Available online at www.ijpab.com

DOI: http://dx.doi.org/10.18782/2320-7051.7123

ISSN: 2320 – 7051

Int. J. Pure App. Biosci. **6 (6):** 680-686 (2018)

Research Article

OPEN ACCESS

Factors Influencing Technology Adoption Gap of Improved Practices in Rice Production in Andhra Pradesh

Maddi Harshitha*, E.P.K. Das and B. Reena Rani

M.S.C. (A.g.) Extension, Assistant professor, M.S.C. (Agroforestry)

Agricultural Extension and Communication,

Sam Higginbottom University of Agriculture Technology and Sciences, Allahabad (U.P.), India

*Corresponding Author E-mail: harshitha.harshi.9999@gmail.com

Received: 15.11.2018 | Revised: 22.12.2018 | Accepted: 27.12.2018

ABSTRACT

The study entitled, "FACTORS INFLUENCING TECHNOLOGY ADOPTION GAP OF IMPROVED PRACTICES IN RICE PRODUCTION IN ANDHRA PRADESH" was purposively conducted in Chagallu mandal of west Godavari district in Andhra Pradesh. For present study, 150 farmers were selected from 6 villages by using N^{th} method of random sampling. The main objective to study the technological gap in paddy cultivation was as certained by using descriptive design .High gap was established in recommended technology such as of improved hybrid varieties, seed and seed treatment, nursery management, transplanting, IPM, INM, etc. The main reason behind existence of gap were unavailability of labours, costly seeds of improved hybrids varieties, lack of irrigation facilities, unequal distribution of rainfall, high cost of fertilizer and weedicides as experienced by majority of the paddy grower The results of the relational analysis revealed that the variables namely land holding, annual income, social participation, socio-economic status, scientific orientation, economic motivation and sources of information had significant influence on knowledge.

Key words: *Knowledge, Technology gap and Adoption gap.*

INTRODUCTION

Paddy is grown on 150 million hectares which is about 11 per cent of the worlds cultivated land, in 114 countries in major ecosystems, at altitudes ranging from more than 3000 meters mean sea level in Nepal and Bhutan to 3 meters below sea level in south Indian state of Kerala. In India, archaeological findings from However, the general consensus is that domestication of paddy took place independently in China, India and Indonesia, the Ganga valley, Koldihwah (Neolithic) site suggest that paddy cultivation dates bade to 5000 B.C. Ancient Indian scriptures, the 'Yajurveda', the 'Atharva Veda' and Smritis make mention about paddy as not just a cereal for consumption as food but also as sacred offering to the deities especially during religious and social functions. giving rise to Asia's three varietal groups Japonica, Indica and Javanica.

Cite this article: Harshitha, M., Das, E. P. K. and Reena Rani, B., Factors Influencing Technology Adoption Gap of Improved Practices in Rice Production in Andhra Pradesh, *Int. J. Pure App. Biosci.* **6(6):** 680-686 (2018). doi: http://dx.doi.org/10.18782/2320-7051.7123

When all developing countries are considered together, paddy (rice) provides 27 per cent of dietary energy supply and 20 per cent of dietary protein intake. Over 90 per cent of the world's paddy (rice) is produced and consumed in Asia with over 2 billion people obtaining 60 to 70 per cent of their energy intake from rice and rice products. Globally, the rice productivity has gone up by almost 2.4 times in over 50 years. India stands first in paddy area, over 40 million hectares and second in production. It almost tripled from 3.4 million tonnes (milled rice) in 1966 to record production of 93.3 million tonnes with average productivity being 2.08 tonnes per hectare in 2015-16. India's target is production of 106 million tonnes of rice by 2011 and 120-130 million tonnes by 2025. This call for an annual increase of 2.0 million tonnes coming primarily with enhancement in resource use efficiency and productivity. Paddy (*Oryzasativa*) is a staple crop and main source of income for millions of people in the world, and is grown in all the continents of universe. It is India's most important food crop being grown on 45 million hectares of land with an annual production of 76 million tonnes.

Therefore, the present "technology adoption gap in paddy in west Godavari district in Andhra Pradesh" was planned with the following specific objectives.

