NEW AGRICULTURAL TECHNOLOGY IN CHITTOOR DISTRICT OF ANDHRA PRADESH

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ABSTRACT

The ways in which technologies are employed and made use of are different across countries. The different policies and concerns regarding the accomplishment of sustainable agriculture have resulted in the range of slants and levels at which they are put into operation. Market signals, voluntary co-operative industry-led attitudes guide the development, distribution and adoption of technologies in some countries. There has been large emphasis on the government intervention. Such government involvement ranges from an assisting to a compulsory role, and includes direct funding for research, payments for distribution and implementation, legal restraints, information and support. Moreover, the overall framework of agricultural policies and the level of support are the primary factors in defining which technologies are accepted at which positions at the farm level. Demand of the farmers has led to an growth in the implementation of technologies. Farmers have continuously looked to new technologies as a way to drop the costs. This means that chi-square is systematic association between the above two variables at 99 % level of confidence. Hence it concludes that there is significant relationship range between annual income of the respondents and different divisions of Chittoor district. The correlation between overall satisfaction for implement of new agricultural technology and three factors was positive and was significant at the 0.01 level (2-tailed). For example, the correlation between overall satisfaction of new agricultural technology and New agricultural technology (Factor 1) was 0.172 (p=0.001); the correlation between overall satisfaction of new agricultural technology and adopting new mechanization (Factor 2) was 0.102 (p=0.054); and the correlation between overall satisfaction of new agricultural technology and easy operation (Factor 3) was 0.301 (p=0.000),. Therefore, the study indicated that the correlation between overall

satisfaction of new agricultural technology and easy operation was higher than that between overall satisfaction of new agricultural technology and new agricultural technology or adopting new mechanization.

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INTRODUCTION

Development in the agricultural growth is an indispensible aspect for leading to overall growth and development of the country. The reason being, this sector sustains livelihood of 65 per cent of the population. However, the involvement of agriculture towards Gross Domestic Product (GDP) is 14 per cent. Several revolutions in agriculture have taken place to boost the sector. These include, Green Revolution, Old time favourite Revolution, Blue Revolution, White Revolution, Yellow Revolution, Bio-technology Revolution, Information and Communications Technologies (ICT) Revolution. In order to increase productivity, it is important to make use of technologies and what is compulsory is the delay of these developed systems. Agriculture extension lead that has been combined with arrangement is regarded as the key feature towards agricultural growth. Involvement of the private sector would help in the interest of technologies in this sector in a rapid way.

Factors relating to adoption of technologies have the possible to contribute to the supportable farming systems. It is a wide-ranging perception and is artificial by the development, circulation and application at the farm level of the present and new biological, chemical and power-driven techniques, all of which are merged in farm capital and other inputs. The implementation of technologies for maintainable farming systems and other agricultural practices is a challenging and a vigorous issue for the farmers, postponement services, crop growing business and policy makers. The agricultural sector needs to employ a wide range of changing technologies and farm put into practise across many not the same farming systems and arrangements to meet a diversity of changing and varied demands from consumers and the public for food, fibre and other goods and services that are as long as. Quite often unclear outcomes in terms of their personal property on sustainability are portrayed. The farmers and the agricultural labourers need to acquire adequate sympathetic of how to make use of technology to profit production. The procedure of trade liberalization is enlargement the sources of supply and the degree of opposition. The varying demands are reproduced in policies and are powerfully communicated to the farmers by the media, weight groups, food vendors and processors.

OBJECTIVE

1. To study the socio-economic conditions of the sample respondents in the study area.
2. To study the implement of the new agriculture technology in the study area.

SAMPLE DESIGN

For the purpose of present study, 360 sample respondents from Chittoor District were selected. Of this, the three Revenue divisions I.e., Madanapalli, Tirupati and Chittoor divisions have been selected for this study, 120 sample respondents from each division for this study. Thus the total sample size was 360. The sample respondents have been selected regularly by perceiving to the simple random sampling. In this study primary data were collected from directly respondents by the Schedules.

