'most like' statements and the weights of the 'least like' statements. The scores ranged from 18 to 54.

Then, the respondents were categorized based on mean (X) and standard deviation (SD) as measure of check.

Risk Orientation

It is operationalized as the degree to which a farmer is oriented towards risk and uncertainty and has courage to face the various risks involved in farming. Risk orientation was measured with the help of risk orientation scale developed by Supe (1969) and as followed by Shashidhara (2006). The scale consisted of six statements, of which first and fifth statements were negative and all others were positive. The items were rated on a five point continuum ranging from 'strongly agree', 'agree', undecided', 'disagree' and 'strongly disagree' with weightages of 5, 4, 3, 2 and 1 for positive statements and 1, 2, 3, 4 and 5 for negative statements, respectively. The scores ranged from 6 to 30.

Based on the scores, the respondents were grouped into three categories by using mean ($\underline{X}$) and standard deviation (SD) as measure of check.

Category	Score
Low	Less than $(\overline{X} - 0.425\ SD)$
Medium	Between $(\overline{X} \pm 0.425\ SD)$
High	More than $(\overline{X} + 0.425\ SD)$

3.7 Quantification of problems of groundnut growers

To identify the problems in the adoption of improved cultivation practices of groundnut production, the probable problems of groundnut growers in the study area were listed out in discussion with scientists, field functionaries and few progressive farmers. Responses were obtained from the groundnut growers. Later on frequency and percentage were calculated to analyze each of the problems.

3.8 Procedure followed for data collection

Keeping in view the objectives and variables of the study, a structured interview schedule was developed by consulting experts and referring to the relevant literature on the subject developed by the University of Agricultural Sciences, Dharwad. Pre-testing of schedule was carried out in the non-sample area for its practicability and relevancy. The final schedule was prepared by making necessary corrections, additions and deletions based on pre-testing results. The final format of the interview schedule is given in Appendix II.

The data were collected from the respondents through personal interview method in an informal atmosphere.

3.9 Statistical tools used

The following statistical tools were made used to analyze the data.

Mean: The arithmetic mean is the sum of the scores divided by their number. This measure was used to categorize the dependent and independent variables into low, medium and high categories.

Frequency: This measure was used to know the distribution pattern of respondents variable wise and to categorize the problems perceived by groundnut growers in order of importance.

Percentage: This measure was used for simple comparisons.

Standard deviation: This measure was used to categorize the dependent and independent variables into low, medium and high categories.

t-test: This measure was used to compare the means of the two dependent variables.

Correlation test: Karl Pearson's simple correlation test was used to find out the nature

of relationship between independent and dependent variables.

Multiple linear regressions: This measure was used to find the contribution of the independent variables to the adoption gap.

The functional form of regression equation used was,

$$Y = b_0 + b_1X_1 + b_2X_2 + b_3X_3 + \ldots\ldots\ldots\ldots\ldots\ldots b_{11}X_{11} + u$$

Where,

Y : Adoption gap (%)

X_1 : Age

X_2 : Education

X_3 : Land holding

X_4 : Farming experience

X_5 : Experience in groundnut cultivation

X_6 : Extension contact

X_7 : Mass media utilization

X_8 : Cosmopoliteness

X_9 : Cropping intensity

X_{10} : Innovative proneness

X_{11} : Risk orientation

u : Random error

4. RESULTS

The results of the study are presented under the following headings.

4.1 Profile characteristics of the respondents

4.2 Gaps in adoption of recommended package of practices of groundnut

4.3 Gap in adoption of individual recommended cultivation practices of groundnut

4.4 Assessment of yield gap of respondents

4.5 Relationship between socio-psychological characteristics of the groundnut growers and their adoption gaps

4.6 Contribution of independent variables to the adoption gap of respondents

4.7 Benefits gained from the demonstration

4.8 Problems in adoption of recommended cultivation practices of groundnut

4.1 Profile characteristics of the respondents

The data presented in Table 1, 2, 3, 4, 5, 6, 7, and 8 gives a detailed account of Personal, socio-economic and Psychological attributes of the groundnut growers.

4.1.1 Age

A perusal of Table 1 indicated that majority (83.33%) of the demonstrator farmers were middle aged, whereas 10.00 and 6.67 per cent of them belonged to 'old age' and 'young age' categories respectively. Similarly, majority (50.00%) of the fellow farmers were also middle aged. While 31.67 per cent of the fellow farmers were old aged, only 18.33 per cent of them were found to be young.

4.1.2 Education

More than half the number of the demonstrator farmers (56.67%) studied up to 'high school' level which was just 10.00 per cent in case of fellow farmers. While 16.66 per cent of demonstrator farmers were graduates, none of the fellow farmers was graduate (Fig. 3). Interestingly, the percentage of fellow farmers belonging to the 'middle' (16.67%) and 'primary' (46.67%) school levels were much higher than the demonstrator farmers. The percentage of illiteracy was 23.33 for fellow farmers while it was only 3.33 per cent in case of demonstrator farmers. It may also be noted that none of the demonstrator farmers belonged to the 'PUC' level while it was 3.33 per cent for fellow farmers.

4.1.3 Landholding

The results indicated that majority (70.00 %) of the demonstrator and considerable percentage (41.67%) of the fellow farmers were marginal farmers. The small farmers constituted 20.00 and 25.00 per cent of the demonstrator farmers and fellow farmers respectively. In the semi–medium category it was 6.67 per cent in case of demonstrator farmers and 21.66 per cent among fellow farmers. Only 3.33 per cent of the demonstrator

Table 1: Profile characteristics of the respondents

(n=90)

Sl. No.	Variables	Category	Demonstrator farmers (n=30)		Fellow farmers (n=60)	
			Frequency	Percentage	Frequency	Percentage
1	Age	Young (< 31 years)	2	6.67	11	18.33
		Middle (31 - 50 years)	25	83.33	30	50
		Old (> 51 years)	3	10	19	31.67
2	Education	Illiterate	1	3.33	14	23.33
		Primary School	5	16.66	28	46.67
		Middle School	2	6.67	10	16.67
		High School	17	56.67	6	10
		PUC	0	0.00	2	3.33
		Graduate	5	16.67	0	0.00
3	Land holding	Marginal farmers	21	70.00	25	41.67
		Small farmers	6	20.00	15	25.00
		Semi –Medium farmers	2	6.67	13	21.66
		Medium farmers	1	3.33	7	11.67
		Big farmers	0	0	0	0.00

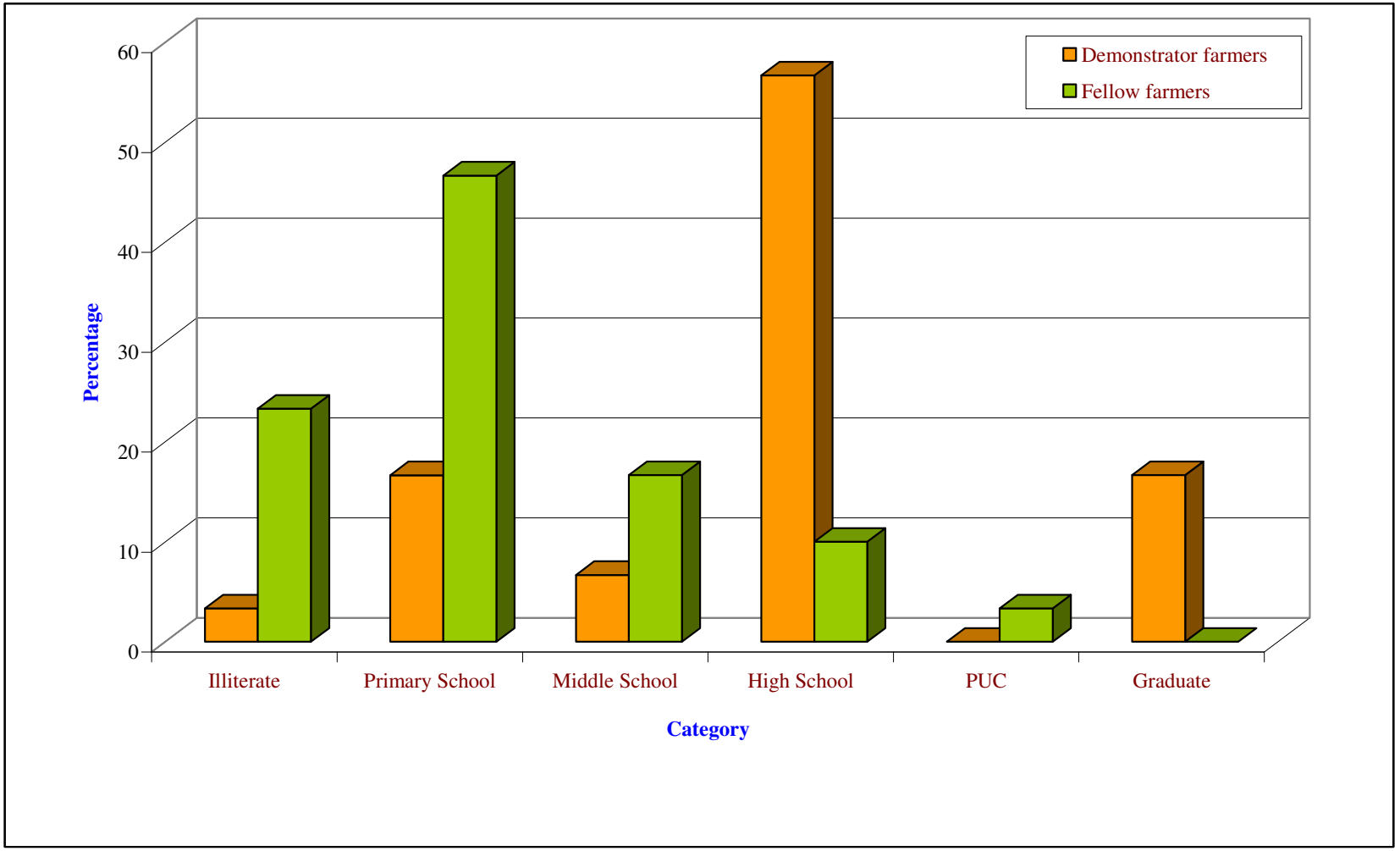

Fig. 3: Education of the respondents

Table 2: Distribution of respondents according to the farming experience

(n = 90)

Sl. No.	Variables	Category	Demonstrator farmers (n=30)		Category	Fellow farmers (n=60)	
			Frequency	Percentage		Frequency	Percentage
1	Farming experience	Low (<13.52)	10	33.33	Low (<9.308)	25	41.67
		Medium (13.52-18.68)	7	23.33	Medium (9.308-13.52)	18	30.00
		High (>18.68)	13	43.33	High (>13.52)	17	28.33
2.	Experience in groundnut cultivation	Low (<10.83)	12	40.00	Low (<5.79)	16	26.67
		Medium (10.83-15.89)	4	13.33	Medium (5.79-10.17)	29	48.33
		High (>15.89)	14	46.67	High (>10.17)	15	25.00

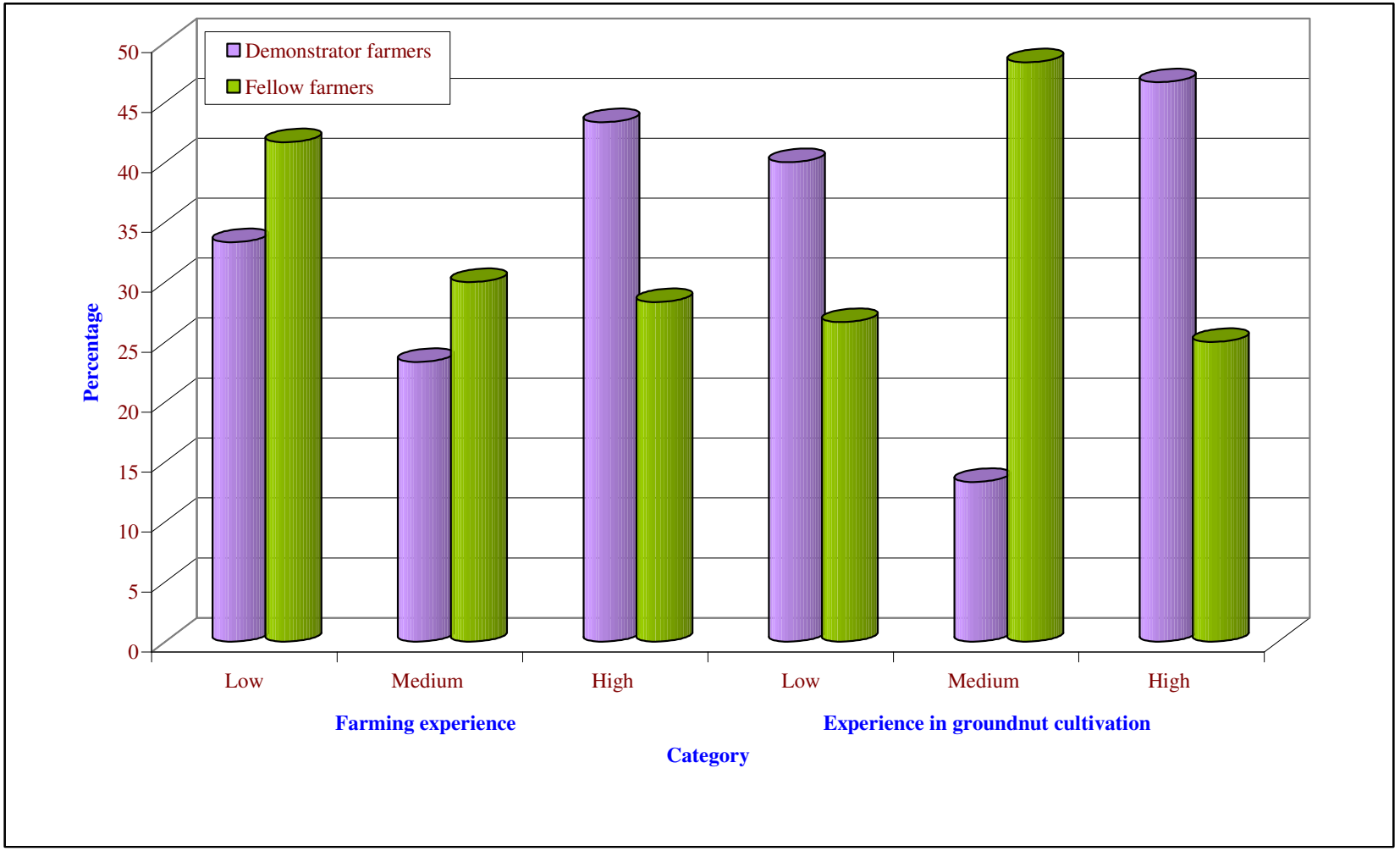

Fig. 4: Distribution of respondents according to the farming experience

farmers and 11.67 per cent of the fellow farmers belonged to the 'medium' category. None of the respondents belonged to the 'big' farmers' category.

4.1.4 Farming experience

4.1.4a Farming experience in agriculture

Table 2 indicated that most of the demonstrator farmers (43.33%) had high farming experience in agriculture (Fig. 4). It was observed that 33.33 and 23.33 per cent of the farmers had low and medium farming experience respectively. For fellow farmers, 41.67 per cent of them had low farming experience whereas 30.00 and 28.33 per cent had medium and high farming experiences respectively.

4.1.4b Farming experience in groundnut cultivation

The data pertaining to farming experience in groundnut showed that 46.67 per cent of the demonstrator farmers had high farming experience in groundnut cultivation. Almost the same percentage (40%) of farmers had low experience in cultivating groundnut while 13.33 per cent of the farmers had medium level experience in the cultivation of the same.

Majority (48.33%) of the fellow farmers had medium experience in groundnut cultivation, 26.67 per cent and 25.00 per cent had low and medium experience in groundnut cultivation.

4.1.5 Extent of utilization of mass media by respondents

It is interesting to note from Table 3 (Fig. 5) and 4 (Fig. 6) that all the respondents possessed radio and television (100%). Almost equally high percentage of demonstrator farmers subscribed newspaper and farm magazine (96.67% and 90%) while only 60.00 and 18.33 per cent of fellow farmers subscribed the same.

The data pertinent to mass media utilization revealed that while 66.67 per cent of the demonstrator farmers read the agricultural articles of the newspaper occasionally, it was read regularly by 30.00 per cent of them. Only 3.33 per cent of them never read the agricultural articles. Majority of them (60.00%) read the information news regularly, 36.67 and 3.33 per cent occasionally and never respectively. In case of recreational articles, 46.66 per cent each were regular and occasional readers and 6.67 per cent of them never read the same.

The agricultural articles of the newspaper was read regularly by 13.33 per cent of fellow farmers, occasionally by 48.33 per cent and never read by 38.33 per cent of them. As high as 43.33 per cent of the fellow farmers regularly read the information news while, 36.67 and 20.00 per cent read occasionally and never respectively. The recreational articles were read regularly by 26.67 per cent, occasionally by 30.00 per cent and never read by 43.33 per cent of the fellow farmers.