To ascertain the personal, socio-economic, and psychological characteristics of the paddy growers

To determine the extent of adoption of improved paddy production technology To assess the extent of technological gap between recommended and actually adopted technologies by paddy

MATERIAL AND METHODS

The present study was carried out in Chagallu in West godavari district of Andhra Pradesh state as this is one of the major paddy growing area of west godavari district. The use of descriptive design of social research was used in the present investigation. There are 13 districts in Andhra Pradesh state. Out of these west Godavari district of Andhra Pradesh has been selected purposively for the present study, as paddy cultivation is prevalent there. There are 47 mandals in west Godavari district. out of 47 mandals in west Godavari district, selection of chagallu mandal is selected purposively as maximum number of paddy growers are available there. There are 11 villages in the chagallu mandal out of these only 6 villages 25 respondents were selected randomly from each of the selected village. Thus total number of respondents was 150. i.e., unagatla, muppavaram, kalavalapalle, nelaturu, bhramanagudem, chagallu field areas were selected purposively for the present study as maximum number of paddy growers are available there.

RESULTS AND DISCUSSION

Technological gap in respect of recommended cultivation practices of paddy crop

The Technological gap in respect of recommended cultivation practices of paddy crop was studied and the data have been given in *table 1*.

Table 1: Distribution of respondents according to their practice wise extent of level of technology gap adoption about recommended package of practices (n=150)

S. No.	Recommended practices of paddy	Respondents (n=150)					
		Fully adopted		Partially adopted		Non adopted	
		F	%	F	%	F	%
A	**Preparatory tillage**						
1	Time of first ploughing (immediate after harrowing of previous crop)	42	28.00	90	60.00	18	12.00
2	Collection and burning of stubbles	14	9.33	72	48.00	64	42.67
3	Time for second ploughing (two-cross ploughing)	20	13.33	36	24.00	94	62.67
4	Recommended dose of manure (FYM) 25-30 Cart load/ha.	14	9.33	86	57.33	50	33.33

B	**Recommended varieties**						
5	Short duration varieties (MTU-1010 MTU-1156)	11	7.33	55	36.67	84	56.00
6	Medium duration varieties (MTU-1121)	10	6.67	53.	35.33	870	58.00
7	Long duration varieties (MTU-1026)	6	4.00	23	15.33	121	80.67
8	Hybrids varieties (MTU-1187,BPT-5204)	1	0.67	2	1.36	147	98.00
C	**Seed and seed treatment**						
10	Seed rate of paddy (35 to 40 Kg/ha.)	14	9.33	93	62.00	43	28.67
11	Salt solution (3% brine solution)	2	1.33	10	6.67	38	92.00
12	Chemical treatment (3 g thirum /kg seed)	0	0.00	8	5.33	142	94.67
D	**Nursery management**						
13	Size of raised bed preparation	25	16.66	51	34.00	74	49.33
14	Recommended dose of manure and fertilizer for raised bed(300 Kg FYM and 1 KgUrea+10 Kg Phorate)	13	8.67	47	31.33	90	60.00
15	Spacing on raised bed (7-8 x 1-2 cm)	19	12.67	14	9.33	117	78.00
16	Time of sowing in raised bed (June-July)	40	26.67	51	34.00	59	39.33
E	**Puddling operation**						
17	Cross ploughing (wooden plough/ power tiller/tractor)	42	28.00	56	37.33	52	34.67
18	Levelling of field	40	26.61	58	38.65	52	34.67
F	**Transplanting**						
19	Age of seedlings(25-30 days old)	48	32.00	70	46.67	32	21.33
20	Seedling spacing (20 x 20 cm)	14	9.33	36	24.00	100	66.67
21	Sowing method (2-3 seedlings)	29	19.35	55	36.67	66	44.00
G	**Integrated nutrient management**						
22	Recommended dose of fertilizer (100:50:50)	5	3.33	91	60.67	54	36.00
23	First dose of chemical fertilizer(50:50:50 at puddling)	3	2.00	55	36.67	92	61.33
24	Second dose of chemical fertilizer (N-25 Kg at sprouting)	1	0.67	42	28.00	107	71.33
25	Third dose of chemical fertilizer (N-25 Kg before earhead formation)	1	0.67	32	21.33	117	78.00
26	Use of urea + DAP brickets	1	0.67	16	10.67	133	88.67
27	Use of blue green algae (BGA)	0	0.00	14	9.33	136	90.67
28	Dose of micronutrient (0.5% zinc sulphate+0.25% calcium)	0	0.00	2	1.33	148	98.67
H	**Water management**						
29	Water level in field (at sowing 2.5cm, after sowing 5cm and later on 10 cm.)	31	20.67	95	63.33	24	16.00
30	Removal of water before harvesting (10 days before harvesting)	27	185.00	123	82.00	0	0.00
I	**Intercultural operation**						
31	Useofweedicides(4Lit.Butaclore/500ml of water)	4	2.67	39	26.00	107	71.33