Age Composition

The age composition of a population is a good indicator of the type of population under study. The age of the members of family plays an important role in the adoption of agricultural technology i.e., young generation are more motivated towards new technology as compared to old.

Table-1
Age-wise analysis of the Sample Households in the study area

S. No.	Age	Madanapalli	Tirupati	Chittoor	Total
1	Below - 25 Years	44 (36.7)	64 (53.3)	39 (32.5)	147 (40.8)
2	26 - 35 Years	60 (50.0)	44 (36.7)	81 (67.5)	185 (51.4)
3	36 - 50 Years	16 (13.3)	12 (10.0)	0 (.0)	28 (7.8)
Total		**120 (100.0)**	**120 (100.0)**	**120 (100.0)**	**360 (100.0)**
Chi-square		$\chi 2$: **33.168; df= 4; p=0.000**; TV = 13.27** Sig. at 0.01 Level			

Source: Primary Data.
Note : Figures in parentheses indicate percentages to the total number of respondents.

Table-1 presents the age specific distribution of the sample farmers which indicates a young age structure and developing or growing population by comprising 51.4% of the population who are assembled in the age group between 26-35 years. As regard to the age distribution in the range below- 26 years, the percentage shows 40.8 per cent respectively. In the age range between 36 to 50 years, the percentage is 7.8% to the total sample respondents who indicate a high mortality or low survival to old age. High fertility, lack of old age care, improper nutrition and low level of socio-economic conditions of sample farmers may be attributed for this state of age composition. The reason behind the low adoption of technology is that there are majority of sample respondents

belongs to age group of 26-35 years. From the chi-square output value we see that significance level 99 % has been achieved. This means that chi-square table is showing systematic association between the above two variables at 99 % level of confidence. Hence it concludes that there is significant relationship between Age wise respondents and different divisions of Chittoor district.

CASTE OF THE RESPONDENTS

Castes are not only unequal to each other in ritual terms; they are also supposed to be complementary and non-competing groups. In other words, each caste has its own place in the system which cannot be taken by any other caste. Since caste is also linked with occupation, the system functions as the social division of labour, except that, in principle, it allows no mobility. Not surprisingly, it was in the cultural and domestic spheres that caste has proved strongest. Endogamy, or the practice of marrying within the caste, remained largely unaffected by modernization and change. For study purpose social status of respondents is classified into three Caste-groups: Scheduled Castes and Scheduled Tribes, Other Backward Castes and General.\

Caste-wise distribution of the respondents in Rayalaseema region of Andhra Pradesh is shown in table-2. It is found in various studies that majority of the members of the self-help groups are from different castes. The present study consists of about 120(33.3 per cent) OC category respondents, followed by nearly 120(33.3 per cent) BC category respondents, 72(20.0 per cent) SC category respondents and 48(13.3 per cent) ST category respondents. From the chi-square production value it can be noticed that significance level 99 % had been achieved. This shows that chi-square table was showing methodical association between the above two variables at 99 % level of self-confidence. Hence it is concluded that there was a significant relationship between Caste wise respondents and different divisions of Chittoor district.

Table-2
Caste wise Analysis of the sample respondents in the study Area

S. No.	Caste	Madanapalli	Tirupati	Chittoor	Total
1	OC	40 (33.3)	40 (33.3)	40 (33.3)	120 (33.3)
2	BC	40 (33.3)	40 (33.3)	40 (33.3)	120 (33.3)
3	SC	24 (20.0)	24 (20.0)	24 (20.0)	72 (20.0)
4	ST	16 (13.3)	16 (13.3)	16 (13.3)	48 (13.3)
Total		**120 (100.0)**	**120 (100.0)**	**120 (100.0)**	**360 (100.0)**
Chi-square		**χ2 : 0.000; df= 6; p=1.000; TV = 12.59** **Sig. at 0.01 Level**			

Source: Primary Data.