As regards the farm magazine, the regular reading behavior of the demonstrator farmers was found to be 30.00, 30.00 and 10.00 per cent of the total respondents with respect to agricultural articles, news and recreational articles, respectively. An equal percentage (60.00%) of the respondents read the agricultural and information news occasionally, which was 70.00 per cent in case of recreational articles. Again, an equal percentage of the farmers (10.00%) never read agricultural and information news and 20.00 per cent of them never read recreational articles.

The regular reading of the farm magazine was 10.00 per cent for agricultural articles and 3.33 per cent each for information and recreational articles respectively for fellow farmers. Occasionally, 6.67, 13.33 and 10.00 per cent of them read the agricultural information and recreational articles while majority of them never read the agricultural (83.33%), information (83.33%) and recreational (86.67%) articles respectively.

Table 3: Extent of utilisation of mass media by demonstrator farmers

(n =30)

Sl. No.	Mass media	Subscriber /Possession		Reading / Listening / Viewing habit					
				Regular		Occasional		Never	
		No.	%	No.	%	No.	%	No.	%
1	Newspaper	29	96.67						
	Agricultural articles			9	30.00	20	66.67	1	3.33
	Information / News			18	60.00	11	36.67	1	3.33
	Recreational articles			14	46.66	14	46.66	2	6.67
2	Farm magazine	27	90.00						
	Agricultural articles			9	30.00	18	60.00	3	10.00
	Information / News			9	30.00	18	60.00	3	10.00
	Recreational articles			3	10.00	21	70.00	6	20.00
3	Radio	30	100.00						
	Agricultural articles			15	50.00	15	50.00	0	0.00
	Information / News			5	16.67	25	83.33	0	0.00
	Entertainment			21	70.00	9	30.00	0	0.00
4	Television	30	100.00						
	Agricultural articles			12	40.00	18	60.00	0	0.00
	Information / News			18	60.00	12	40.00	0	0.00
	Entertainment			23	76.67	7	23.33	0	0.00

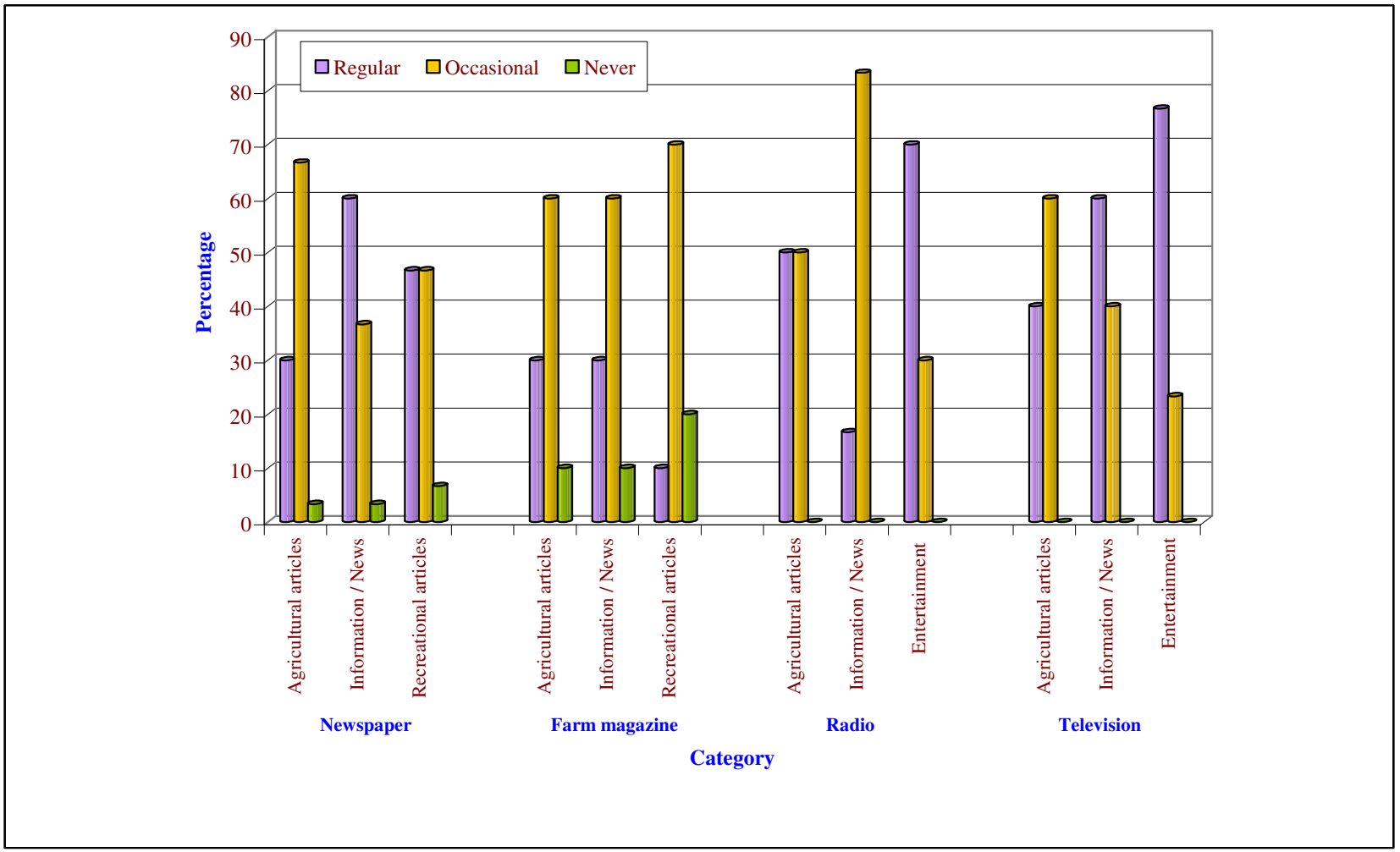

Fig. 5: Extent of utilisation of mass media by demonstrator farmers

Table 4: Extent of utilisation of mass media by fellow farmers

(n =60)

Sl. No.	Mass media	Subscriber / possession		Reading / Listening / Viewing habit					
				Regular		Occasional		Never	
		No.	%	No.	%	No.	%	No.	%
1	Newspaper	36	60.00						
	Agricultural articles			8	13.33	29	48.33	23	38.33
	Information / News			26	43.33	22	36.67	12	20.00
	Recreational articles			16	26.67	18	30.00	26	43.33
2	Farm magazine	11	18.33						
	Agricultural articles			6	10.00	4	6.67	50	83.33
	Information / News			2	3.33	8	13.33	50	83.33
	Recreational articles			2	3.33	6	10.00	52	86.67
3	Radio	60	100.00						
	Agricultural articles			22	36.67	0.00	0.00	38	63.33
	Information / News			38	63.33	20	33.33	2	3.33
	Entertainment			49	81.66	9	15.00	2	3.33
4	Television	60	100.00						
	Agricultural articles			11	18.33	25	41.67	24	40.00
	Information / News			34	56.67	21	35.00	5	8.33
	Entertainment			48	80.00	11	18.33	1	1.67

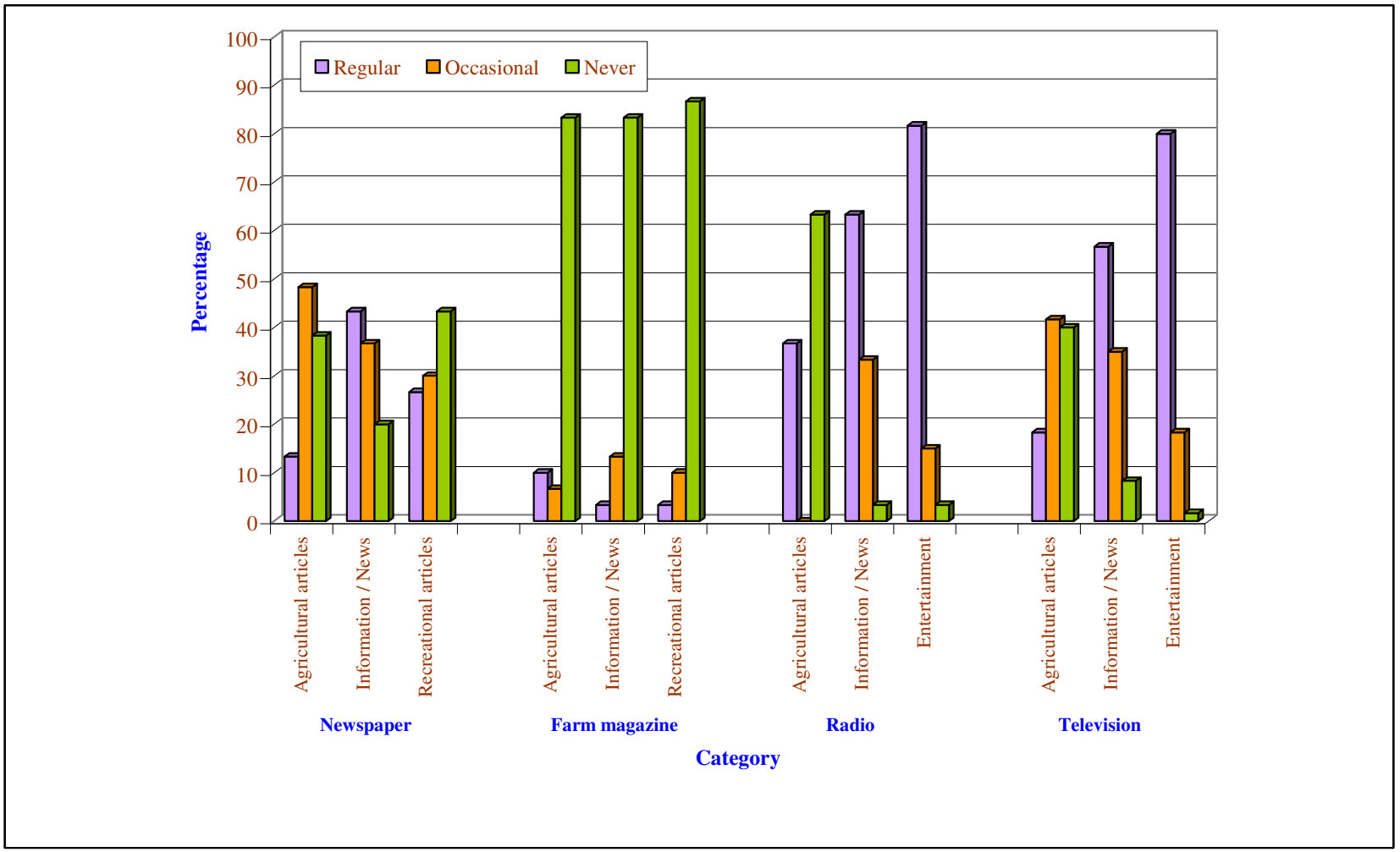

Fig. 6: Extent of utilisation of mass media by fellow farmers

Regarding listening behavior of radio, 50.00 per cent of the demonstrator farmers were regular and occasional listeners of agricultural programmes respectively. Majority (83.33%) of them listened to information news occasionally and 16.67 per cent listened regularly. In case of entertainment programmes, 70.00 per cent of them listened regularly and the rest, occasionally.

High majority (81.66%) of the fellow farmers were regular listeners of entertainment programmes while 63.33 and 36.67 per cent of them regularly listened information and agricultural programmes respectively. Interestingly, 33.33 and 15.00 per cent of them listened information and entertainment programmes occasionally. The agricultural programmes were never listened by 63.33 per cent of the fellow farmers.

As high as 76.67 per cent and 80.00 per cent of the demonstrator and fellow farmers respectively were regular viewers of entertainment through television. Information news and agricultural news were viewed regularly by 60.00 and 56.67 per cent of them. It may be noted that 60.00, 40.00 and 23.33 per cent of the demonstrator farmers were occasional viewers of agricultural, information and entertainment programmes respectively. While the same programmes were viewed occasionally by 41.67, 35.00 and 18.33 per cent of the fellow farmers.

It was found that the demonstrator farmers viewed one or the other programme while the fellow farmers never viewed agricultural, information and entertainment programmes in percentages of 40.00, 8.33 and 1.67 respectively.

4.1.6 Psychological attributes of demonstrator and fellow farmers

a. Innovative proneness

Table 5 indicated that 43.33 per cent of the demonstrator farmers were highly prone towards innovation, while 30.00 and 26.67 per cent were in the ‘medium’ and ‘low’ categories of innovative proneness, respectively. Majority (58.33%) of the fellow farmers were in ‘medium’ category, 25.00 per cent in ‘high’ and 16.67 per cent in ‘low’ categories, respectively.

b. Risk orientation

In their behavior of taking risk, more than half of the demonstrator farmers (63.33%) were highly oriented towards taking risk while 36.67 per cent of the farmers fell in the low category of risk orientation. For fellow farmers, 41.67 per cent of them were highly oriented towards taking risk. In the medium and low categories it was 36.67 and 21.66 percentages respectively (Table 5).

4.1.7 Cropping intensity of respondents

By looking at Table 6 and Fig. 7, it could be inferred that, all the demonstrator farmers (100%) had high cropping intensity. Only one third (33.33 %) of fellow farmers had high cropping intensity while 66.67 per cent of them had low cropping intensity.

4.1.8 Extension contact of respondents

It is clear from Table 7 that most of the demonstrator farmers (43.33%) had high extension contact. In the medium and low categories, it was found to be 36.67 and 20.00 percentages respectively.

Majority (46.67%) of the fellow farmers had low extension contact, 38.33 and 15.00 per cent had high and medium extension contact respectively.

4.1.9 Cosmopoliteness of respondents

Table 8 and Fig. 8 showed that 43.33 per cent of the demonstrator farmers had high cosmopoliteness whereas 40.00 and 16.67 per cent of them had low and medium cosmopoliteness.

Cosmopoliteness was found to be low for 43.33 per cent, high for 30.00 and medium for 26.67 per cent of the fellow farmers respectively.

4.2 Gaps in adoption of recommended package of practices of groundnut

4.2.1 Adoption gap on the demonstration fields

It is learnt from Table 9 that the overall adoption gap was 41.55 per cent among the demonstrator farmers. Forty per cent of the demonstrator farmers belonged to 'low' adoption gap category with mean adoption gap of 31.37 per cent whereas 33.33 per cent of them belonged to 'medium' and 26.67 per cent to 'high' adoption gap categories (Fig. 9 and 10).

4.2.2 Adoption gap on fellow farmers fields

The overall adoption gap was to the tune of 79.90 per cent among the fellow farmers. Adoption gap was found to be high among 43.33 per cent of the fellow farmers, medium for 25.00 and low for 31.67 per cent. The mean adoption gap scores of fellow farmers were 91.89 for 'high', 80.15 for 'medium' and 65.54 for 'low' categories respectively (Table 9).

4.2.3 Comparison of means of adoption gap between the demonstrator farmers and fellow farmers

Table 10 clearly illustrates that there is a highly significant difference in the adoption gaps between the demonstrator and fellow farmers with calculated 't' value of 16.21.

4.3 Gap in adoption of individual recommended cultivation practices of groundnut

Table 11 brings to light the practice wise adoption gaps of the respondents. Among the demonstrator farmers, 100.00 per cent gap in application of Copper Sulphate was observed. Ninety per cent of the demonstrator farmers had not applied Lime Sulphate and Phosphorus Solublising Bacteria. Vermicompost and Rhizobium was not applied by 66.67 per cent while 53.33 per cent of demonstrator farmers had not taken any control measures for diseases like Fungal Neck Rot and Leaf Spot.

Cent per cent gap was observed in application of Rhizobium, Phosphorus Solubilising Bacteria, Lime Sulphate, Copper Sulphate among fellow farmers and none of them followed any practices for control of pests like Spodoptera, Damping Off, Fungal Neck Rot and Leaf Spot. Moreover, most of the fellow farmers did not adopt recommended practices like seed treatment (80.00%), Vermicompost (96.67), N: P: K (63.33%) and control measures for Leaf Roller (81.67%) and Red Headed Caterpillar (96.67%).