32	First weeding (15 Days after planting)	92	61.33	52	34.67	6	4.00
33	Second weeding (20 Days after planting)	89	59.33	47	31.33	14	9.33
J	**Integrated pest management**						
34	Use of resistant varieties	0	0.00	11	7.33	139	92.67
35	Seed treatment (3 gm thirum/Kg of seed)	0	0.00	8	5.33	142	94.67
36	Weed free bunds	98	65.33	30	20.00	22	14.67
37	Rope dragging over the crop for control of army warm	8	5.33	23	15.33	119	79.33
38	Control of jassids (Removal of water after 3-4 days)	10	6.67	92	61.33	48	32.00
39	Control of army worm(Add water in field)	31	20.67	65	43.33	54	36.00
40	Conservation and protection of predators	0	0.00	5	3.33	145	96.67
41	Use of Trichogramma	0	0.00	6	4.00	145	96.67
42	Destroying diseased plants	4	2.67	16	10.67	130	86.67
43	Control of rodents	40	26.67	98	65.33	12	8.00
K	**Chemical control**						
44	For Stem borer (Chloropyriphos 330ml/acre)	13	8.67	75	50.00	62	41.33
45	For Paddy gallfly (Chloron 400ml/acre,10% Phorate)	4	2.67	51	34.00	95	63.33
46	For Jassids (Buprofogen 330ml/acre)	9	6.00	34	22.67	107	71.33
47	Armyworm (Methylparathion 2%)	0	0.00	26	17.33	124	82.67
L	**Disease control**						
48	Blast of paddy (Tricyclazole 100gm/acre,3 gmthirum/+3% brine solution)	2	1.33	19	12.67	129	86.00
49	Smut(Copper oxicloride 25 gm+ streptocynide 0.5 gm+10 lit. of water)	1	0.67	13	8.67	136	90.67
M	**Harvesting and threshing**						
50	Harvesting time(after 90.00% grain maturity)	137	91.33	13	8.67	0	0.00
51	Time of threshing (after completely drying of crop)	145	96.67	5	3.33	0	0.00

Technological gap in respect of recommended cultivation practices of paddy crop of the respondents

The data in Table 1 shows that majority of recommended varieties of paddy, it was observed that considerable higher percentage of respondents (98.00%, 90.00% and 80.67%) were belonged in high category of technological gap about hybrid varieties, scented varieties and long duration varieties of paddy, respectively. More than half of the respondents were also found in high category as regard to medium duration (58.00%) and short duration varieties (56.00%). The mean technological gap about recommended varieties of paddy leads to mention that more than three forth of paddy growers (76.54%) comes under high category of technological gap. While studying the technological gap about recommended seed and seed treatment practice of paddy, it unpleasant to note that higher proportion of the respondents reported high technological gap with respect to chemical seed treatment by use of 3 gm thirum per kg of seed (94.67%), 3 per cent brine