 Note: Figures in parentheses indicate percentages to the total number of respondents.

Table-3
Occupational background of the sample respondents

S. No.	Occupational Background	Madanapalli	Tirupati	Chittoor	Total
1	Agricultural	56 (46.7)	60 (50.0)	58 (48.3)	174 (48.3)
2	Agricultural Labour	52 (43.3)	48 (40.0)	44 (36.7)	144 (40.0)
3	Non-Agricultural	12 (10.0)	12 (10.0)	18 (15.0)	42 (11.7)
Total		**120 (100.0)**	**120 (100.0)**	**120 (100.0)**	**360 (100.0)**
Chi-square		$\chi2$: **2.519; df= 4; p=0.641**[@]**; TV = 13.27** Not Sig			

Source: Primary Data.

Note: Figures in parentheses indicate percentages to the total number of respondents.

Occupational classification of the farmer respondents of the present study is shown in the table-3. In the Madanapalli Revenue Division, agricultural is the main source for the major groups i.e. 56 (46.7 per cent), followed by those as agricultural Labourers 52 (43.3 per cent) and the remaining 12(10.0 per cent) of the respondents belonging to non-agricultural groups respectively. In the Tirupati Revenue Division, agricultural is the main source for the major groups i.e, 60 (50.0 per cent), followed by those as agricultural Labourers 48 (40.0 per cent) and the remaining 12(10.0 per cent) of the respondents belonged to non-agricultural activity. In the Chittoor Revenue Division, agricultural is the main source for the major groups i.e, 58 (48.3 per cent), followed by those as agricultural Labourers 44 (36.7per cent) and the remaining 18(15.0 per cent) of the respondents belonged to non-agricultural activity. The result revealed $\chi2$ value: 2.519 and sig = 0.641 which is greater than 0.05 (even at less level of confidence) which indicates that there was no significant difference among the variables.

LAND HOLDINGS

The size of the landholdings decisively affects the income from agricultural. The farming of certain size under certain conditions yields the best results and gives the maximum returns to the farmer. Since agricultural is the main occupation for the majority of the sample respondents the pattern of land holdings influences considerably

on the economic conditions of the sample respondents. The data pertaining to the size of land holdings of the sample respondents is presented in table-4

Table-4
Land holdings of the sample respondents

S. No.	Own Land Holdings	Madanapalli	Tirupati	Chittoor	Total
1	Below 2.5 Acres	60 (50.0)	56 (46.7)	49 (40.8)	165 (45.8)
2	2.6 - 5 Acres	36 (30.0)	48 (40.0)	35 (29.2)	119 (33.1)
3	5.1 Acres and above	24 (20.0)	16 (13.3)	36 (30.0)	76 (21.1)
Total		**120 (100.0)**	**120 (100.0)**	**120 (100.0)**	**360 (100.0)**
Chi-square		$\chi2$: 11.766; df= 4; p=0.019*; TV = 13.27 Sig at 0.01 level;			

Source: Primary Data.
Note: Figures in parentheses indicate percentages to the total number of respondents.

In the above table-4, it is found that among the sample respondents 60 (50.0 per cent) owned land below 2.5 Acers, 36 (30.0 per cent) owned land between 2.6 to 5 acres and the remaining 24 (20.0 per cent) owned land 5.1 Acers and above in Madanapalli.

In the Tirupati revenue division of the sample respondents 56 (46.7 per cent) owned land below 2.5 Acers, 48 (40.0 per cent) owned land between 2.6 to 5 acres and the remaining 16 (13.3 per cent) owned land 5.1 Acers and above.

In the Chittoor revenue division of the sample respondents 49 (40.8 per cent) owned land below 2.5 Acers, 35 (29.2 per cent) owned land between 2.6 to 5 acres and the remaining 36 (30.0 per cent) owned land 5.1 Acers and above in Chittoor. The result of chi-square test shows $\chi2$ value = 11.766; and sig =0.019 which was less than 0.01 (at 99% level of confidence), which indicates that there was significant difference among the variables.