Table 5: Psychological attributes of respondents

(n=90)

Sl. No.	Variables	Category	Demonstrator farmers (n=30)		Category	Fellow farmers (n=60)	
			No.	%		No.	%
1	Innovative proneness	Low (<14.69)	8	26.67	Low (<14.74)	10	16.67
		Medium (14.69-16.36)	9	30.00	Medium (14.74-16.66)	35	58.33
		High (>16.36)	13	43.33	High (>16.66)	15	25.00
2	Risk orientation	Low (<21.90)	11	36.67	Low (<21.86)	13	21.66
		Medium (<21.90-23.49)	0	0.00	Medium (<21.86-23.39)	22	36.67
		High (>23.49)	19	63.33	High (>23.39)	25	41.67

Table 6: Distribution of the respondents according to the cropping intensity

(n=90)

Sl. No.	Variable	Category	Demonstrator farmers (n=30)		Fellow farmers (n=60)	
			Frequency	Percentage	Frequency	Percentage
1.	Cropping Intensity	Low (below 100)	30	100.00	40	66.67
		High (above 100)	0	0.00	20	33.33

Table 7: Distribution of respondents according to their extension contact

(n=90)

Variable	Category	Demonstrator farmers (n=30)		Category	Fellow farmers (n=60)	
		Frequency	Percentage		Frequency	Percentage
Extension contact	Low (<4.312)	11	36.67	Low (<1.17)	28	46.67
	Medium (4.312-5.808)	6	20.00	Medium (1.17-2.33)	9	15.00
	High (>5.808)	13	43.33	High (>2.33)	23	38.33

Demonstrator farmers - Mean : 5.066 S.D : 1.7 0
Fellow farmers - Mean : 1.75 S.D : 1.37

Table 8: Distribution of respondents according to their cosmopoliteness

(n=90)

Variable	Category	Demonstrator farmers (n=30)		Category	Fellow farmers (n=60)	
		Frequency	Percentage		Frequency	Percentage
Extension contact	Low (<6.41))	12	40	Low (<10.03)	26	43.33
	Medium (6.41-8.51)	5	16.67	Medium (10.03-11.16)	16	26.67
	High (>8.51)	13	43.33	High (>11.16)	18	30

Demonstrator farmers - Mean : 7.46 S.D : 2.48
Fellow farmers - Mean : 10.6 S.D : 1.34

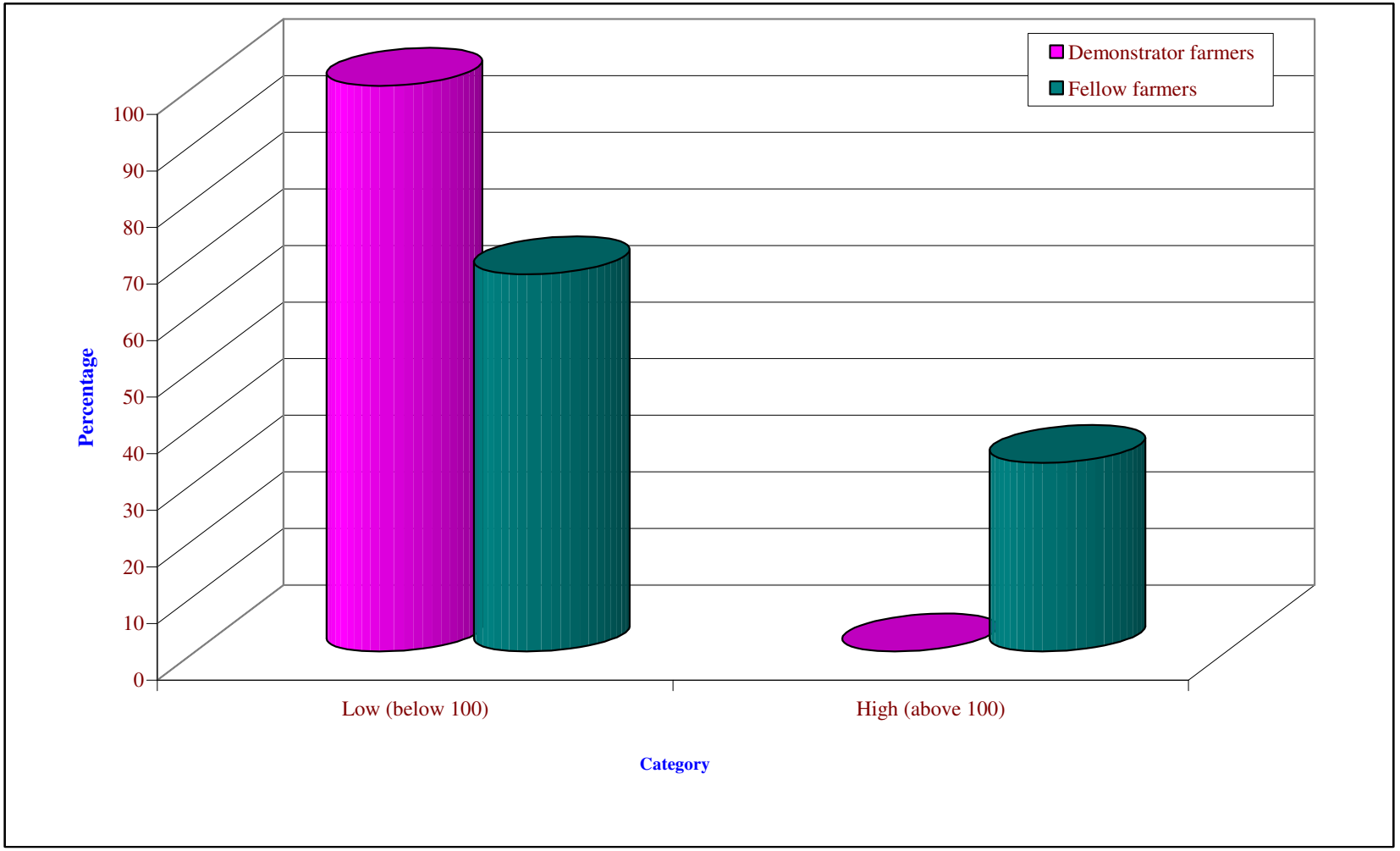

Fig. 7: Distribution of the respondents according to the cropping intensity

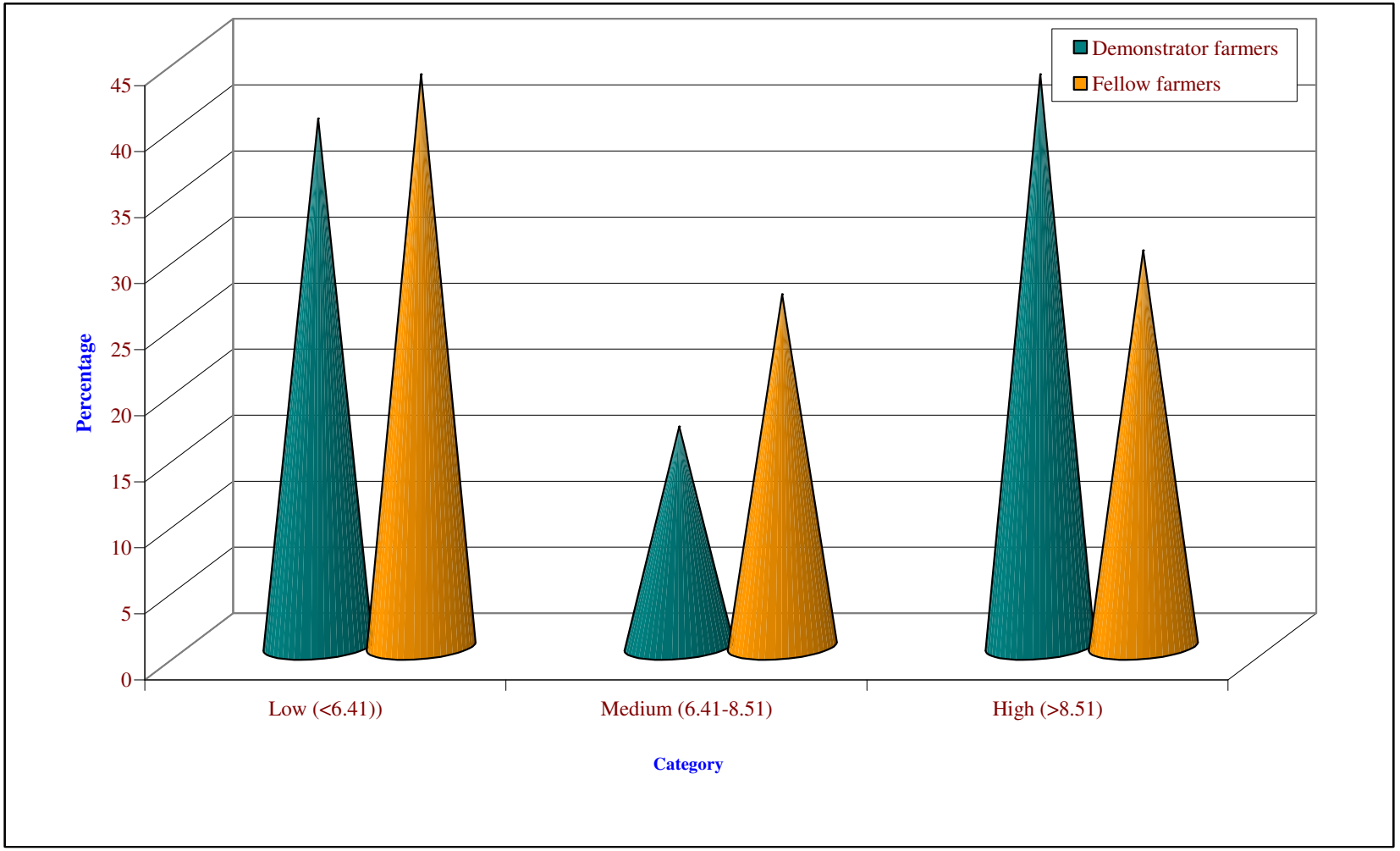

Fig. 8: Distribution of respondents according to their cosmopoliteness

Table 9: Distribution of respondents according to their adoption gaps

(n=90)

Variable	Category	Demonstrator farmers (n=30)				Fellow farmers (n=60)			
		No.	%	Mean adoption gap	Overall mean	No.	%	Mean adoption gap	Overall mean
Adoption gap	Low (< 37.412)	12	40.00	31.37		19	31.67	65.54	
	Medium (37.412-45.704)	10	33.33	42.10	41.55	15	25.00	80.15	79.90
	High (> 45.7045)	8	26.67	52.63		26	43.33	91.89	

Demonstrator farmers - S.D:9.75 Fellow farmers - S.D: 12.76

Table 10: Comparison of means of adoption gap between the demonstrator farmers and fellow farmers

(n=90)

Sl. No.	Category	Mean	t calculated value
1	Demonstrator farmers	41.55	16.21**
2	Fellow farmers	79.90	

t tab value at 1 % =2.64 ** - Significant at 1%

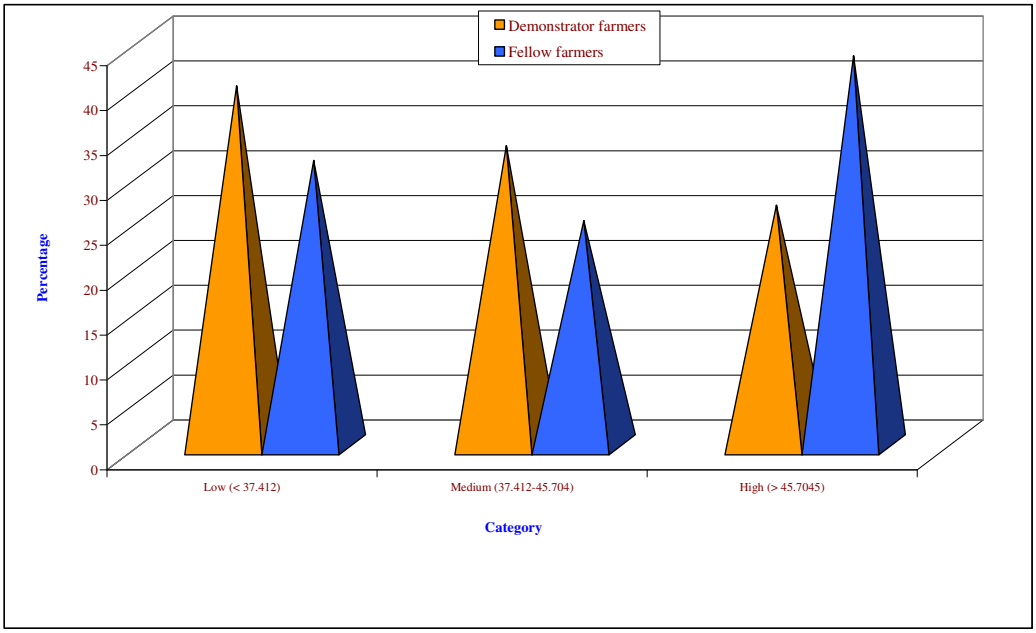

Fig. 9: Distribution of respondents according to their adoption gaps

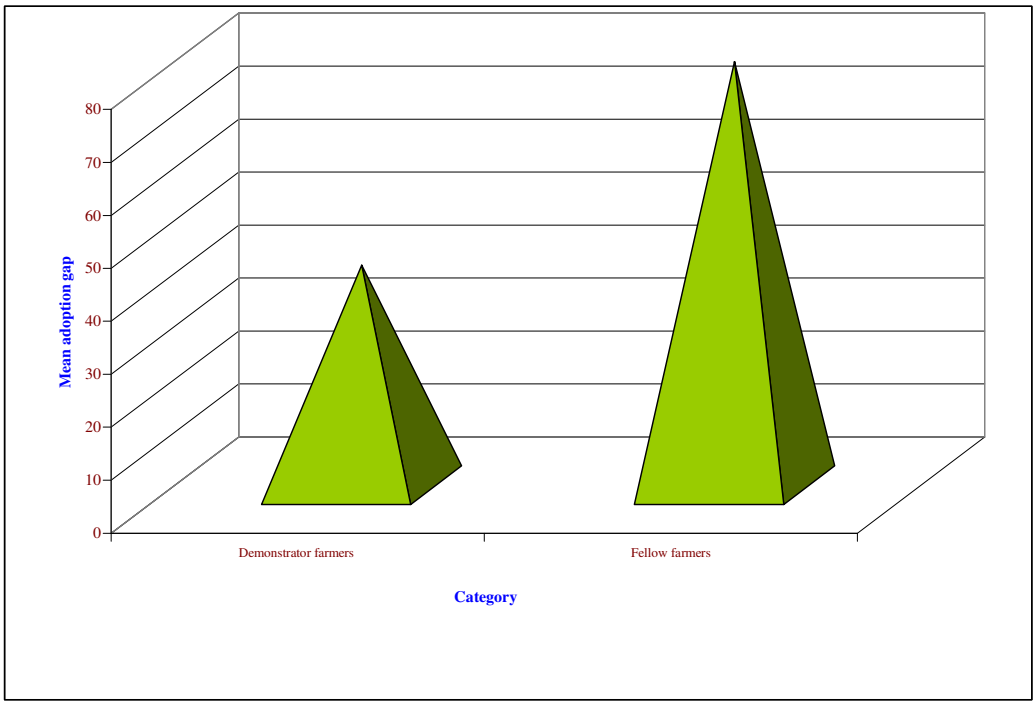

Fig. 10: Comparison of means of adoption gap between the demonstrator farmers and fellow farmers

Table: 11. Gap in adoption of individual recommended cultivation practises of groundnut

(n = 90)

Sl. No.	Recommended Practice	Demonstrator farmers (n=30)		Fellow farmers (n=60)	
		Adoption Gap		Adoption Gap	
		No.	%	No.	%
1	Variety	0	0.00	2	3.33
2	Seed rate	1	3.33	28	46.67
3	Seed treatment	0	0.00	48	80.00
4	Sowing time	0	0.00	16	26.67
5	Spacing	1	3.33	26	43.33
6	Nutrient management (per ha)				
	a. Application of FYM(7.5 tonnes)	0	0.00	26	43.33
	b. Vermicompost (1 ton)	20	66.67	58	96.67
	c. Rhizobium (2.5 kg)	20	66.67	60	100.00
	d. N:P:K(25:50:25 kg)	3	10	38	63.33
	e. Phosphorus solubilising bacteria	27	90.00	60	100.00
	f. Gypsum(500 kg)	9	30.00	54	90.00
	g. Lime sulphate(25kg)	27	90.00	60	100.00
	h. Copper sulphate(25kg)	30	100.00	60	100.00

Contd….

Sl. No.	Recommended Practice	Demonstrator farmers (n=30)		Fellow farmers (n=60)	
		Adoption Gap		Adoption Gap	
		No.	%	No.	%
7	**Plant protection measures**				
	Pests				
	i) Leaf roller	1	3.33	49	81.67
	ii) Spodoptera	0	0.00	60	100.00
	iii) Red Headed Caterpillar	12	40.00	58	96.67
	Diseases				
	i) Damping off	11	36.67	60	100.00
	ii) Fungal Neck rot	16	53.33	60	100.00
	iii) Leaf spot	16	53.33	60	100.00

4.4 Assessment of yield gap of respondents

4.4.1 Yield gap on demonstration fields

It is observed from Table 12 that the average yield of the demonstrator farmers was 20.91 quintal/ha as against the potential farm yield of 27.5 q per ha. The gap in the yields was found to be 6.59 q per ha. Yield gap to the tune of 23.96 per cent existed on demonstration field (Fig. 11).

4.4.2 Yield gap between demonstrator and fellow farmers fields

A perusal of Table 13 showed that there was 59.15 per cent yield gap between Demonstrator and fellow farmers. The yield of fellow farmers was 8.54 q/ha while that of the demonstrator was 20.91 q/ha. Thus, there existed a gap of 12.37 q/ha between the demonstrator and fellow farmers.

4.4.3 Comparison of means of yield between the demonstrator and fellow farmers

It can be inferred from Table 14 that there was a highly significant difference in the yields between the demonstrator and fellow farmers with the calculated t value of 32.12 which was significant at 0.01 level of probability.