solution (92%), whereas majority of the respondents (62%) were observed in medium category of technological gap about recommended per hectare seed rate of paddy. From average technological gap about seed and seed treatment practice leads to conclude that majority of the paddy grower 71.78 per cent were included in high category. However, technological gap about nursery management practices for paddy like sowing spacing on raised bed (78.00%), nutrient management on raised bed (60.00%), size of raised bed (49.33%) and 39.33 per cent of the respondents expressed high technological gap for time of sowing on raised bed. High technological gap was established in nursery management practices as per perception of 56.66 per cent of respondents Maximum percentage of respondents were observed in medium technological gap in puddling practices of paddy such as land levelling (38.66%) and cross ploughing (37.33%). Whereas equal percentage of respondents (34.37%) reported high level of technological gap for same practice of puddling operation. From overall picture about puddling operation, it may be inferred that 38.00 per cent of the respondents expressed technological gap up to medium extent. In case of transplanting of paddy, high gap was found in spacing between two seedlings as per opinion of two third of the respondents (66.67%). This was followed by high gap in method of transplanting (44%) and considerable percentage of respondents (46.67%) reported low gap in age of seedling while transplanting of paddy. The average gap for transplanting of paddy was high as 44 per cent of the farmers were found in high category. The average technological gap for INM practices of paddy was also high as three fourth of the respondent (74.95%) were found in high gap category. High technological gap was established in practices like micronutrient (98.67%), application of BGA per hectare (90.67%), urea + DAP brikets (88.67%), recommended third dose of fertilizer (78%), top dressing (71.33%) and 61.33 per cent of the respondents comes under high category for first dose of fertilizer. While maximum 60.67 per cent of the respondents were in medium level of technological gap about recommended dose of fertilizer as a practice of INM. Technological gap for water management practice of paddy was found up to the medium (72.67%) extent. Majority of the respondents belonged in medium category in case of practices like removal of water from field (82.00%) and water level in filed (63.33%). While studying the technological gap about inter cultivation practice of paddy, it may be seen that higher percentage of the respondents (71.33%) perceived high gap while using the weedicide. Further, it is interesting to note that majority of the respondents (61.33% and 59.33%) were found in low level of gap about first and second time of weeding respectively. From above findings, it may be said that low to medium gap was established in inter cultivation practices paddy as 41.11 per cent and 30.67 per cent of paddy growers were observed in low to medium category of gap, respectively. With regards to technological gap about IPM practices, it is unpleasant to note that vogue majority reported high technological gap about conservation of predators (96.67%), use of Trichogramma (96%), seed treatment by use of 3 per cent brine solution (94.67%), use of pest resistant varieties (92.67%), destroying pest affected plant (86.67%) and rope dragging (79.33%). Medium extent of gap was established while control of rodents as per opinion (65.33%) of the respondents. Further 65.33 per cent of respondents comes under low gap category in case of weed free bunds. The overall technological gap about IPM practices was up to high extent as 63.67 per cent respondents were found in high gap category. The reason behind that unawareness about IPM practices due to faulty extension approaches. In case of chemical control measure higher percentage of the respondents (82.67, 71.33 and 63.33%) were also reported high level of gap in control of armyworm (Parathion 2%), jassids (Malathion 50%) and paddy gallfly (10% Phorate), respectively. Medium gap was established, while controlling stem borer of paddy (Endosulfan 17 ml) as expressed by 50.00 per cent of the respondents. Nearly two third of the paddy growers (64.67%) perceived

high technological gap about chemical control measures for insect pest management practices of paddy. High gap was found in case of diseases like smut and blast of paddy as (90.67 and 86.00%) of the respondents included in high category. Higher percentage of the respondents (88.33%) reported wide gap while controlling diseases of paddy. It is surprising to note that very low gap was established in harvesting and threshing time of paddy as higher (96.67% and 91.33%) respondents were found in low category. It has quite logical that due to cultivation of paddy from generation to generation, farmers had well experience in identifying the maturity stage of paddy leads to harvesting and threshing at proper time. Maximum percentage of the respondents were observed in high level category of technological gap with respect to major recommended technologies for paddy cultivation such as use of improved hybrid varieties of paddy (76.54%), technologies for seed and seed treatment (71.78%), nursery management (56.66%), transplanting operation of paddy (44.00%), integrated nutrient management practices (74.95%), integrated pest management practices (63.67%), chemical pest control measures (64.67%) and control measures for disease (88.33%). The present findings, wide gap in plant protection measures, INM, seed and seed treatment, and application of fertilizer did get support from the observations of Nikhade *et al.*[4], Sharma[6], Chand[3], Sharma *et al.*[5] and Singh and singh[7].

Overall knowledge about recommended paddy cultivation technologies

Table 2 Distribution of respondents according to their overall knowledge about recommended paddy cultivation technologies (n = 150)

Sr. No.	Knowledge level	Respondents (n=150)	
		Frequency	Percentage
1	Low	12	8.00
2	Medium	94	62.67
3	High	44	29.33
	Total	150	100.00

The table 2 indicated that majority of the respondents (62.67%) possessed medium level of knowledge. As much as 29.33 per cent had high and remaining 8.00 per cent of respondents had low level of knowledge about recommended paddy cultivation technology. Nearly two third (62.67%) of paddy growers had medium level of knowledge about paddy cultivation practices. The above findings are in consonance with the findings of Borkar[2], Sharma *et al.*[5] and Suryawanshi[8]. These entire researcher reported that majority of paddy growers had medium level of knowledge about recommended paddy cultivation technology.