FARMING EXPERIENCE

The agricultural production is the most widespread livelihood strategy for most poor rural households in developing countries. Development agencies have focused on the broadcasting of improved agricultural technologies to enhance productivity. These technologies broadly include improved crop varieties, land management and agronomic practices. Development agencies and government programmes often provide farmers

with technical knowledge and skills regarding the application of these technologies. However, a number of factors influence the farmers' decision to adopt a certain technology. The determinants of technology adoption can be broadly categorized as resource endowments (for example, land, labour, livestock and farm equipment) market access (for example, credit and input and output markets) risk and uncertainty (for example, characteristic and covariate surprises) topographic factors (for example, slope, soil type and location) and intellectual capital accumulators (for example, education, experience and extension).

Table-5
Farming experience of the sample cultivators

S. No.	Farming Experience	Madanapalli	Tirupati	Chittoor	Total
1	Below 5 Years	40 (33.3)	72 (60.0)	58 (48.3)	170 (47.2)
2	6 - 10 Years	60 (50.0)	40 (33.3)	43 (35.8)	143 (39.7)
3	11 and above Years	20 (16.7)	8 (6.7)	19 (15.8)	47 (13.1)
Total		**120 (100.0)**	**120 (100.0)**	**120 (100.0)**	**360 (100.0)**
Chi-square		χ^2 : 19.623; df= 4; p=0.001*; TV = 13.27 Sig at 0.01 level;			

Source: Primary Data.

Note   : Figures in parentheses indicate percentages to the total number of respondents.

The farming size of the sample respondents is presented in the table-5. Out of the total respondents in Madanapalli Revenue Division, 40(33.3 per cent) of the Respondents had farming experience below 5 years, 60(50.0 per cent) of the respondents had farming experience between 6 to 10 years and the remaining 20(16.7 per cent) had farming experience of 11 and above years. In the Tirupati Revenue Division, 72(60.0 per cent) of the respondents had farming experience below 5 years, 40(33.3 per cent) of the respondents had farming experience between 6 to 10 years and the remaining 08(6.7 per cent) had farming experience of 11 and above years. In the Chittoor Revenue Division, 58(48.3 per cent) of the respondents had farming experience below 5 years, 43(35.8 per cent) of the respondents had farming experience between 6 to 10 years and the remaining 19(15.8 per cent) farming experience of 11 and above years. The result of chi-square test shows χ^2 value = 19.623; and sig =0.001 which was less than 0.01 (at 99% level of confidence), which indicates that there was significant difference among the variables.

COST OF INPUTS IN IRRIGATED WET CROPS

Availability of irrigation facilities, whatever may be the source, still depends on seasonal rainfall in many states of India. If rainfall is plenty, rivers and waterways tend to be full and canal irrigation flows may be adequate. Likewise, groundwater is recharged if rainfall is heavy and continuous. Many farmers in India still depend on rainfall directly for crop cultivation. Instances of irrigation facilities being damaged due to excess rainfall are also not rare. Consequently, irrigation water varies across seasons even within one agricultural year, which again influences the cultivation practices of paddy and other crops. The broad objective of this paper is to examine, using field survey data, the seasonal variation of irrigation facilities for cultivation, of paddy with special emphasis on summer paddy in Chittoor district of Andhra Pradesh. Specifically, the present paper addresses the following issues: (i) how the irrigation facilities mainly for paddy cultivation vary over three seasons of the agricultural year (ii) what the possible impact of this seasonality of irrigation is on the adoption/cultivation of paddy, both high-yielding varieties (HYV) and traditional varieties (TV), and their yields (iii) how the farmers are managing irrigation for summer paddy cultivation and (iv) what issues or strategies are to be addressed for paddy cultivation, mainly in summer.