4.5 Relationship between socio-psychological characteristics of the groundnut growers and their adoption gaps

4.5.1 Relationship between socio-psychological characteristics and adoption gap among demonstrator farmers

Findings in Table 15 enlighted that out of 10 variables, seven were found to be negatively and significantly correlated with the adoption gap. The variables are education, farming experience, extension contact, mass media utilization, cosmopoliteness, cropping intensity, innovative proneness. The variable ‘age’ showed positive and significant relationship with the adoption gap. Land holding and Risk Orientation showed a negative and non-significant relationship with the adoption gap.

4.5.2 Relationship between socio-psychological characteristics and adoption gap among fellow farmers

An appraisal of Table 15 indicated that eight variables had negative and significant correlation with the adoption gap among fellow farmers. The variable’ age’ had positive and significant relation with the adoption gap. Risk orientation was found to have negative and non- significant relation to adoption gap.

4.6 Contribution of independent variables to the adoption gap of respondents

The results of the multiple regression analysis undertaken to determine the extent of contribution of selected variables to the adoption gap are furnished in the Table 16.

The data in the table indicated that the co-efficient of determination was 0.919 for demonstrator farmers, which revealed that 91.90 per cent of variation in adoption gap was influenced by the independent variables namely age, education, landholding, farming experience, extension contact, cosmopoliteness, cropping intensity, innovative proneness and risk orientation. For the demonstrator farmers, “F value” was 18.49 which was significant at both 5 and 1 per cent level of probability.

Table 12: Yield gap on demonstration fields

(n=30)

Potential Yield (quintal/hectare)	Average yield at the demonstration field (quintal/hectare)	Yield Gap I (quintal/hectare)	Yield gap I in percentage
27.5	20.91	6.59	23.96

Table 13: Yield gap between demonstrations and fellow farmers fields

(n=90)

Average yield at the demonstration field (n=30) (quintal/hectare)	Average yield at the fellow farmers field (n=60) (quintal/hectare)	Yield Gap II (quintal/hectare)	Yield gap II in percentage
20.91	8.54	12.37	59.15

Table 14: Comparison of means of yield between the demonstrator and fellow farmers

(n=90)

Average Yield at the Demonstration Field (n=30) (quintal/hectare)	Average Yield at the Fellow farmers Field (n=60) (quintal/hectare)	't' value
20.91	8.54	32.12**

** - Significant at 1%; 't' tab at 1% = 2.65

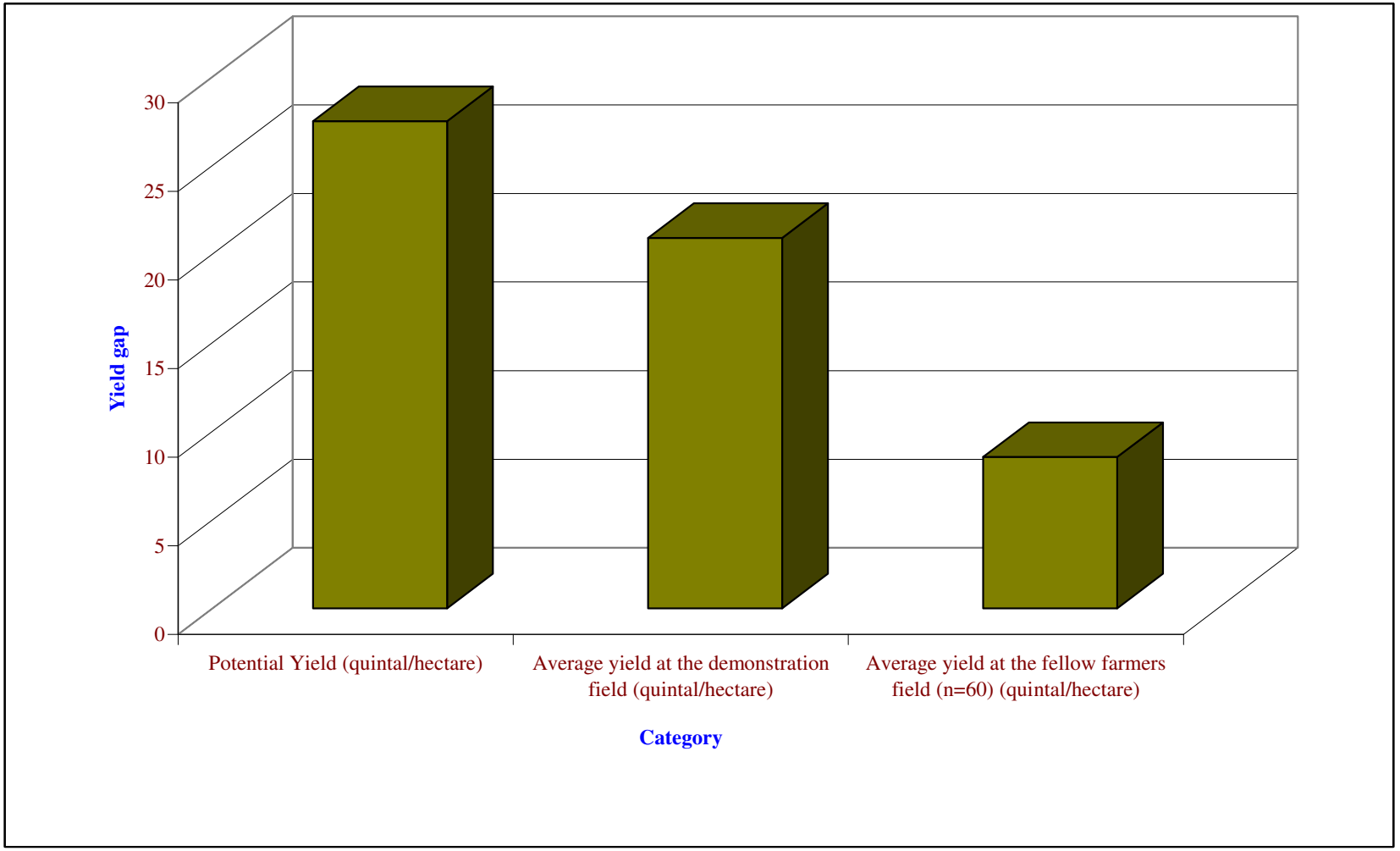

Fig. 11: Yield gap on demonstration fields

Table 15: Correlation between Independent variables and adoption gap of respondents

(n=90)

Sl. No.	Variables	Demonstrator farmers (n = 30)	Fellow farmers (n=60)
		Correlation coefficient (r)	Correlation coefficient (r)
1	Age	+ 0.69 **	+ 0.50 **
2	Education	-0.74**	-0.28*
3	Land Holding	-0.23 NS	-0.59* *
4	Farming Experience		
	i) In Agriculture	-0.58**	-0.44**
	ii) In Groundnut Cultivation	-0.61**	-0.34**
5	Mass Media Utilisation	-0.73**	-0.58**
6	Innovative Proneness	-0.62**	-0.29*
7	Risk Orientation	-0.15 NS	-0.12 NS
8	Cropping Intensity	-0.75**	-0.65**
9	Extension Contact	-0.78**	-0.61**
10	Cosmopoliteness	-0.88**	-0.33*

** Significant at 1% * Significant at 5% NS- Non significant

Table 16: Regression analysis of independent variables with the adoption gap of the respondents

(n=90)

Code No.	Characteristics	Regression coefficient		Standard error		't' value	
		Demonstrator farmers	Fellow farmers	Demonstrator farmers	Fellow farmers	Demonstrator farmers	Fellow farmers
	Constant	42.42**	99.702**	15.32	16.85	2.76	5.91
X_1	Age	0.376**	0.187*	0.113	0.095	3.34	1.97
X_2	Education	0.048 NS	0.764	0.779	0.973	0.061	0.785
X_3	Land holding	0.295NS	-0.702**	0.202	0.239	1.464	-2.93
X_4	Farming experience	-0.497*	-0.467NS	0.234	0.265	-2.123	-1.76
X_5	Experience in groundnut Cultivation	0.218NS	-0.334NS	0.305	0.198	0.715	-1.68
X_6	Extension contact	-2.327**	0.529NS	0.745	1.08	-3.124	-0.487
X_7	Mass media utilization	-0.440NS	-0.665*	0.421	0.338	-1.044	-1.97
X_8	Cosmopoliteness	-1.334*	0.585NS	0.669	0.769	-1.994	0.760
X_9	Cropping intensity	-0.009NS	-0.119**	0.020	0.024	-0.436	-4.91
X_{10}	Innovative proneness	1.278NS	-0.428NS	0.786	0.434	1.626	-0.986
X_{11}	Risk orientation	-0.063NS	0.076NS	0.510	0.532	-0.123	0.143

Demonstrator farmer: R^2= 0.919 Fellow farmer: R^2 = 0.792
F value=18.49** F value = 16.59**
* Significant at 5 per cent level
** Significant at 1 per cent level

The results further revealed that out of 10 variables, extension contact and age were found to be significant at 1 per cent level of probability, while farming experience and cosmopoliteness were significant at 5 per cent level of probability for the demonstrator farmers.

For fellow farmers, the coefficient of determination was 0.792 which means that 79.20 per cent of variation in the adoption gap was explained by all the independent variables. The 'F' value which was 16.59 was significant at 1 per cent level of probability. Landholding and cropping intensity were significant at 1 per cent level of probability. The variable mass media utilization was significant at 5 per cent level of probability.

4.7 Benefits gained from the demonstration

4.7.1 Benefits derived by the demonstrator and fellow farmers from the demonstration

In Table 17, it is depicted that cent per cent (100.00%) of the demonstrator farmers agreed that higher yield and good quality fodder were obtained by adopting the recommended package of practices.

Table 17 also clearly indicates that more than half the number of the fellow farmers also agreed to the same.

4.7.2 Accessibility of fellow farmers to the demonstrations conducted

Table 18 clearly illustrates that 73.33 per cent of the fellow farmers were aware of the demonstration, 70.00 per cent of them visited the demonstration field and 65.00 per cent of them even attended field days.

4.8 Problems in adoption of recommended cultivation practices of groundnut

An appraisal of the Table 19 and Fig. 12 clearly reflects the problems faced by the respondents.

4.8.1 Technical problems

The major technical problem perceived by the respondents was inadequate guidance regarding improved technology which was expressed by few (23.33%) of the demonstrator farmers and an overwhelming 95.00 per cent of the fellow farmers.

4.8.2 Problems related to the inputs

As many as 76.67 and 96.67 per cent of demonstrator and fellow farmers respectively expressed high cost of chemicals and fertilizers as the major problem related to input followed by unavailability of inputs on time (70.00% and 86.67% respectively).

4.8.3 Financial problems

For Demonstrator farmers, the major financial problems were insufficient credit (66.67%), and complex, lengthy and rigid procedure of bank finance (76.67%). The fellow farmers faced financial problems like insufficient credit (85.00%), inadequate guidance on credit availability (91.67%) and complex, rigid and lengthy bank procedures (90.00%).

Table 17: Benefits gained from the demonstration by the respondents

(n=90)

Sl. No.	Important learnings	Demonstrator farmers (n=30)		Fellow farmers (n=60)	
		Frequency	Percentage	Frequency	Percentage
1	Higher yield	30	100	37	61.67
2	Good quality fodder (GPBD-4)	30	100	34	56.67

Table 18: Accessibility of fellow farmers to the demonstrations conducted

(n=60)

Sl. No.	Details	Respondents	
		Frequency	Percentage
1	Awareness of the demonstration	44	73.33
2	Visited the demonstration field	42	70.00
3	Attended field days	39	65.00

4.8.4 Marketing problems

Price fluctuation was the main marketing problem as expressed by both the demonstrators (86.67%) and fellow (93.33%) farmers, whereas, 66.67 per cent of demonstrator and 80.00 per cent of the fellow farmers expressed lack of marketing facilities.

4.8.5 General problems

The general problems faced by the respondents were lack of information about government schemes and subsidies as reported by 40.00 per cent of demonstrator and 81.67 per cent of fellow farmers. Irregular rainfall pattern was also cited as problem by 86.67 and 70.00 per cent of demonstrator and fellow farmers respectively.

Table 19: Problems in adoption of recommended cultivation practices of groundnut

(n = 90)

Sl. No.	Problems as perceived by the farmers	Demonstrator farmers		Fellow farmers	
		No.	%	No.	%
I	**Technical problems**				
a)	Inadequate guidance regarding improved technology	7	23.33	57	95.00
II	**Problems related to the inputs**				
a)	High cost of chemicals	23	76.67	58	96.67
b)	Unavailability of inputs	21	70.00	52	86.67
III	**Financial problems**				
a)	Insufficient credit	20	66.67	51	85.00
b)	Inadequate guidance on credit availability to farmers	13	43.33	55	91.67
c)	Complex, lengthy and rigid procedure of bank finance	23	76.67	54	90.00
IV	**Marketing problems**				
a)	Lack of marketing facilities	20	66.67	48	80.00
b)	Price fluctuation	26	86.67	56	93.33
V	**General problems**				
a)	Lack of information about Government schemes and subsidies	12	40.00	49	81.67
b)	Erratic rainfall pattern	26	86.67	42	70.00

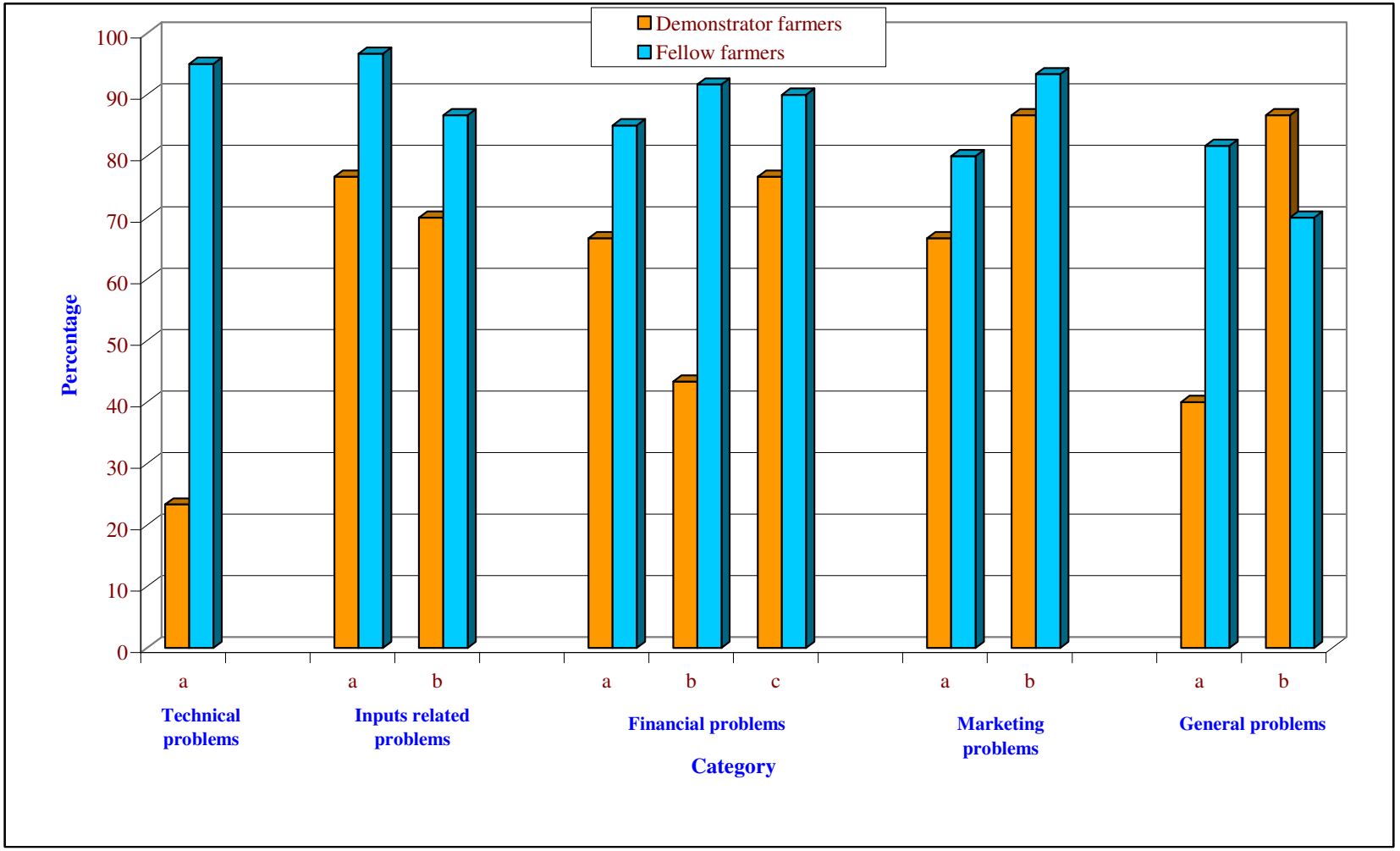

Fig. 12: Problems in adoption of recommended cultivation practices of groundnut

5. DISCUSSION

The findings of the study are discussed in this chapter under following headings. Since the research studies in this particular field were very scarce, the findings of the related studies were made use of to substantiate the results wherever possible.