Relationship of selected characteristics of the respondents with their technological gap

The table 3 revealed that the correlation coefficient of personal, socio-economic, psychological, and situational and communication characteristics of respondent's technological gap.

Table 3: Relationship of selected characteristics of the respondents with their technological gap

S. No.	Characteristics	Coefficient of correlation `r' value
1	Age	0.002^{NS}
2	Education	-0.551**
3	Land holding	-0.597**
4	Annual income	-0.645**
5	Social participation	-0.503**
6	Socio-economic status	-0.732**
7	Scientific orientation	-0.239*
8	Economic motivation	-0.290**
9	Knowledge	-0.682**
10	Sources of information	-0.586**

It means improvement of these characteristics there will be better adoption behaviour among the respondents. Similar findings were reported by Yakub[10] concluding age, education, land holding, socio-economic status, scientific orientation and knowledge were significantly correlated with technological gap at 0.01 level of probability. Bodadias *et al*.[1] found that in case of level of education, social participation, size of land holding, irrigation availability, sources of information and knowledge increases, the technological gap decreases. Similarly the above findings in respect of socio-economic status are in finding of Tyagi *et al*.[9].

CONCLUSION

From the present study the following conclusions were drawn. Nearly half of the respondents (48.67%) had high and 32.00 per cent of the respondents had medium extent of technological gap in recommended technologies of paddy cultivation. Maximum percentage of the respondents were observed in high category of technological gap with respect to major recommended technologies for paddy cultivation such as use of improved hybrid varieties of paddy (76.54%), technologies for seed and seed treatment (71.78%), nursery management (56.66%), transplanting operation of paddy (44.00%), Integrated Nutrient Management Practices (74.95%), Integrated Pest Management Practices (63.67%), chemical pest control measures (63.67%), control measures for disease (88.33%), followed by medium level technological gap in case of technological recommended for preparatory tillage (45.17%), puddling operation (38.00%), water management practices (72.67%). While, a sizeable percentage of the respondents (41.11, 96.67 and 91.33%) belonged under low category of technological gap in intercultural operations, time of harvesting and time of threshing for paddy.

REFERENCES

1. Bodadias, K., Shrivastava, K. K. and Lakhera, M. L., Technological gap in chickpea cultivation technology. *Agril.Extn. Rev*. **14(3):** 25-27 (2002).
2. Borkar, M. M., Impact of technologies of paddy crop recommended by Dr. PDKV, Akola. *M. Sc. Thesis* (Unpub.) Dr. PDKV, Akola (2001).
3. Chand, S., Technological gap in adoption of improved arshar production technology in Haryana, *M.Sc. Thesis* (Unpub.) CCS Haryana Agril. Uni. Hisar (1990).
4. Nikhade, D. M., Bhople, R. S. and Kale, N. M., Technological gap in cultivation in gram, green gram and Bengal gram. In Gulbarqa district of Karnataka. *Indian J. Extn. Educ*. **33(1and2):** 72 (1991).
5. Sharma, S., Tyagi, B. D., Sharma, G. C. and Singh, S. P., Constraints in adoption of improved rice production technology. *Agril. Extn. Review*. **13:** 17-22 (2001).
6. Sharma, V., Varieties replacement and adoption level of gram in Haryana, M.Sc. Thesis (unpub.) CCS Haryana Agril. University, Hissar (1997).
7. Singh, P. and Singh, S. K., Technological gap in rapeseed and mustard cultivation in Bharatpur. *Agril. Expt. Rev.* **7:** 10-13 (2002).
8. Suryawanshi, L. R., Knowledge and adoption of package of practices of paddy by the farmers. *M. Sc. (Agri.) Thesis* (Unpub.) Dr. PDKV, Akola (2002).
9. Tyagi, A., Sharma, S., Tyagi, B. D., Socio-economic variables and technological gap in rice. *Agril. Rice. Agril. Ext. Rev.*: 16-19 (2003).
10. Moho, Y., Moho, Y., Technological gap between recommendation and adoption of dry wheat technology by wheat grower. *M. Sc. Thesis* (Unpub.) Dr. PDKV, Akola (1985).