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Knowledge of NFSM-Rice beneficiaries in Guntur District of Andhra Pradesh

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ABSTRACT

The present study was conducted in Guntur district of Andhra Pradesh with a sample size of 120 beneficiaries. It was found that majority of beneficiaries with medium knowledge (58.34%) followed by low (24.16%) and high (17.50%). Out of fourteen with variables such as education, training received, socio-politico participation, extension contact mass media exposure, decision making, achievement motivation, market orientation, scientific orientation and innovativeness were significant at 1% level of probability, whereas age was significant at 5% level of probability. Risk orientation was negatively significant with knowledge. Land holding was non-significant with knowledge whereas farming experience was negatively non-significant with knowledge of beneficiaries about NFSM-Rice programme. The Multiple Linear Regression analysis was indicated that all fourteen variables put together explained 86.80 per cent of variance especially education, farming experience, socio-politico participation and risk orientation had significant relation with extent of knowledge.

Key words : *Knowledge, NFSM-Rice programme, Profile,*

The total food production in India during 2015-16 is 253.16 mt. The targeted food production by 2030 is 300 mt. In order to meet this target food production, the National Development Council (NDC) launched a centrally sponsored scheme "National Food Security Mission (NFSM)" in October 2007 to increase the annual production of rice, wheat and pulses. The National Food Security Mission (NFSM) during the 12th Five Year Plan have five components NFSM- Rice, NFSM-Wheat, NFSM-Pulses, NFSM -Coarse cereals and NFSM-Commercial Crops. In Andhra Pradesh, NFSM-rice is being implemented in the districts of Guntur, Krishna, Srikakulam, Vijayanagaram and Visakapatanam. NFSM-Rice in Guntur has started during the year 2007-08.The scheme has been implemented at district level through Agricultural Technology Management Agency (ATMA). A District Food Security Mission Executive Committee (DFSMEC) is constituted for project formulation, implementation and monitoring of the scheme components through department of agriculture-Guntur. NFSM-Rice programme is providing micro nutrients, Pink Pigmented facultative Methylotrophic (PPFM) bacteria, biofertilisers *etc*. Knowledge means facts, information and skills acquired through experience or education.

Keeping the above facts in view, a study on "Impact of National Food Security Mission (NFSM-rice) Programme on Rice Farmers in Guntur district of Andhra Pradesh" has been articulated with the following objectives: To know the extent of knowledge of NFSM-Rice beneficiaries and to unearth the relationship between the selected profile characteristics of NFSM-Rice beneficiaries with their knowledge towards NFSM-Rice programme.

METHODOLOGY

The study was conducted in Guntur district of Andhra Pradesh purposively as NFSM-Rice was being implemented in Guntur since 2007 by adopting Ex-post-facto research design. The present study has been taken up in three mandals covering twelve villages of Guntur district. A sample of 120 beneficiaries were selected based on proportionate random sampling method. The data was collected through well structured pre-tested interview schedule, which was coded, tabulated and analysed in computer and presented in tables to make the findings meaningful and easily understandable. Various statistical measures such as frequency, percentage, correlation coefficient and multiple linear regressions were used. The findings were suitably interpreted and necessary conclusions and interference were drawn.

RESULTS AND DISCUSSION

From Table 1, it could be inferred thatmajority (58.34%) of the beneficiaries had medium knowledge followed by low (24.16%) and high (17.50%) level of knowledge. The probable reason for this trend might be the fact that majority of the beneficiaries belonged to middle age, and majority of the beneficiaries were having 21-30 years of farming experience, they had regular contact with the extension agencies like MPEOs and AEOs, having medium mass media exposure, attended trainings conducted by agricultural officials and acquired information about the NFSM-Rice Programme that were implemented in the study area. Similar findings were reported by Obaiah (2004).