5.1 Profile characteristics of the respondents

5.2 Gaps in adoption of recommended package of practices of groundnut

5.3 Gap in adoption of individual recommended cultivation practices of groundnut

5.4 Assessment of yield gap of respondents

5.5 Relationship between socio-psychological characteristics of the groundnut growers and their adoption gaps

5.6 Contribution of independent variables to the adoption gap of respondents

5.7 Benefits gained from the demonstration

5.8 Problems in adoption of recommended cultivation practices of groundnut

5.1 Profile characteristics of respondents

5.1.1 Age

An overview of the Table 1 indicates that majority of the respondents *i.e.*, demonstrator (83.33%) and fellow farmers (50.00%) were middle aged. Generally, persons between 31 to 50 years of age group have physical vigour, more sense of responsibility than younger ones and are more enthusiastic and efficient. Thus, most of the respondents fell in the middle age group could be justified.

This result is in line with the research findings of Kapse *et al.* (2000) and Kumar (2009).

5.1.2 Education

Table 1 enlightens us on fact that the demonstrator farmers were educated to the tune of 96.67 per cent while fellow farmers were 76.67 per cent. Only 3.33 per cent of the demonstrator farmers were illiterate as against 23.33 per cent of the non demonstrator farmers.

Demonstrator farmers had high socio-economic status and well-to-do background. Further, the facilities of schooling available might be the other reason. The lesser percentage of literacy of fellow farmers could be the non-realization of the influence of education in one's life. Illiteracy of parents and rural social environment might not have encouraged the parents to send their children to schools.

This finding is supported by earlier studies carried out by Keshavaiah *et al.* (2003).

5.1.3 Land holding

It is learnt from Table 1 that majority (70.00%) of the demonstrator and 41.67 per cent of fellow farmers were marginal farmers. The fragmentation of ancestral land from generation to generation has lead to smaller size of land holding. Moreover agriculture may not be the only occupation for few.

This result is in conformity with the finding of Swami (2006).

5.1.4 Farming experience

The farming experience presented in Table 2 showed that the experience in farming (43.33%) as well as in cultivation of groundnut (46.67%) was high for majority of the demonstrator farmers. The experience of fellow farmers in farming was low for 41.67 per cent of them. In groundnut cultivation, their experience was found to be medium for majority (48.33%) of them.

5.1.5 Extent of utilization of various mass media

It is clearly presented in Table 3 and 4 that almost equally high percentage of demonstrator farmers subscribed newspaper and farm magazine (96.67% and 90.00%, respectively) while only 60.00 and 18.33 per cent of fellow farmers subscribed the same. Higher education of the demonstrator farmers as compared to the fellow farmers is accountable for the result. The agricultural article of newspaper was read regularly by very few percentages of the demonstrator (30.00%) and fellow farmers (13.33%). Also the agricultural article of farm magazine was read regularly only by 30.00 per cent of demonstrator and 10.00 per cent of fellow farmer regularly as compared with information and entertainment. Lack of applicability and monotonous agricultural information resulted in this kind of result.

Table 3 and 4 indicated that all the respondents possessed radio and television (100.00%). This revealed that television and radio were the most effective common medium which was possessed by a large majority of the respondents. Increasing popularity and monopolization of television and affordability of radio dominated in its use over the other mass media. Moreover, these two media overcome the barrier of illiteracy.

The television viewing and radio listening were done for purposes other than the agricultural programmes. The less utility, lack of practicability and inconvenient timing of the agricultural programmes were the reasons that could be attributed to this finding.

5.1.6 Psychological attributes of demonstrator farmers

a. Innovative proneness

It is depicted in Table 5 that majority (43.33%) of the demonstrator farmers were highly prone towards innovation while for fellow farmers majority of fellow farmers (58.33%) were in medium category of innovative proneness. Higher educational status, more experience in groundnut cultivation and higher cosmopoliteness have played major role here. Majority of the demonstrator farmers were marginal farmers and they would like to achieve higher returns by adopting the innovations intensively in case of demonstrator farmer as compared to fellow farmers.

b. Risk orientation

In case of risk orientation, majority of the respondents (63.33 per cent demonstrator and 41.67 per cent fellow farmers) had high risk orientation as cultivation of groundnut involves both production and marketing risk because of erratic rainfall pattern and price fluctuation. Interestingly no demonstrator farmer belonged to ‘medium’ category while it was 36.67 per cent for fellow farmers. In the ‘low’ category, it was found to be 36.67 per cent for the demonstrator farmer and 21.66 per cent for the fellow farmers.

5.1.7 Cropping intensity

The findings of the Table 6 indicate that cent per cent of the demonstrator farmers had high cropping intensity whereas, 66.67 per cent of the fellow farmers had low cropping intensity. This may be attributed to the fact that the demonstrator farmers were cultivating a number of crops in all the three seasons *i.e.*, *summer, kharif* and *rabi* while the fellow farmers cultivated only in one or two seasons. Besides, the demonstrator farmers were making use of both the land and irrigation potential whereas the fellow farmers lacked irrigation facilities.

The research finding of Kokate *et al* (1996) is in support of this.

5.1.8 Extension contact

According to Table 7, the extension contact was found to be high for majority (43.33%) of demonstrator farmers while for majority (46.67%) of fellow farmers it was found to be low. The demonstrator farmers are under the close supervision and monitoring of extension professionals. They seek information at every stage of the crop and have greater reach to extension services. Moreover, the demonstrator farmers have higher cosmopoliteness and innovative proneness as compared to fellow farmers.

5.1.9 Cosmopoliteness

It is evident from Table 8 that majority (43.33%) of the demonstrator farmers were highly cosmopolite. The demonstrator farmers are well educated therefore they are more open to changes and in pursuit of which they are more cosmopolite.

The Table also indicated that majority (43.33%) of the fellow farmers were low in cosmopoliteness. The fellow farmer being less educated and being less exposed to mass media are hesitant to socialize outside his own social system.

5.2 Gaps in adoption of recommended package of practices of groundnut

5.2.1 Adoption gap on the demonstration fields

It is learnt from Table 9 that the overall adoption gap was 41.55 per cent among the demonstrator farmers. It is also evident that majority (40.00%) of the demonstrator farmers had low adoption gap. The demonstrator farmers have better educational status, higher farming experience, more exposure to mass media, were more innovative, more cosmopolite, more contact with extension personnel and higher cropping intensity which are accountable for the low adoption gap. Moreover having understood the benefits that the demonstration can bring about, the demonstrator farmers have greater interest in adopting the recommended package of practices.

5.2.2 Adoption gap on fellow farmers fields

The overall adoption gap was to the tune of 79.90 per cent among the fellow farmers. The fellow farmers had not availed the services provided by the extension personnel as they had poor extension contact and were less cosmopolite with poor educational status. They also did not adopt the practices recommended which resulted in 43.33 per cent of them belonging to high adoption gap category.

5.2.3 Comparison of means of adoption gap between demonstrator and fellow farmers

Table 10 clearly indicated that there was a significant difference between the adoption of fellow farmers and the demonstrator farmers. The calculated't' value was 16.21 which is significant both at 1 per cent level of probability. This strongly agrees to the fact that since the demonstrator farmers have more extension contact, they are more aware of the benefits of improved practices and possessed higher knowledge regarding the cultivation of the crop. Moreover they are under the guidance and supervision of the extension specialists. The highly significant calculated t value also brings to light that demonstrations can certainly bridge the existing adoption gap of the farmers.

It may be noted from the Table 10 that the mean adoption gap for the demonstrator farmers was 41.55 per cent while it was as high as 79.90 per cent for fellow farmers. A difference of 38.35 per cent can be observed in the means of the adoption gap between the demonstrator and fellow farmers. Unexpectedly, the table also reveals that though the demonstrations were under the supervision of scientists of the National Agriculture Research System, there still existed adoption gap to the tune of 41.55 per cent. Only critical inputs and training are provided, remaining inputs are procured by the farmers themselves. Moreover, the frontline demonstrations are only on a pilot basis on the farmer's fields. These results only indicate that there is a possibility of increasing the yields of groundnut.

5.3 Gap in adoption of individual recommended cultivation practices of groundnut

Table 11 furnishes the adoption of recommended cultivation practices by the respondents.

It is clearly indicated in the Table 11 that there was cent per cent adoption gap in application of Copper Sulphate among the demonstrator farmers. Ninety per cent of the demonstrator farmers did not apply Phosphorus Solubilising Bacteria and Lime Sulphate. Adoption gap was also found in cases of practices like application of Vermicompost (66.67%) and *Rhizobium* (66.67%) among the demonstrator famers.

The Table 11 also brings to light that among the fellow farmers there was cent per cent adoption gap in practices like application of *Rhizobium*, Phosphorus Solubilising Bacteria, Lime Sulphate and Copper Sulphate. None of the fellow farmers used control measures for pests like Spodoptera and diseases like Damping Off, Fungal Neck Rot and Leaf spot. In addition to those, 96.67 per cent of the fellow farmers did not apply Vermicompost nor used control measure for Red Headed Caterpillar. Gypsum was not applied by 90.00 per cent, Leaf Roller was not controlled by 81.67 per cent and Seed Treatment was not followed by 80.00 per cent of the fellow farmers.

The reason for non-adoption of nutrients as per recommendation was because of non-availability at the time of need, high cost, and inadequate guidance regarding nutrient management.

In comparison between the demonstrator and fellow farmers in nutrient application, it was found that the fellow farmers were much behind the demonstrator farmers because of low educational status and aversion to the use of chemicals. Some opined that use of any fertilizer would cause soil deterioration.

A huge percentage of the fellow farmers did not use any measures for the control of pest and diseases because of reasons like unawareness of the right chemicals, high cost of chemicals, negligible losses caused by the pests and diseases. The fellow farmers also opined that the fodder becomes poisonous and no longer fit for the consumption by the cattle after the use of chemicals.

The low usage of seed treatment practice among the fellow farmers could be attributed to the fact that they ignored the practice since the visible impact of the seed treatment was not instant.

The findings are in conformity with the study of Siddarmaiah and Goud (1991).

5.4 Assessment of yield gap of respondents

5.4.1 Yield gap on the demonstration field

It was observed from Table 12 that there was 23.96 per cent of yield gap on the demonstration fields. The average yield of the demonstrator farmers was 20.91 quintal per ha as against the potential yield of 27.5 quintal per ha. Thus a gap of 6.59 quintal per ha existed even at the demonstration field.

The full potential of the crop on farm thus remains untapped even though there is technology explosion in this fast changing world.

The reason accountable for this is the partial or non adoption of certain recommended package of practices like the application of Copper Sulphate, Phosphorus Solubilising Bacteria,Lime Sulphate, Vermicompost and *Rhizobium* even on the demonstration fields. This calls for monitoring of frontline demonstrations so that the potential farm yield of the crops can be realized.

5.4.2 Yield gap between demonstrations and fellow farmers fields

It is evident from Table 13 that there was a gap of 59.15 per cent between the demonstrator and fellow farmers yield. The yield gap between the demonstrator and fellow farmers' field was as high as 12.37 quintal/ ha.

This existence of yield gap was because the fellow farmers failed to adopt recommendations for important practices like application of *Rhizobium*, Phosphorus Solubilising Bacteria, Lime Sulphate, Vermicompost, Gypsum and Copper Sulphate, use of control measures for pests like Spodoptera, Red Headed Caterpillar and Leaf Roller and diseases like Damping Off, Fungal Neck Rot and Leaf spot. Moreover they did not follow Seed Treatment.

5.4.3 Comparison of means of yield between demonstrator and fellow farmers

A perusal of Table 14 enlightens us on the fact that in comparison of the mean yields between the demonstrator and fellow farmers, a significant difference was noticed (calculated t value of 32.12). This indicated that yield of the demonstrator farmers were remarkably higher than the fellow farmers.

More exposure to the skilled techniques, greater motivation due to frequent extension contact, greater tendency to seek information and close monitoring under the extension personnel, higher educational status, more cosmopoliteness and more prone to innovation among the demonstrator farmers as compared to the fellow farmers certainly support the above finding.

This finding is in line with the study done by Rao and Prasad (1994).

5.5 Relationship between socio-psychological characteristics of the groundnut growers and their adoption gaps

The data presented in Table 15 illustrates that 9 variables out of 11 had a significant relationship with the adoption gap of the demonstrator farmers while 10 variables had significant relationship with the adoption gap for the fellow farmers. It is discussed in detail as follows:

5.5.1 Age

The variable 'age' was found to have positive and highly significant relationship with the adoption gap for both the demonstrator (0.69) and fellow farmers (0.50). The more advanced a person is in years, the stronger he clings to his traditional perception of things. Therefore the harder it is to convince and change his attitude and perception towards modern technology. Similarly the younger a person is, the more open he is to accept changes. Therefore, it was found that younger the age of the farmer lesser the gap in adoption of recommended cultivation practices.

This finding is in tune with the research study of Sharma *et al* (2005).

5.5.2 Education

There was negative and highly significant relationship between education and adoption gap for the demonstrator (-0.74) and negative and significant for fellow farmers (-0.28). As education increases, adoption gap decreases. Education exposes farmers to more communication media or methods. Better perception and comprehension could be observed among well educated groundnut growers than others. Acquisition of formal education also helps to interpret ideas in a rational manner resulting in pragmatic decision making. Thus, education provides a persistent reorientation to the farmers, wherein, they gradually subsume science and innovation and ultimately reflecting on better adoption of practice. Therefore, the finding seemed to be logical.

5.5.3 Land holding

Land holding of both the demonstrator (-0.23) and fellow farmers (-0.59) had negative relationship with the adoption gap. The more area a person possess for cultivation, the lesser will be the adoption gap .The groundnut growers with larger land holding will have more opportunities and potentialities to try and adopt large number of technological innovations. As a result, it is quite possible that groundnut growers with larger farm size show keen interest to know about new farm practices and be more receptive to such ideas thus leading to better acquisition of knowledge, skills and other management factors, which in turn reflect on lesser adoption gap of the crops.

5.5.4 Farming experience

Both the farming experience and experience in groundnut cultivation was found to have negative and highly significant relationship with the adoption gap for both the demonstrator (-0.58 and -0.61) and fellow farmers (-0.44 and -0.34). The longer a farmer is engaged in farming of a particular crop, the more knowledge he has in the production of that crop. The more the knowledge acquired, the lesser will be the gap in adoption of practices.

5.5.5 Mass media utilization

There existed a negative and highly significant relationship between mass media participation and adoption gap for both the demonstrator (-0.73) and fellow farmers (-0.58). The higher levels of exposure to mass media would facilitate the individual to develop habits of gathering more information about innovations through television, radio, news paper and other literature related to groundnut cultivation. Such individuals will be in readiness to accept the practices than others, who do not have exposure to mass media. In other words, exposure to mass media modernizes farmers; make them more efficient in acquiring, retaining and evaluating the effective factors of adoption. Mass media also provides enormous opportunity for repeated exposure to new technology, motivating the groundnut growers to reacquire and to take positive steps relevant for adoption of recommended cultivation practices. This view could be supported by Festingers (1957), 'Dissonance theory' which states that, due to accumulation of information in the individual, a dissonance stage is created and in order to maintain homeostasis, the individual will be motivated to adopt technologies. Thus, the findings of the present study seemed to be on right lines.

The finding of this study gets the support of findings reported by Veeraiah *et al*. (1998).

5.5.6 Innovative proneness

There was a negative and highly significant relationship between the innovative proneness and the adoption gap of the demonstrator (-0.62) and negative and significant relationship for fellow farmers (-0.29). The most important cause of innovative proneness is an underlying willingness to change and to try new ideas. This is treated as psychological trait which manifests in all behavioral aspects of the respondents, which also serves as an indicator of the respondents' orientation to excel in groundnut production and succeed in his activities. Further, the individual who is prone to innovations generally will have higher orientation towards scientific technology and competition. It also acts as an indicator of person's evaluative perception of activities with different dimensions such as practicability leading to rational decision making thus, it helps an individual to realize maximum economic profits from groundnut production. Thus, innovative proneness has established negative and highly significant relationship with the adoption gap.

The finding is in line with the study of Kumar (2009).

5.5.7 Risk orientation

The risk orientation had negative and non significant relationship with the adoption gap of both the demonstrator and fellow farmers. It could be explained that, the respondents with higher levels of risk orientation would be much ahead of others in exploiting the potentialities of groundnut production technology. Such individuals would possess more entrepreneurial characteristics like cosmopoliteness, innovative proneness etc. These individuals will be very much critical and cautious in understanding different aspects of this technology which directly or indirectly might have helped them to acquire different components essential for better adoption of groundnut production. Hence the more the ability to take risk, the lesser the adoption gap. However it was found to have a non significant relationship with the adoption gap because groundnut cultivation does not require much risk except the irregular pattern of rainfall and price fluctuation.