Table-6 implies that the respondents preferred 1st rank to Rotavator, among the land preparation on irrigated wet crops and sowing followed by the assigned 2nd rank to power tiller, 3rd rank to leveler, 4th rank to damunagali, preferred their 5th rank to drum seeder, their 6th priority is to harrow, preferred cage wheels as their 7th option, opted disk harrow as 8th priority, and they preferred peddler as 9th option, and opted plate transplater as their last priority. In the same way the respondents in Madanapalli division assigned their 1st rank to Rotavator among the land preparation on irrigated wet crops and sowing followed by the assigned their 2nd rank to power tiller, 3rd preferred to leveler, 4th rank to damunagali, and they preferred drum seeder as their 5th priority, cage wheels as 6th option, opted their 7th rank to Harrow, assigned 8th rank to peddler, 9th rank to plate transplater, and they preferred lastly i.e.' 10th rank to disk harrow. Similarly Tirupati division respondents assigned their 1st rank to cage wheels, followed by Rotavator as 2nd option, assigned their 3rd rank to power tiller, 4th rank to drum seeder, 5th rank to harrow, and they preferred 6th rank to damunagali, 7th priority to leveler, 8th option to peddler, preferred disk harrow as their 9th priority, and they gave last prominence to plate transplater. It is obvious that Chittoor district respondents assigned their 1st rank to Rotavator, and assigned their 2nd rank to disk harrow, 3rd priority to weeding, 4th option to leveler, 5th rank to power tiller, they assigned their 6th rank to damunagali, 7th option to drum seeder, preferred plate transplater as their 8th option, peddler as their 9th option, and they gave their last priority to cage wheels

Table-6
Cost of Inputs used in Irrigated wet crops of the sample respondents in the study area

Land Preparation and sowing	Madanapalli			Tirupati			Chittoor			Grand Total		
	Amount Rs.	Weighted score	Rank	Amount Rs.	Weighted score	Rank	Amount Rs.	Weighted score	Rank	Amount Rs.	Weighted score	Rank
Peddler	76400	636.67	8	72400	603.33	8	74200	618.33	9	223000	619.44	9
Dammu nagali	138400	1153.33	4	113200	943.33	6	103700	864.17	6	355300	986.94	4
Rotavator	190400	1586.67	1	164800	1373.33	2	185100	1542.50	1	540300	1500.83	1
Power tiller	158200	1318.33	2	162400	1353.33	3	136600	1138.33	5	457200	1270.00	2
Cage wheels	87200	726.67	6	175200	1460.00	1	11700	97.50	10	274100	761.39	7
Leveller	140800	1173.33	3	93200	776.67	7	141400	1178.33	4	375400	1042.78	3
Harrow	84800	706.67	7	118400	986.67	5	142000	1183.33	3	345200	958.89	6
Disk harrow	56200	468.33	10	40000	333.33	9	151300	1260.83	2	247500	687.50	8
Plate transplater	60000	500.00	9	39600	330.00	10	76100	634.17	8	175700	488.06	10
Drum seeder	130000	1083.33	5	140000	1166.67	4	77700	647.50	7	347700	965.83	5
Weeding	88600	738.33	1	80800	673.33	2	74400	620.00	3	243800	677.22	

Source: Primary Data.
Note   : Figures in parentheses indicate percentages to the total number of respondents

ANNUAL INCOME

Income plays a significant role in determining the standard of living of the people. The income comprises of the income from cultivation of agriculture and various sources such as land property, house property, rearing of cattle's and other investment. In this study the concept of income consists of income from marketing of agricultural and products.

Table-7
Annual income of the sample respondents in the study area

S. No.	Annual income	Madanapalli	Tirupati	Chittoor	Total
1	Below 20000	52 (43.3)	60 (50.0)	47 (39.2)	159 (44.2)
2	20001 - 40000	44 (36.7)	44 (36.7)	69 (57.5)	157 (43.6)
3	40001 - 60000	24 (20.0)	16 (13.3)	4 (3.3)	44 (12.2)
4	60001 and above				
Total		120 (100.0)	120 (100.0)	120 (100.0)	360 (100.0)
Chi-square		χ2 : 23.403; df= 4; p=0.000**; TV = 13.27 Sig at 0.01 level;			

Source: Primary Data.
Note   : Figures in parentheses indicate percentages to the total number of respondents.