Table 2, revealed that 75 to 100 per cent of the beneficiaries had knowledge about NFSM-Rice programme in the percentage rank order of their decreasing importance were; knew about cultivating rice varieties in their area (100.00%), recommended spray fluid for taiwan sprayer (100.00%), recommended pre-emergence herbicide (100.00%), recommended post-emergence herbicide (100.00%), stage for incorporation of green manure crops (100.00%), recommended chemical for controlling blast (100.00%), purpose of organization of on farm trials (100.00%), green manure crops will increase nutrient efficiency in soil (100.00%),formation of alleys or pathways of 20 cm width for every 2m of planting reduces BPH attack (100.00%), panicle initiation, flag leaf and milky stages in rice crop are moisture sensitive stages (100.00%),excess use of nitrogenous fertilizers increases insect pests (100.00%), amount of zinc sulphate should be applied at last ploughing (20 kg/acre) (99.17%),recommended amount of Oxadiargyl (topstar) at 8-10 DAS (30-40 gr/acre) (99.17%),optimum Number of paddy hills per square meter to get higher yields during *Kharif (*33 hills/sq.mt)(99.17%), recommended chemical for controlling stem borer (90.84%), for the control of both grassy and broad leaved weeds, recommended quantity of Bispyribac sodium (nominee gold) (100ml/acre) (87.50%), recommended seed rate for transplanted rice per acre (85.00%), potash plays a key role in grain filling and increase grain weight in rice (85.00%), usage of Phosphorous Solubilising Bacteria (PSB) (84.17%), the recommended nursery area required for one acre of main field is (5 cents) (80.84%), recommended seed rate for DSR rice per acre is (10-15kg) (79.17%), usage of pseudomonas (75.00%), usage of pheromone traps (75.00%).

An overview of the Table 2, implies that more than 75% of the beneficiaries had knowledge on cultivating rice varieties in their area , spray fluid for taiwan sprayer, pre-emergence herbicide, post-emergence herbicide, stage for incorporation of green manure crops, chemical for controlling blast, on farm trials , formation of alleyways or pathways, amount of zinc sulphate should be applied at last ploughing , optimum number of paddy hills per square meter to get higher yields during *Kharif*, chemical for controlling stem borer, recommended seed rate for transplanted rice per acre, potash plays a key role in grain filling and increase grain weight in rice , usage of Phosphorous Solubilising Bacteria (PSB) nursery area required for one acre of main field, seed rate for DSR rice usage of pseudomonas, usage of pheromone traps.

Table 2, also revealed that 50 to less than 75 per cent of the beneficiaries had knowledge about NFSM-Rice programme in the percentage rank order of their decreasing importance were; knew about pheromone traps @ 5/acre should be kept to monitor yellow stem borer (73.34%), recommended chemical for controlling brown plant hopper (72.50%), time of organization of field days (70.84%), usage of azatobacter and azospirillum (66.67%), quantity of $ZnSO_4$ should be applied as foliar spray (2 gr/lit)(65.00%),recommended chemical for controlling leaf folder (57.50%), chemical for seed treatment and recommended dosage of carbendazim for treating 1kg of seed is (2 gr) (55.84%).

It was clear from Table 2, that knowledge was medium with respect to chemical for controlling brown plant hopper, field days, usage of azatobacter and azospirillum, quantity of $ZnSO_4$ should be applied as foliar spray, chemical for controlling leaf folder, chemical for seed treatment, dosage of carbendazim.

Table 2, revealed that 25 to less than 50 per cent of the beneficiaries had knowledge about NFSM-Rice programme in the percentage rank order of their decreasing importance were; knew about pheromone traps will monitor the insect pest in rice field (41.66%), major component in pheromone trap (32.50%).

Table 2, showed that less per cent of the beneficiaries had knowledge about pheromone traps will monitor the insect pest in rice field, major component in pheromone trap.

From Table 2, it revealed that less than 25 per cent of the beneficiaries had knowledge about NFSM-Rice programme in the percentage rank order of their decreasing importance were; knew about recommended herbicide used for managing echinochloa (24.16%), recommended dosage of pseudomonas for treating 1kg of seed is (10 gr) (22.50%), cultivating DSR (Direct Sown Rice) variety in their area (22.50%), recommended chemical for controlling panicle mite (15.83%), recommended dose of NPK fertilisers for one acre of rice crop is (12.50%), recommended seed rate for SRI paddy per acre is (2kg) (9.16%), predators names in rice field (4.16%), usage of Potash Mobilising Bacteria (PMB) and Zinc Solubilising Bacteria (ZSB) (0.00%), usage of boran (0.00%), trichocards (biocontrol agents) should be released at three times in the field (60,000 eggs) (0.00%), amount of PPFM bacteria per acre (200ml) (0.00%), recommended spacing for SRI paddy is (25×25 cm^2) (0.00%).