5.5.8 Cropping intensity

The cropping intensity was found to have negative and highly significant relationship with the adoption gap of both the demonstrator (-0.75) and fellow farmers (-0.65). The possible explanation for this maybe that the respondents cultivated a number of crops in all the three seasons, *i.e. kharif, rabi* and *summer*. Therefore the higher gross cropped area led to higher cropping intensity. The more number of crops they cultivate, more the experience in cultivation and the more knowledge acquired. Therefore this type of relationship is quite expected.

5.5.9 Extension Contact

The relation between extension contact and adoption gap was found to be negative and highly significant for both the demonstrator (-0.78) and fellow farmers (-0.61). It is obvious that farmers who are in constant contact with the extension personnel are likely to get more attention and guidance from them regarding the cultivation of crops which would further increase the technical know-how and adoption of recommended practices of the farmers. This implies that the farmers who are in contact with the extension personnel would have lesser adoption gap as they would be under the guidance and supervision of them, hence, the result.

5.5.10 Cosmopoliteness

Negative and highly significant relationship was noticed between cosmopoliteness of the demonstrator farmers (-0.88) and negative and significant relationship for fellow farmers (-0.33) with their adoption gap. Cosmopolite farmers are brought into an atmosphere of broader perspectives where there is a better scope for exchange of new ideas and facts. Further, the individuals who interact with other people outside their systems are likely to receive cues from other people that would further reinforce supporting the concepts of legitimization and reinforcement. Thus the respondents might have been tempted to acquire the effective factors of adopting the technology and profit maximization techniques on their orientation outside the social system. Rogers and Svenning (1969) consider cosmopoliteness as an important antecedent variable to bring about modernization. In this context, a cosmopolite respondent is likely to adopt more recommended practices and thereby lesser adoption gap.

5.6 Contribution of independent variables to the adoption gap of respondents

It was observed from Table 16 that the ten independent variables included in the study could explain 91.90 per cent and 79.20 per cent variation in the adoption gap of both demonstrator and fellow farmers respectively. Out of the ten independent variables, three variables, farming experience, extension contact and cosmopoliteness were found to have negative and significant influence while age had positive and highly significant influence on the adoption gap of demonstrator farmers. Thus, these four variables were more prominent in their contribution to the variation than the other variables. In case of fellow farmers, independent variables like land holding, mass media utilization and cropping intensity had negative and significant relationship with the adoption gap while age had positive and significant relationship with adoption gap of fellow farmers.

The regression analysis indicated that coefficients of regression were highly significant for age (0.376) extension contact (-2.32) and significant for farming experience (-0.49) and cosmopoliteness (-1.33) for demonstrator farmers. So it can be predicted that one unit change in independent variables like age, extension contact, farming experience and cosmopoliteness leads to corresponding change of 0.37, 2.32, 0.49 and 1.33 in adoption gap of groundnut production technology.

It can be concluded that for demonstrator farmers, factors like more access to high contact with the extension personnel, sound experience in farming, more interactive and cosmopolite nature lead to more adoption of recommended practises and thereby less adoption gap.

For fellow farmers, variables like land holding (-0.702) and cropping intensity (-0.119) were found to have negative and highly significant relationship with the adoption gap while mass media utilization (-0.665) had negative and significant relationship with the adoption gap. Age (0.187) had positive and significant relationship with adoption gap. This implies that a unit change in independent variables like age, land holding, cropping intensity, and mass media would lead to a corresponding change of 0.18, 0.70, 0.11 and 0.66 in adoption gap of fellow famers. These four variables contributed significantly to the variation in adoption gap as compared to the others.

The value of multiple determinations (R^2) indicated that the independent variables explained 79.2 per cent variation in adoption gap for fellow farmers. The rest of the variation was explained by factors not included in the study.

For fellow farmers, factors like greater land holding with greater exposure to mass media and higher cropping intensity were found to have significant effect on reduction of adoption gap. Therefore the farmers should be encouraged to have more exposure to mass media like radio, television, newspaper and farm magazine which would certainly improve their knowledge about crop production.

5.7 Benefits gained from the demonstration

5.7.1 Benefits derived by the demonstrator and fellow farmers from the demonstration

Both the demonstrator and fellow farmers were convinced that the demonstration conducted using the recommended package of practice led to higher yields besides production of good quality fodder (Table 17). This is because of better yields realized as compared to other years. Moreover the good quality fodder was obtained because of improved groundnut variety-GPBD 4 which almost all the farmers had adopted.

5.7.2 Accessibility of fellow farmers to the demonstrations conducted

Table 18 clearly illustrated that 73.33 per cent of the fellow farmers were aware of the demonstration. This was because before the demonstrations are being conducted it is widely publicized. Any event or activity which has been publicized arises curiosity, especially in the villages which might have prompted 65.00 per cent of them to visit the demonstration field.

Sixty per cent of them attended field days. It is very convenient to the other farmers to attend the field days. They are very eager to observe and compare the performance of the demonstration which ultimately leads to opinion formation.

5.8 Problems in adoption of recommended cultivation practices of groundnut

5.8.1 Technical problems

Inadequate guidance regarding improved technology was the only technical problem expressed by an overwhelming majority of fellow farmers (95.00%). This problem was expressed by few of the demonstrator farmers also (23.33%). Majority of the fellow farmers had poor contact with the extension personnel. Leaving aside the fellow farmers, even few of the demonstrator farmers were lacking guidance from the extension personnel at the appropriate time.

5.8.2 Problems related to the inputs

High cost of chemicals and fertilizers was expressed as the prime problem by majority of the demonstrator (76.67%) and fellow farmers (96.67%) as regards to problems related to the inputs.

As high as 70.00 per cent of demonstrator and 86.67 per cent of fellow farmers expressed unavailability of inputs on time as another problem related to inputs.

Groundnut cultivation requires a number of chemicals and fertilizers like Gypsum, Phosphorus Solubilising Bacteria, Lime Sulphate, Pesticides and Fungicides which are costly in nature and not available at appropriate time therefore, these were the major problems expressed by the respondents.

5.8.3 Financial problems

Complex, lengthy and rigid procedure of bank finance, insufficient credit and inadequate guidance on credit availability to farmers were the important financial problems as expressed by the respondents.

The present state of credit facility is not satisfactory as rate of interest is very high and there exist tedious procedures in advancing loan. Therefore, these problems were expressed by many of the groundnut growers.

5.8.4 Marketing problems

It can be seen from Table 20 that price fluctuation was expressed as the main marketing problem by both the demonstrator (86.67%) and fellow farmers (93.33%). It was observed during the research that the selling price of groundnut varied from place to place. Besides, there is no regulated price and it changes from time to time.

Lack of marketing facilities was expressed as a problem by 66.67 per cent of the demonstrator and 80.00 per cent of fellow farmers. Proper marketing facilities are not available for majority of the villages. Hence, this result.

5.8.5 General problems

The groundnut growers expressed lack of information about government schemes and subsidies as a general problem. Many a times awareness about the Government schemes and subsidies is not effective enough to reach the illiterate farmers. Therefore, the schemes should be publicized more efficiently to make the farmers avail the opportunity.

Erratic pattern of rainfall was also a major problem expressed by the farmers as many lack irrigation facilities and depend on the monsoon.

6. SUMMARY AND POLICY IMPLICATIONS

Agriculture is the life-line of the National economy and continues to be a fundamental instrument for sustainable development and poverty alleviation in our country. It provides employment to around 60 per cent of the workforce and contributes about 18 per cent to our Gross Domestic Product. With more than 6 lakhs villages, home to millions of farmers, it is difficult to visualize a prosperous India without agriculture and rural development. While the population is increasing, the demand for agricultural produce is increasing rapidly and the scope of bringing more land under cultivation is receding fast. Thus increasing production per unit of available land is the only answer to the problem. Therefore, the Indian Council of Agricultural Research (ICAR) in order to boost the production and productivity by using the latest technologies introduced the concept of frontline demonstration during 1991-92. The frontline demonstrations are the field demonstrations organised by KVK, SAU and ICAR institutes under the direct supervision of the scientist with a view to test the research results on the farmers field and get a direct feedback from the farmers. Research studies have shown that there exist a gap between the yields obtained at the farmers' field and that of the demonstration plots. Even more unexpected, there also exists gap in the yields between the demonstration plot and the research stations.

Keeping this in view, the present investigation was designed with the following specific objectives:

1. To ascertain the adoption gaps in demonstration fields and farmers' field.

2. To assess the yield gap in groundnut.

3. To study the socio-psychological characteristics of groundnut demonstrator farmers as well as other farmers in relation to their adoption gap.

4. To identify the constraints in adoption of groundnut production technology.

The study was conducted in the Northern Transition Zone of Karnataka in the year 2009-10. All the districts under the zone namely, Dharwad, Belgaum, Gadag and Haveri were selected for the study. Further, the villages under each district that had laid the frontline demonstration in the year 2008-09 were selected. All the farmers who had laid the frontline demonstration in the study area were taken as demonstrator farmers. Five villages where more number of frontline demonstrations was conducted were selected. Twelve respondents from each of the five selected villages were selected at random to form a sample of sixty farmers to study the influence on other farmers. Thus, a total of 90 farmers formed the sample for the study.

In the light of the objectives set for the study, the two dependent variables selected for the study were adoption gap and yield gap. The variables age, education, land holding, farming experience, extension contact, mass media participation, cosmopoliteness, cropping intensity, innovative proneness and risk orientation were the independent variables.

A pre-tested interview schedule was used to collect the data from the groundnut growers by personal interview method. The data collected were scored, tabulated and analyzed by using frequency, percentage, mean, standard deviation, t-test, correlation and regression.

The salient findings of the present study are:

- Adoption Gap was found to the tune of 41.55 per cent for demonstrator farmers and 79.90 per cent for fellow farmers.

- Forty per cent of the demonstrator farmers had low adoption gap while 43.33 per cent of the fellow farmers were in high adoption gap category.

- There was a highly significant difference of 38.35 per cent in the means of adoption gap between the demonstrator farmers and fellow farmers.

- Yield Gap was found to be 6.59 q/ha at the demonstrators field and 12.37 q per ha at the fellow farmers field.

- About 23.00 per cent of yield gap was found between the demonstration fields and research station.

- Huge yield gap of 59.15 per cent was found between the demonstrator and fellow farmers' field.

- Cent per cent of the demonstrator farmers had not adopted recommended Copper Sulphate application.

- All the fellow farmers had not adopted eight important recommended package of practices such as application of Rhizobium, Phosphorus Solubilising Bacteria, Lime sulphate and Copper Sulphate, control of pest (Spodoptera) and diseases like Damping Off, Fungal Neck rot and Leaf Spot.

- Education, Farming Experience, Extension Contact, Mass Media Utilization, Cosmopoliteness, Innovative Proneness and Cropping intensity were found to have negative and highly significant relationship with the adoption gap while Age was found to have positive and highly significant relationship with the adoption gap of the demonstrator farmers. Land holding and Risk Orientation were found to have negative and non-significant relationship with the adoption gap of demonstrator farmers.

- In case of fellow farmers, majority of the independent variables *viz*., Education, Land holding, Farming Experience, Extension Contact, Mass Media Utilization, Cosmopoliteness, Innovative Proneness and Cropping Intensity had negative and highly significant relationship with the adoption gap. The variable Age was found to have positive and highly significant relationship with the adoption gap, except the variable Risk Orientation which was non-significant.

- The variation in the adoption gap of demonstrator farmers was explained to the extent of 91.90 per cent by all the independent variables. The variables like Age, Farming Experience, Extension Contact and Cosmopoliteness contributed significantly to the variation in the adoption gap of the demonstrator farmers.

- All the ten independent variables explained the variation of 79.20 per cent in the adoption gap of the fellow farmers of which, variables like Age, Land Holding, Mass Media Utilization and Cropping Intensity contributed significantly.

- A large majority of the demonstrator farmers (83.33%) and 50.00 per cent of the fellow farmers were middle aged.

- More than half of the demonstrator farmers (56.67%) studied up to high school while majority (46.67%) of the fellow farmers were educated up to primary school.

- As high as 70.00 per cent of the demonstrator farmers and 41.67 per cent of the fellow farmers belonged to the 'marginal farmers' category.

- Farming Experience (43.33%) and Experience in Groundnut Cultivation (46.67%) were high for the demonstrator farmers. Majority (41.67%) of the fellow farmers had low experience in farming while about 48.33 per cent of them had medium experience in groundnut cultivation.

- Cent per cent of both the demonstrator and fellow farmers possessed media channels like radio and television. As high as 96.67and 90.00 per cent of the demonstrator farmers subscribed newspaper and farm magazine respectively. About 60.00 per cent and 18.33 per cent of the fellow farmers subscribed newspaper and farm magazine respectively.

- Majority of the demonstrator farmers had high Risk Orientation (63.33%), high Cropping Intensity (100.00%), and around 43.00 per cent had high innovative proneness, Extension Contact and Cosmopoliteness. Majority of the fellow farmers had medium Innovative Proneness (58.33%), low Cropping Intensity (66.67%), Extension contact (46.67%), low Cosmopoliteness (43.33%) and high Risk Orientation (41.67%).

- Cent per cent of the demonstrator farmers learned that adopting the recommended package of practices resulted in higher yield and good quality fodder. Around 61.00 per cent of the fellow farmers agreed to the fact that the demonstration gave higher yield while 56.67 per cent of them learned that the demonstration resulted in good quality fodder.

- As high as 73.33 and 70.00 per cent of the fellow farmers were aware of the demonstration and even visited the demonstration plot. About 65.00 per cent of them attended field days.

- The major technical problem for the respondents was inadequate guidance regarding improved technology.

- High cost of chemicals was the major problem related to input for both the demonstrator (76.67%) and fellow farmers (96.67%).

- Unavailability of the input was a problem expressed by 70.00 and 86.00 per cent of demonstrator and fellow farmers respectively.

- The important financial problems expressed by the respondents were complex, lengthy and rigid procedure of bank finance and inadequate guidance on credit availability to farmers.

- The general problems stated by the respondents were lack of information about Government schemes and subsidies and erratic rainfall pattern.

Implications of the study

1. Adoption as well as yield gaps exist even on demonstration fields which bring out the fact that demonstrator farmers have not adopted all the recommendations specially the micro nutrients. Continuous monitoring and guidance is required for the demonstrator farmers to bridge the adoption and yield gaps.

2. There is a wide difference in the yields of the demonstrator and fellow farmers which implies that there is a huge scope to increase the yield of groundnut at the farmers' field by adopting the recommended package of practices. This calls for intensification of efforts by the extension agencies. Moreover, frontline demonstrations needs to be popularized much among the farming communities as it plays a pivotal role in bridging the gap between the available technologies at one end and their application for increased production on the other.

3. Micro nutrients were not adopted by majority of the respondents. The farmers have to be made aware of the importance of micro nutrients and necessary efforts should be made so that the inputs are within the reach of the farmers.

4. Non-availability of inputs, finance problem and lack of knowledge were the dominant reasons for non-adoption. An ideal strategy to provide necessary technical guidance should be developed. Issues related to availability, accessibility and affordability of the farm inputs should be addressed by both governmental and non governmental agencies through farm co-operation and farmers organization at village level.

5. Strengthening the market infrastructure at bullock cart distance will ensure efficient marketing system for the groundnut growers.

Suggestions for future research

1. The present investigation was confined to the Northern Transition Zone of Karnataka. The study needs to be replicated covering the entire groundnut growing areas in Karnataka, so that the inference drawn can be generalized to a greater extent.

2. A probe into other variables apart from those that are studied in the present investigation may be identified and their influence on adoption gap may also be studied.

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Appendix I: Recommended Package of Practices for Groundnut Production

Practice	Recommendation
Variety	**i) Bunch type** a) GPBD-4 b) JL-24 c) TMV-2 d) DH 3-30 e) MUTANT-3 **ii) Spreading type** a) DSG-1
Seed rate	a) 150 kg/ha (JL-24,DH 3-30) b) 75 kg/ha (DSG-1) c) 125 kg/ha (GBPD-4, MUTANT-3,TMV-2)
Seed treatment	a) Captan (2 gm/kg seed) or b) Thiram (2 gm/kg seed) or c) Carboxyn (2 gm/kg seed) or d) Trichoderma (4 gm/kg seed)
Sowing time	a) June starting (GPBD-4, MUTANT-3, JL-24, TMV-2, DH 3-30) b) July starting (DSG-1)
Spacing	a. 30 × 10 cm (bunch type) b. 45 × 10 cm (spreading type)
Nutrient management (ha)	a. Application of FYM (7.5 tonnes) b. Vermicompost (1 ton) c. *Rhizobium* (2.5 kg) d. Phosphorus solubilising bacteria (2.5 kg) e. N:P:K (25:50:25 kg) f. Gypsum (500 kg) g. Lime sulphate (25 kg) h. copper sulphate (25 kg)
Plant Protection Measures	*Contd…..*
a) Pests	
i) Thrips	a) 1.7 ml Dimethoade 30 EC/litre of water or b) 0.5 ml Penthion 100 EC/litre of water or

	c) 0.5 ml Phosphomidon per litre of water
ii) Spodoptera	a) 2 ml Quinolphos 25 EC/litre of water or b) 1 ml Methyl parathion 50 EC/litre of water
iii) Red headed caterpillar	a) 4% Endosulphon or b) 1.5% Quinolphos or c) 2% Methyl Parathion or d) Cultural practises: Deep ploughing, light trapping.
b) Diseases	
i) Damping off	Seed treatment with (2-3) gm Captan/ thiram/ trichoderma 4 gm per kg of seed.
ii) Fungal neck rot	a) Crop rotation with sorghum, pearl millet, maize b) Summer ploughing, deep ploughing and green manuring.
iii)Leaf spot	a) Carbendazim (0.05%) or b) Hexaconezol (0.1%) or c) Diphenoconzol (0.1%) during 35 & 50 days.