In the Madanapalli Revenue Division, 52(43.3 per cent)   respondents had an income of below Rs. 20000, 44(36.7 per cent) respondents had an income between Rs.20001 and 40000, 24(20.0 per cent) respondents have the income between Rs.40001 and 60000 above. In the Tirupati Revenue Division, 60(50.0 per cent)   respondents had an income of below Rs. 20000, 44(36.7 per cent) respondents had an income between Rs.20001 and 40000, 16(13.3 per cent) respondents had an income between Rs.40001 and 60000 above. In the Chittoor Revenue Division, 47(39.2 per cent)   respondents had an income of below Rs. 20000, 69(57.5 per cent) respondents had an income between Rs.20001 and 40000, 4(3.3 per cent) respondents had an income between Rs.40001 and 60000 above. From the chi-square output value we see that significance level 99 % has been achieved. This means that chi-square table is showing systematic association between the above two variables at 99 % level of confidence. Hence it concludes that there is significant relationship range between annual income of the respondents and different divisions of Chittoor district.

Correlation between Overall Satisfaction new agricultural technologies

Table-8

Correlation between Overall Satisfaction of implement of new agricultural technology and Three Factors

		Factor 1 (New Agricultural Technology)	Factor 2 (Adopting new Mechanization)	Factor 3 (Easy Operation)
Overall Satisfaction Implement of new agricultural Technology	Pearson Correlation	0.172**	0.102*	0.301**
	Sig. (2-tailed)	0.001	0.054	0.000
	N	360	360	360

Source: Primary Data.

Correlation is significant at the 0.05 Level (2-tailed) * P < 0.05 **P< 0.01

A correlation coefficient measured the strength of a linear between two variables. In the study, a correlation coefficient measured the strength of a linear between the overall satisfaction of the respondents and three factors (new agricultural technology, adopting new mechanization, and easy operation). The correlation between overall satisfaction for implement of new agricultural technology and three factors was positive and was significant at the 0.01 level (2-tailed). For example, the correlation between overall satisfaction of new agricultural technology and New agricultural technology (Factor 1) was 0.172 (p=0.001); the correlation between overall satisfaction of new agricultural technology and adopting new mechanization (Factor 2) was 0.102 (p=0.054); and the correlation between overall satisfaction of new agricultural technology and easy operation (Factor 3) was 0.301 (p=0.000), (Table no.). Therefore, the study indicated that the correlation between overall satisfaction of new agricultural technology and easy operation was higher than that between overall satisfaction of new agricultural technology and new agricultural technology or adopting new mechanization.

CONCLUSION

The factors relating to adoption of technologies have the possible to contribute to the supportable farming systems. It is a wide-ranging perception and is artificial by the development, circulation and application at the farm level of the present and new biological, chemical and power-driven techniques, all of which are merged in farm capital and other inputs. The implementation of technologies for maintainable farming systems and other agricultural practices is a challenging and a vigorous issue for the farmers, postponement services, crop growing business and policy makers. The chi-square production value it can be noticed that significance level 99 % had been achieved. This shows that chi-square table was showing methodical association between the above two variables at 99 % level of self-confidence. Hence it is concluded that there was a significant relationship between

Caste wise respondents and different divisions of Chittoor district. The result of chi-square test shows $\chi2$ value = 19.623; and sig =0.001 which was less than 0.01 (at 99% level of confidence), which indicates that there was significant difference among the variables. The chi-square output value we see that significance level 99 % has been achieved. This means that chi-square table is showing systematic association between the above two variables at 99 % level of confidence. Hence it concludes that there is significant relationship range between annual income of the respondents and different divisions of Chittoor district.

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