It was clear from Table 2, that less per cent of the beneficiaries had knowledge about herbicide used for managing *echinochloa*, dosage of *pseudomonas*, chemical for controlling panicle mite, recommended dose of NPK fertilisers, recommended seed rate for SRI paddy per acre.

It was also clear from Table 2, that beneficiaries were not having knowledge on usage of Potash Mobilising Bacteria (PMB) and Zinc Solubilising Bacteria (ZSB), usage of boran, trichocards (biocontrol agents) should be released at three times in the field (60,000 eggs), amount of PPFM bacteria per acre (200ml) recommended spacing for SRI paddy.

Knowledge of NFSM-Rice beneficiaries and its relationship with Profile characteristics

It was revealed from Table 2 that the computed r values of education, training received, socio-politico participation, extension contact, mass media exposure, decision making, achievement motivation, market orientation, scientific orientation and innovativeness were significant at 1 per cent level of probability and age at 5 per cent level of probability. The other variable land holding showed non-significant relation, the other variable farming experience showed a negative and non significant relation and risk orientation showed negatively significant relation.

It was observed from Table 3, that age and the knowledge level of the beneficiaries was found positive and significant. Age was considered as an important factor to decide the knowledge in any technology. As the age increases knowledge tends to increase. The possible reasons for the above result might be due to the fact that middle and young age categories of the beneficiaries were having regular contact with the extension agencies, and to mass media exposure. Moreover they were having 20-30 years of farming experience hence they have more knowledge. This finding was in agreement with results of Prakash& De (2008).

It was noticed from Table 3, that education and the knowledge level of the beneficiaries was found positive and significant.This might be due to the fact that the education played greater role in acquiring and understanding the information that widened the thinking horizon and made the beneficiary more changed and knowledgeable. This finding was in agreement with results of Sharma *et al.* (2009).

It was resulted from Table 3, that land holding and the knowledge level of the beneficiaries was found positive and non-significant. This might be due to the fact that the knowledge is the cognitive character, which did not effected by the land holding. Further, majority of beneficiaries were leasing their lands instead of cultivating themselves. More over, the beneficiaries maintaining the farms with similar management techniques irrespective of the land holding. Similar findings were reported by Naik*et al*. (2009).

It was identified from Table 3, that farming experience and the knowledge level of the beneficiaries was found negative and non-significant. This might be due to the most of the beneficiaries were having knowledge on cultivational practices but not having knowledge on programme due to lack of exposure. This results were in line with the findings of Rajashekhar (2009).

It was inferred d from Table 3, that training received and the knowledge level of the beneficiaries was found positive and significant.This might be due to the fact that the beneficiaries attended training programmes and contacted the Agricultural department personnel to clarify the doubts and achieve knowledge on latest production technologies on the crops in the study area, information and importance of soil sampling. Similar findings were reported by BaluNaik (2009).

It was concluded from Table 3, that socio-politico participation and the knowledge level of the beneficiaries was found positive and significant.This

inferred that beneficiaries who actively participate in social activities through social organizations come across different types of people, exchange one's views and experiences, discuss about problems and solutions and there by gain more and more knowledge. Similar findings were reported by Prasadreddy*et al.* (2007).

It was inferred from Table 3, that extension contact and the knowledge level of the beneficiaries was found positive and significant. This might be the reason due to the fact that beneficiaries approach to change agents like MPEO/AEO, MAO, ADA etc., when they need information regarding agricultural practices on on going agricultural programmes and latest production technologies in agriculture in their area. This finding was in line with findings of Thiyagarajan (2011).

It was resulted from Table 3, that mass media exposure and the knowledge level of the beneficiaries was found positive and significant. This might be due to the reason that mass media exposure implies several aspects of farm technologies. Now-a-days farmers keep in touch with mass media like agricultural programmes on television, print media, exhibitions, text messages on mobiles, etc., were considered to be the accelerators of diffusion of agricultural innovations and better knowledge on the recent technologies in agriculture. This finding was in concurrence with that of Natarajan (2004).

It was concluded from Table 3, that decision making and the knowledge level of the beneficiaries was found positive and significant. This might be due to beneficiaries were having good contacts with department officials and having medium scientific orientation, medium innovativeness so, they can take good decisions regarding cultivation methods. With the increase in knowledge of beneficiaries decision making ability will also increase. This results were in line with the findings of Jyothi (2006).