Appendix II: Interview Schedule

ಸಂದರ್ಶನ ಪಟ್ಟಿ

ADOPTION GAP IN GROUNDNUT PRODUCTION IN NORTHERN TRANSITION ZONE OF KARNATAKA

ಉತ್ತರ ಕರ್ನಾಟಕದಲ್ಲಿ ಶೇಂಗಾ ಉತ್ಪಾದನೆಯಲ್ಲಿ ಅಳವಡಿಕೆ ಅಂತರ

Respondent type :
ಸಾಮಾನ್ಯ ರೈತ

Demonstrator/ Fellow farmer :
ಪ್ರಾತ್ಯಕ್ಷಿಕೆ ಕೈಗೊಂಡ ರೈತ

Phone. No. :
ದೂರವಾಣಿ ಸಂಖ್ಯೆ

Part –A
ಭಾಗ 1

A. General Information

ಅ. ಸಮಾನ್ಯ ವಿವರಗಳು

1. Name of the respondent : _____
1. ರೈತನ ಹೆಸರು

2. Village : _____
2. ಗ್ರಾಮ

3. Taluk : _____
3. ತಾಲೂಕು

4. District : _____
4. ಜಿಲ್ಲೆ

B. Profile of Respondent :

ಆ. ವೈಯ್ಯಕ್ತಿಕ ವಿವರಗಳು

1. Age : _____ yrs.
1. ವಯಸ್ಸು : _____ (ವರ್ಷಗಳು)

2. Education : _____ std
2. ಶಿಕ್ಷಣ : _____

3. Land holding (in acres) :

ಇ. ಹೊಂದಿರುವ ಭೂಮಿ (ಎಕರೆಗಳಲ್ಲಿ)

a. Dry land :

1. ಮಳೆ ಆಧರಿತ

b. Irrigated land :

2. ನೀರಾವರಿ

Total : _____

ಒಟ್ಟು

4. Farming experience (in years) :

ಈ. ಬೇಸಾಯದಲ್ಲಿ ಅನುಭವ (ವರ್ಷಗಳಲ್ಲಿ)

a. Since how many years are you engaged in agriculture?

1. ಎಷ್ಟು ವರ್ಷಗಳಿಂದ ಬೇಸಾಯದಲ್ಲಿ ನಿರತರಾಗಿದ್ದೀರಾ?

b. For how many years are you practicing groundnut *Kharif* cultivation?

2. ಎಷ್ಟು ವರ್ಷಗಳಿಂದ ಶೆಂಗಾ ಬೆಳೆಯಲ್ಲಿ ಬೆಳೆಯುತ್ತಿದ್ದೀರಾ? _____

5. Extension Contact How often do you contact the extension personnel?
ಉ. ವಿಸ್ತರಣಾ ಸಿಬ್ಬಂದಿಯೊಂದಿಗೆ ಭೇಟಿಯ ಪ್ರಮಾಣ

Sl. No. ಅ. ಸಂ.	Extension personnel ವಿಸ್ತರಣಾ ಸಿಬ್ಬಂದ್ದಿಯೊಂದಿಗ	Frequency of contact			
		Once in a week ವಾರಕ್ಕೆ ಒಮ್ಮೆ	Once fortnight 15 ದಿನಕ್ಕೆ ಒಮ್ಮೆ	When needed ಅವಶ್ಯಕತೆ ಇದ್ದಾಗ	Never ಎಂದೂ ಇಲ್ಲ
	1. AAO 1. ಸಹಾಯಕ ಕೃಷಿ ಅಧಿಕಾರಿ				
	2. AO 2. ಕೃಷಿ ಅಧಿಕಾರಿ				
	3. University scientists 3. ವಿಶ್ವವಿದ್ಯಾಲಯದ ವಿಜ್ಞಾನಿಗಳು				
	4. Private company field staff 4. ಖಾಸಗಿ ಸಂಸ್ಥೆಗಳ ಸಿಬ್ಬಂದಿ				
	5. Others specify 5. ಇತರೆ a. ಅ) b. ಬ)				

6. Mass media utilization

Please indicate which of the following sources you have used for getting information about groundnut production technology and how often
ಊ. ಸಮೂಹ ಮಾಧ್ಯಮಗಳ ಬಳಕೆ

ಈ ಕೆಳಗಿನ ಯಾವ ಮೂಲಗಳ ಮೂಖಾಂತರ ನೀವು (ನೆಲಗಡಲೆ) ಶೇಂಗಾ ಉತ್ಪಾದನಾ ತಂತ್ರಜ್ಞಾನದ ಬಗ್ಗೆ ತಿಳಿದುಕೊಂಡಿರಿ ದಯವಿಟ್ಟು ತಿಳಿಸಿ

Sl. No ಅ ಸಂ	Mass media sources ಸಮೂಹ ಮಾಧ್ಯಮ	Subscriber/ owner ಚಂದಾದಾರ/ ಮಾಲೀಕ		Programmes/ articles ಕಾರ್ಯಕ್ರಮಗಳು/ ಲೇಖನಗಳು	Frequency of use ಉಪಯೋಗದ ವಿವರಗಳು		
		Yes ಹೌದು	No ಇಲ್ಲ		Regular ನಿಯಮಿತ	Occasional ಅನಿಯಮಿತ	Never ಇಲ್ಲ
1	News-paper ವಾರ್ತಾಪತ್ರಿಕೆ			Agricultural articles ಕೃಷಿ ಸಂಬಂದಿತ ಲೇಖನಗಳು			

				Information /News ಮಾಹಿತಿ/ ವಾರ್ತೆ			
				Recreational articles ಮನರಂಜನಾ ಲೇಖನಗಳು			
2	Farm Magazine ಕೃಷಿ ಪತ್ರಿಕೆ			Agricultural articles ಕೃಷಿ ಸಂಬಂದಿತ ಲೇಖನಗಳು			
				Information /News ಮಾಹಿತಿ/ ವಾರ್ತೆ			
				Recreational articles ಮನರಂಜನಾ ಲೇಖನಗಳು			

3	ರೇಡಿಯೋ (ಆಕಾಶವಾಣಿ)			Agricultural Programmes ಕೃಷಿ ಸಂಬಂದಿತ ಕಾರ್ಯಕ್ರಮ			
				Information News ಮಾಹಿತಿ/ ವಾರ್ತೆ			
				Entertainment ಮನರಂಜನಾ ಕಾರ್ಯಕ್ರಮ			
4	ದೂರದರ್ಶನ			Agricultural Programmes ಕೃಷಿ ಸಂಬಂದಿತ ಕಾರ್ಯಕ್ರಮ			
				Information News ಮಾಹಿತಿ/ ವಾರ್ತೆ			
				Entertainment ಮನರಂಜನಾ ಕಾರ್ಯಕ್ರಮ			

7. Cosmopoliteness

ಋ. ಪಟ್ಟಣ ಸಂಪರ್ಕ

a. Please indicate the number of times, you visit the nearest town:

ಅ) ನೀವು ಪಟ್ಟಣಕ್ಕೆ ಭೇಟಿ ಕೊಡುವ ವಿವರಗಳನ್ನು ತಿಳಿಸಿ:

1	Twice per week ವಾರಕ್ಕೆ ಎರಡು ಬಾರಿ	2	Once per week ವಾರಕ್ಕೆ ಒಂದು ಬಾರಿ
3	Once in a fortnight 15 ದಿನಗಳಿಗೊಮ್ಮೆ	4	Once in a month ತಿಂಗಳಿಗೊಮ್ಮೆ
5	Seldom ಯಾವಾಗಲದರೊಮ್ಮೆ	6	Never ಎಚೆದೂ ಇಲ್ಲ

b. What generally would be the main purpose of visit?

ಅ) ಸಾಮಾನ್ಯವಾಗಿ ಪಟ್ಟಣಕ್ಕೆ ಭೇಟಿ ನೀಡುವ ಮುಖ್ಯ ಉದ್ದೇಶವೇನು?

1	All relating to agriculture ಸಂಪೂರ್ಣ ಕೃಷಿಗೆ ಸಂಬಂದಿಸಿದಂತೆ	2	Some relating to agriculture ಭಾಗಶಃ ಕೃಷಿಗೆ ಸಂಬಂದಿಸಿದಂತೆ
3	Entertainment ಮನರಂಜನೆಗಾಗಿ	4	Personal/ domestic ವೈಯ್ಯಕ್ತಿಕ/ ಗೃಹಸಂಬಂದಿ
5	Other ಇತರೆ ಕಾರಣಗಳಿಗಾಗಿ		

8. Cropping intensity:

ಋೂ. ಬೆಳೆ ಬೆಳೆಯುವ ಕ್ರಮ

Sl. No. ಅ. ಸಂ.	**Seasons** ಋತುಮಾನ	**Crops grown and the acreages** ಬಿತ್ತನೆ ಬೆಳೆ ಮತ್ತು ಎಕರೆಗಳಲ್ಲಿ			
		Dry land ಮಳೆ ಆಶ್ರಿತ	**Acres** ಎಕರೆ	**Irrigated** ನೀರಾವರಿ	**Acres** ಎಕರೆ
1	Kharif ಮುಂಗಾರು				
2	Rabi ಹಿಂಗಾರು				
3	Summer ಬೇಸಿಗೆ				

ಸಮಸ್ಯೆ ಎದುರಿಸುವಿಕೆ

ಅ ಸಂ.	ಹೇಳಿಕೆಗಳು	ಪ್ರತಿಕ್ರೀಯೆಗಳು				
		ಖಂಡಿತ ಒಪ್ಪುತ್ತೇನೆ	ಒಪ್ಪುತ್ತೇನೆ	ನಿರ್ಧಾರ ಇಲ್ಲ	ಖಂಡಿತ ಒಪ್ಪಿಗೆ ಇಲ್ಲ	ಒಪ್ಪಿಗೆ ಇಲ್ಲ
1	ರೈತರು ಅನೇಕ ಬೆಳೆಗಳನ್ನು ಬೆಳೆಯುವದರಿಂದ, ಒಂದು ಅಥವಾ ಎರಡು ಬೆಳೆಗಳನ್ನು ಬೆಳೆಯುವದರಲ್ಲಿರುವ ತೊಂದರೆಗಳಿಂದ ಪಾರಾಗಬಹುದು.					
2	ರೈತರು ದೊಡ್ಡದಾದ ಸಮಸ್ಯೆ ಎದುರಿಸಿ ಹೆಚ್ಚಾಗಿ ಲಾಭ ಪಡೆಯುವದಕಿಂತ ಬದಲಾಗಿ ಸಣ್ಣ ಸಣ್ಣ ಸಮಸ್ಯೆ ಎದುರಿಸಿ ಸಣ್ಣ ಸಣ್ಣ ಲಾಭ ಪಡೆಯುವದಲ್ಲಿ ಒಳಿತು.					
3	ರೈತನು ಹೆಚ್ಚಾಗಿ ತೊಂದರೆ ತೆಗೆದುಕೊಂಡರೆ, ಅವನು ಸರಾಸರಿ ರೈತನಿಗಿಂತ ಹಣಕಾಸಿನ ವ್ಯವಹಾರದಲ್ಲಿ ಲಾಭ ಗಳಿಸುತ್ತಾನೆ.					
4	ಯಶಸ್ವಿ ಖಂಡಿತ ಎನಿಸಿದಾಗ, ರೈತನು ತೊಂದರೆ ತೆಗೆದುಕೊಳ್ಳುವುದು ಒಳಿತಾಗಿರುತ್ತದೆ.					
5	ಇತರೆ ರೈತರು ಹೊಸ ವಿಧಾನಗಳನ್ನು ಅಳವಡಿಸಿಕೊಂಡು ಯಶಸ್ವಿಯಾಗುವತನಕ ರೈತ ಆ ವಿಧಾನವನ್ನು ಅಳವಡಿಸಿಕೊಳ್ಳದಿರುವದು ಒಳಿತೆನಿಸುತ್ತದೆ.					
6	ಸಂಪೂರ್ಣವಾಗಿ ಹೊಸ ಪದ್ಧತಿಗಳನ್ನು ಅಳವಡಿಸಿಕೊಳ್ಳುವದರಲ್ಲಿ ಅನೇಕ ತೊಂದರೆಗಳಿದ್ದರೂ ಸಹ ಅದು ಬೆಲೆಯುಳ್ಳದ್ದಾಗಿರುತ್ತದೆ.					

9. Innovative proneness

Please, indicate you response to following statements

ಎ. ಹೊಸ ವಿಧಾನಗಳಿಗೆ ಒಗ್ಗಿಕೊಳ್ಳುವಿಕೆ:
ಕೆಳಗಿನ ಹೇಳಿಕೆಗಳಿಗೆ ನಿಮ್ಮ ಪ್ರತಿಕ್ರಿಯೆಯನ್ನು ತಿಳಿಸಿ

Sl. No. ಅ. ಸಂ.	**Statements** ಹೇಳಿಕೆಗಳು	**Responses** ಪ್ರತಿಕ್ರೀಯೆಗಳು	
		Most like ಖಂಡಿತ ಒಪ್ಪುತ್ತೇನೆ	**Least like** ಒಪ್ಪುತ್ತೇನೆ
1–ಅ	I try to keep myself up to date with information on new farm practices but that does not mean that I try out all the new methods on my farm ನಾನು ಬೇಸಾಯದ ಹೊಸ ಕ್ರಮಗಳನ್ನು ಮರೆಯದೇ ತಿಳಿದುಕೊಳ್ಳುತ್ತೇನೆ ಆದರೆ, ನನ್ನ ಹೊಲದಲ್ಲಿ ಅವುಗಳನ್ನೆಲ್ಲ ಪ್ರಯೋಗಿಸುತ್ತೇನೆ ಅಂತ ಅಲ್ಲ		

ಬ	I feel restless till I try out a new farm practice, I have heard about ನಾನು ತಿಳಿದುಕೊಂಡ ಹೊಸ ವಿಧಾನಗಳನ್ನು ಅಳವಡಿಸುವ ವರೆಗೂ ನನಗೆ ಸಮಾಧಾನವೇ ಇರುವುದಿಲ್ಲ		
ಕ	They talk of many farm practices these days, but who knows if they are better than the old ones ಸಾಕಷ್ಟು ಹೊಸ ವಿಧಾನಗಳ ಬಗೆಗೆ ಮಾತನಾಡುತ್ತಾರೆ ಆದರೆ ಯಾರಿಗೆ ಗೊತ್ತು ಹೊಸ ವಿಧಾನಗಳು ಹಳೆಯ ವಿಧಾನಗಳಿಗಿಂತ ಉತ್ತಮ ಎಂದು?		
2–ಅ	From time to time I have heard of several new farm practices and I have tried out most of them in the last few years ಸಮಯಕ್ಕೆ ಅನುಗುನವಾಗಿ ನಾನು ಕೇಳಿದ ಸಾಕಷ್ಟು ಹೊಸ ಬೇಸಾಯ ಕ್ರಮಗಳಲ್ಲಿ ಅನೇಕವುಗಳನ್ನು ಕಳೆದ 5 ವರ್ಷಗಳಲ್ಲಿ ನನ್ನ ಹೊಲದಲ್ಲಿ ಪ್ರಯೋಗಿಸಿದ್ದೇನೆ		

ಆ	I usually wait to see that what results my neighbors obtain before I try out the new farm practices. ನಾನು ಹೊಸ ವಿಧಾನಗಳನ್ನು ಅಳವಡಿಸುವ ಮೊದಲು ನನ್ನ ಸುತ್ತಲಿನ ರೈತರ ಫಲಿತಾಂಶಗಳನ್ನು ಅವಲೊಕಿಸುತ್ತೇನೆ		
ಇ	Some how I believe that traditional ways of farming are the best ಮೊದಲಿನ ಪರಂಪರಾಗತ ಬೇಸಾಯ ಕ್ರಮವೇ ಉತ್ತಮವೆಂದು ನಾನು ನಂಬುತ್ತೇನೆ		
3–ಅ	I am cautious about trying a new practice ಹೊಸ ಬೇಸಾಯ ಕ್ರಮಗಳನ್ನು ಅಳವಡಿಸುವ ಮೊದಲು ನಾನು ತುಂಬಾ ಎಚ್ಚರವಹಿಸುತ್ತೇನೆ		
ಆ	After all our fore-fathers were wise in their farming practices and I do not see any reason for changing these old methods ನಮ್ಮ ಮುತ್ತಾತನ ಕಾಲದಲ್ಲಿದ್ದ ಬೇಸಾಯ ಪದ್ದತಿಗಳೇ ಉತ್ತಮವಾಗಿವೆ, ಅವುಗಳನ್ನು ಬದಾಲಾಯಿಸಲು ನನಗೆ ಯಾವುದೇ ಕಾರಣ ಕಂಡುಬರುತ್ತಿಲ್ಲ		
ಇ	Often new farm practices are not successful, however, if they promising I would surely like to adopt them ಹೊಸ ಪದ್ಧತಿಗಳು ಫಲಪ್ರದವಾಗಿಲ್ಲ ಆದರೆ ಭರವಸೆ ಹುಟ್ಟಿದರೆ ನಾನು ಖಂಡಿತ ಅಳವಡಿಸಿಕೊಳ್ಳುತ್ತೇನೆ		

10. Risk orientation

Please, indicate your response to following statements

ಏ. ಸಮಸ್ಯೆಗಳನ್ನು ಎದುರಿಸುವಿಕೆ

Sl. No. ಅ ಸಂ.	Statements ಹೇಳಿಕೆಗಳು	Responses ಪ್ರತಿಕ್ರೀಯೆಗಳು				
		SA ಖಂಡಿತ ಒಪ್ಪುತ್ತೇನೆ	A ಒಪ್ಪುತ್ತೇನೆ	UD ನಿರ್ಧಾರ ಇಲ್ಲ	DA ಖಂಡಿತ ಒಪ್ಪಿಗೆ ಇಲ್ಲ	SDA ಒಪ್ಪಿಗೆ ಇಲ್ಲ
1	A farmer should grow large number of crops to avoid greater risks involved in growing one or two corps ರೈತ ಅನೇಕ ಬೆಳೆಗಳನ್ನು ಬೆಳೆಯುವುದರಿಂದ, ಒಂದೇ ಬೆಳೆಯನ್ನು ಬೆಳೆಯುವುದರಲ್ಲಿರುವ ತೊಂದರೆಯಿಂದ ಪಾರಾಗಬಹ್ಯದು					
2	A farmer should rather take more of a chance in making a big profit than to be content with a smaller but less risky profits ರೈತ ಸಣ್ಣ ಆದರೆ ಕಡಿಮೆ ಸಮಸ್ಯೆಯ					
3	A farmer who is willing to take greater risks than the average formers usually does better financially ಯಾವ ರೈತ ಹೆಚ್ಚು ಸಮಸ್ಯೆಗಳನ್ನು ನಿಭಾಯಸುತ್ತಾನೆ ಅವನು ಸರಾಸರಿ ರೈತರಿಗಿಂತ ಹೆಚ್ಚು ಲಾಭ ಗಳಿಸುತ್ತಾನೆ					
4	It is good for a farmer to take risk when he knows his change of success is fairly high ಲಾಭಗಳಿಸುವ ಅಂಶ ಹೆಚ್ಚಾಗಿ ಕಂಡುಬಂದಲ್ಲಿ ಸಮಸ್ಯೆಗಳನ್ನು ಎದುರಿಸಲು ಸಿದ್ದರಾಗುವುದು ಒಳ್ಳೆಯದು					
5	It is better for a farmer not to try new farming methods unless most of the other farmers have used them with success ಈಗಾಗಲೇ ಹೊಸ ವಿಧಾನಗಳನ್ನು ಅಳವಡಿಸಿಕೊಂಡು ಯಶಸ್ವಿಯಾದ ರೈತರ ಬಗ್ಗೆ ತಿಳಿದುಕೊಳ್ಳುವುದು ಒಳ್ಳೆಯದು					
6	Trying an entirely new method in farming by a farmer involves risks					

	but it is worthy ಸಂಪೂರ್ಣವಾಗಿ ಹೊಸ ಪದ್ಧತಿಗಳನ್ನು ಅಳವಡಿಸಿಕೊಳ್ಳುವಲ್ಲಿ ಅನೇಕ ತೊಂದರೆಗಳನ್ನು ಎದುರಿಸಬೇಕಾದರೂ ಸಹ ಅದು ಒಳ್ಳೆಯದು.					

SA-Strongly agree, A-Agree, UD-Undecided, DA- Disagree, SDA- Strongly disagree
ಖ ಒ–ನಿ ಖಂಡಿತ ಒಪ್ಪುತ್ತೇನೆ ಒ–ಒಪ್ಪುತ್ತೇನೆ ನಿ ಇ–ನಿರ್ಧಾರ ಇಲ್ಲ ಖ. ವ. ಇ – ಖಂಡಿತ ಒಪ್ಪಿಗೆ ಇಲ್ಲ ಒ. ಇ–ಒಪ್ಪಿಗೆ ಇಲ್ಲ

11. Details of demonstration
ಐ. ಪ್ರಾತ್ಯಕ್ಷಿಕೆಯ ವಿವರಗಳು

1. For Demonstrator Farmers
1. ಪ್ರಾತ್ಯಕ್ಷಿಕೆ ಕೈಗೊಂಡ ರೈತ

a. Period of demonstration : _____

ಅ. ಪ್ರಾತ್ಯಕ್ಷಿಕೆ ಅವಧಿ

b. Technology demonstrated : _____

ಆ. ತಂತ್ರಜ್ಞಾನ ನಿರೂಪಣೆ

c. Critical input supplied :

ಇ. ಪ್ರಾತ್ಯಕ್ಷಿಕೆ ತಂತ್ರಜ್ಞಾನ

1.
2.
3.

d. Important learnings from the demonstration:
ಈ. ಪ್ರಾತ್ಯಕ್ಷಿಕೆಯಿಂದ ಕಲಿತ ಮುಖ್ಯ ವಿಷಯಗಳು

1
2
3

2. For fellow farmers: (Please indicate your response)
2. ಸಾಮಾನ್ಯ ರೈತರಿಗಾಗಿ

1. Were you aware of the demonstration? Yes/ No

1. ನಿಮಗೆ ಪ್ರಾತ್ಯಕ್ಷಿಗೆಗಳ ನಿರೂಪಣೆಯ ಬಗೆಗೆ ತಿಳುವಳಿಕೆ ಇತ್ತೇ? ಹೌದು/ಇಲ್ಲ

2. Did you visit the demonstration field? Yes / No

2. ಪ್ರಾತ್ಯಕ್ಷಿಕ ತಾಕುಗಳಿಗೆ ನೀವು ಭೇಟಿ ನೀಡಿದ್ದೀರಾ? ಹೌದು/ಇಲ್ಲ

3. Did you attend any field days? Yes / No

3. ನೀವು ಯಾವುದಾದರೂ ಕ್ಷೇತ್ರೋತ್ಸವಕ್ಕೆ ಭೇಟಿ ನೀಡಿದ್ದೀರಾ? ಹೌದು/ಇಲ್ಲ

4. Did you learn anything from the demonstration?

If yes, what did you gain from it?

4. ಪ್ರಾತ್ಯಕ್ಷಿಕೆಗಳಿಂದ ನೀವೇನಾದರೂ ತಿಳಿದುಕೊಂಡಿದ್ದೀರಾ?

ಹೌದು ಎಂದಾದರೆ ನಿಮಗೆ ಆದ ಲಾಭವೇನು?

	Knowledge **ಜ್ಞಾನ/ ಅರಿವು**		**Skill ಕೌಶಲ್ಯ**
1		1	
2		2	
3		3	
4		4	

Part-B
ಭಾಗ–2

Adoption Pattern of Groundnut *(Kharif)* by the Farmers
ಮುಂಗಾರು ಶೇಂಗಾ ಬೆಳೆಯ ಸುಧಾರಿತ ಬೇಸಾಯ ಪದ್ಧತಿಗಳ ಅಳವಡಿಕೆ

Sl. No. ಅ ಸಂ.	Practices ಅಳವಡಿಕಾ ಪದ್ಧತಿ	Details of use/ adoption (specify) ಅಳವಡಿಕೆ/ ಉಪಯೋಗ	Since when ಎಂದಿನಿಂದ	Reason for non adoption/ deviations ಕಾರಣಗಳು ಅಳವಡಿಸಲು/ ಅಳವಡಿಸದಿರಲು
1	**Variety** **I. Bunch type** a. GBPD –4 b. JL-24 c. TMV-2 d. DH 3-30 e. MUTANT-3 **II. Spreading type** a. DSG-I **ತಳಿ** **1. ಗೆಜ್ಜೆ ಶೇಂಗಾ** 1. ಜಿಬಿಪಿಡಿ – 4 2. ಜೆ ಎಲ್ – 24 3. ಟಿ ಎಮ್ ವಿ – 2 4. ಡಿ ಹೆಚ್ – 3–30 5. ಮ್ಯುಟಂಟ್ – 3 **2. ಬಳ್ಳಿ ಶೇಂಗಾ** 1. ಡಿಎಸ್‌ಜಿ –1			
2	**Seed rate** a. 150 kg/ha (JL- 24, DH 3-30) b. 75 kg/ha (DSG-1) c. 125 kg/ha (GBPD-4, MUTANT-3, TMV-2) **ಬೀಜಗಳ ಪ್ರಮಾಣ** 1. 150 ಕೆಜಿ/ಹೆ (ಜೆ ಎಲ್–24, ಡಿ ಹೆದ್ 3–30) 2. 75 ಕೆಜಿ/ಹೆ (ಡಿ ಎಸ್ ಜಿ –1) 3. 125 ಕೆಜಿ/ಹೆ (ಜಿ ಜಿ ಪಿ ಡಿ –4, ಮ್ಯುಟಾಂಟ್ –3, ಟಿ ಎಮ್ ವಿ –2)			
3	**Seed treatment** a. Captan (2gm/kg seed) b. Thiram (2gm/kg seed) c. Carboxyn (2gm/kg seed) d. Trichoderma (4gm/kg seed)			

	ಬೀಜೋಪಚಾರ 1. ಕ್ಯಾಪ್ಟನ್ (2ಗ್ರಾಂ/ಕೆಜಿ ಬೀಜ) 2. ಥೈರಮ್ (2ಗ್ರಾಂ/ಕೆಜಿ ಬೀಜ) 3. ಕಾರ್ಬಾಕ್ಸಿನ್ (2ಗ್ರಾಂ/ಕೆಜಿ ಬೀಜ)			
4	**Sowing time** a. June starting (GPBD-4, MUTANT-3, JL- 24, TMV-2, DH 3- 30) b. July starting (DSG-1) **ಬಿತ್ತನೆ ಸಮಯ** 1. ಜೂನ ಆರಂಭ (ಜಿ ಬಿ ಪಿ ಡಿ–4, ಮ್ಯುಟಾಂಟ್–3, ಜೆ ಎಲ್–24, ಟಿ ಎಮ್ ವಿ –2) 2. ಜುಲೈ ಆರಂಭ (ಡಿ ಎಸ್ ಜಿ – 1)			
5	**Spacing** a. 30*10 cm (bunch type) b. 45*10 cm (spreading type) **ಅಂತರ** ಗೆಜ್ಜೆ – 30/10 ಸೆ. ಮಿ ಬಳ್ಳಿ – 45/10 ಸೆ. ಮಿ			

6	**Nutrient Management (Per ha)** a. FYM (7.5 tonnes) b. Vermicompost (1ton) c. Rhizobium (2.5 kg) d. Phosphorus solubilising bacteria (2.5 kg) e. N:P:K (25:50:25kg) f. Gypsum (500 kg) g. Lime sulphate (25kg) h. Copper sulphate (25kg) **ಪೋಷಕಾಂಶಗಳು ನಿರ್ವಹಣೆ/ ಪ್ರತಿ ಹೆ.** ಅ. ಎಫ್ ವಾಯ್ ಎಮ್ (7.5 ಟನ್) ಆ. ಎರೆಹುಳು ಗೊಬ್ಬರ (1 ಟನ್) ಇ. ರೈಝೋಬಿಯಂ (2.5 ಕೆಜಿ) ಈ. ಫಾಸ್ಪರಸ್ ಸಾಲ್ಯೂಬ್ಲೈಸಿಂಗ್ ಬ್ಯಾಕ್ಟೀರಿಯಾ (2.5 ಕೆಜಿ) ಉ. ಎನ್:ಪಿ:ಕೆ (25:50:25 ಕಜಿ) ಊ. ಜಿಪ್ಸಮ್ (500 ಕೆಜಿ) ಋ. ಲೈಮ್ ಸಲ್ಫೇಟ್ (25 ಕೆಜಿ) ಋೂ. ಕಾಪರ್ ಸಲ್ಫೇಟ್ (25 ಕೆಜಿ)			

7. Plant protection measures
ಸಸ್ಯ ಸಂರಕ್ಷಣಾ ಕ್ರಮಗಳು

a. Pests:
ಅ. ಕೀಟಗಳು

Sl. No. ಅ ಸಂ	Pests observed ಕೀಟದ ಹೆಸರು	Stage of infestation ಸೊಂಕು ತಗಲುವ ಹಂತ	Control measures ನಿಯಂತ್ರಣಾ ಕ್ರಮಗಳು		
			Chemical used ಉಪಯೋಗಿಸಿದ ರಾಸಾಯನಿಕಗಳು	Dosage ಪ್ರಮಾಣ	Frequency ಎಷ್ಟು ಸಲ

b. Diseases
ಆ. ರೋಗಗಳು

Sl. No. ಅ ಸಂ.	Diseases observed ರೋಗದ ಹೆಸರು	Stage of infection ಸೊಂಕು ತಗಲುವ ಹಂತ	Control measures taken ನಿಯಂತ್ರಣಾ ಕ್ರಮಗಳು		
			Chemical used ಉಪಯೋಗಿಸಿದ ರಾಸಾಯನಿಕಗಳು	Dosage ಪ್ರಮಾಣ	Frequency ಎಷ್ಟು ಸಲ

8. Yield (per acre)
ಇ. ಇಳುವರಿ (ಪ್ರತಿ ಎಕರೆಗೆ)

Year ವರ್ಷ	Pod ಕಾಯಿ	Kernel ಕಾಳು	Fodder ಮೇವು
2007-08			
2008-09			

Part-C
ಭಾಗ 3

Problems encountered in a adoption of improved cultivation practices of groundnut

ಶೇಂಗಾ ಬೆಳೆಯ ಸುಧಾರಿತ ಬೇಸಾಯ ಕ್ರಮಗಳನ್ನು ಅಳವಡಿಸಿಕೊಳ್ಳುವಲ್ಲಿ ಎದುರಾದ ಸಮಸ್ಯೆಗಳು

I. Technical problems
1. ತಾಂತ್ರಿಕ ಸಮಸ್ಯೆಗಳು

1. 2. 3.

II. Problems related to the inputs
2. ಪರಿಸರ ಸಂಬಂಧಿತ ಸಮಸ್ಯೆಗಳು

1. 2. 3.

III. Financial problems
3. ಆರ್ಥಿಕ ಸಮಸ್ಯೆಗಳು

1. 2. 3.

IV. Marketing problems
4. ಮಾರಾಟ ಸಮಸ್ಯೆಗಳು

1. 2. 3.

V. General problems
5. ಸಾಮಾನ್ಯ ಸಮಸ್ಯೆಗಳು

1. 2. 3.

ADOPTION GAP IN GROUNDNUT PRODUCTION IN NORTHERN TRANSITION ZONE OF KARNATAKA

WONDANGBENI KIKON 2010 Dr. J. G. ANGADI
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ABSTRACT

A study on adoption gap in groundnut production in Northern Transition Zone was carried out during the year 2009-2010. Thirty demonstrator farmers and sixty fellow farmers formed the sample for the study. The data was elicited through the personal interview method.

The overall adoption gap for demonstrator farmers was to the tune of 41.55 per cent and for the fellow farmers it was 79.90 per cent. The yield gap on the demonstration fields was 23.96 per cent while it was 59.15 per cent between demonstrator and farmers fields. Both the adoption and yield gaps were found to be significantly different between the demonstrator and fellow farmers. Cent per cent of the demonstrator farmers had not adopted recommended Copper Sulphate application. All the fellow farmers had not adopted recommended practices such as application of rhizobium, phosphorus solubilising bacteria, lime sulphate and copper sulphate, control of pest (Spodoptera) and diseases like damping off, fungal neck rot and leaf spot.

Education, farming experience, extension contact, mass media utilization, cosmopoliteness, cropping intensity and innovative proneness were negatively and significantly related to adoption gap of demonstrator as well as fellow farmers while age was positively and significantly related to their adoption gaps. Landholding had significant relationship with the adoption gap of fellow farmers. All the independent variables explained 91.90 per cent and 79.20 per cent of variation in the adoption gaps for the demonstrator and fellow farmers respectively.

High cost of chemicals and fertilizers (96.67%) and price fluctuation (86.67%) were the major constraints in adoption of recommended cultivation practices of groundnut.