It was vivid from Table 3, that achievement motivation and the knowledge level of the beneficiaries was found positive and significant.This might be due to forced the individual towards reaching goal which they had carved for themselves. In this process the individual end up with acquisition of knowledge about NFSM-Rice programme. This would have been predisposing them to set useful and additional information than the low achievers in improving the knowledge over others. This finding was in concurrence with that of Archana (2016).

It was noticed from Table 2 that risk orientation and the knowledge level of the beneficiaries was found negative and significant. This trend might be due to the fact that majority of the beneficiaries were belonged to low risk orientation. And majority of the beneficiaries were marginal farmers so, they do not want to take much risk though, they were having good knowledge.

It was found from Table 3, that market orientation and the knowledge level of the beneficiaries was found positive and significant. This trend might be because, beneficiaries who pay attention to market information on prices in order to get high income, they also try to improve their knowledge on rice production technology which helps in getting good yields. These results were in conformity with the findings of Praveen Babu (2014).

It was found from Table 3, that market orientation and the knowledge level of the beneficiaries was found positive and significant.The probable reason might be that the beneficiaries with progressive ideas were more receptive towards new scientific innovations. In this process they might have acquired more knowledge on latest farm machinery and recommended practices in farming. This trend was also noticed by Prasadreddy*et al.* (2007).

It was observed from Table 3, that innovativeness and the knowledge level of the beneficiaries was found positive and significant. This trend might be due to the fact that beneficiaries with high innovativeness desire to seek changes in farming techniques and introduce changes in his own operation. This desire make him to acquire innovations directly from scientists in terms of knowledge about recommended practices.The above findings were in line with the findings of PraveenBabu (2014).

Multiple Linear Regression analysis of profile characteristics of NFSM-Rice beneficiaries with their extent of knowledge

From the Table 4, indicated that all the fourteen independent variables put together contributed for 86.80 per cent of variance in the knowledge of beneficiaries.Out of fourteen variables education, risk orientation were found to be significant at 0.01 level of probability. Whereas farming experience and socio-politico participation was found to be significant at 0.05 level of probability. This means, education, farming

Table1. Distribution of NFSM-Rice beneficiaries According to their Extent of Knowledge

n = 120

S.No.	Category	NFSM- Rice beneficiaries	
		Frequency	Percentage
1	Low knowledge	29	24.16
2	Medium knowledge	70	58.34
3	High knowledge	21	17.50
	Total	120	100.00
	Mean = 85.30	SD = 3.20	

Table 2. Content analysis of knowledge level of the beneficiaries aboutNFSM-Rice Programme

n=120

S.No.	Statements	Knowledge			
		Known		Unknown	
		F	%	F	%
1	Knowledge about cultivating rice varieties in their area	120	100.00	0	0.00
2	Recommended chemical for seed treatment (Carbendazim)	67	55.84	53	44.16
3	Having idea on usage of *Pseudomonas*	90	75.00	30	25.00
4	Knowledge about cultivating DSR (Direct Sown Rice) variety in their area	27	22.50	93	77.50
5	Usage of azatobacter and azospirillum	80	66.67	40	33.33
6	Usage of Phosphorous Solubilising Bacteria (PSB)	101	84.17	19	15.83
7	Usage of Potash Mobilising Bacteria (PMB) and Zinc Solubilizing Bacteria (ZSB)	0	0.00	120	100.00
8	Predators names in rice field (Coccinellids, mired bugs)	5	4.16	115	95.84
9	Recommeneded spray fluid for taiwan sprayer) (20 l/tank	120	100.00	0	0.00
10	Recommended pre-emergence herbicide (Oxadiargyl (topstar), Butachlor)	120	100.00	0	0.00
11	Recommended post-emergence herbicide (2,4-D-Sodium salt)	120	100.00	0	0.00
12	Recommended herbicide used for managing Echinochloa (Butachlor)	29	24.16	91	75.84
13	Usage of boran	0	0.00	120	100.00
14	Usage of pheromone traps	90	75.00	30	25.00
15	Major component in pheromone trap (lure)	39	32.50	81	67.50
16	Stage for incorporation of green manure crops	120	100.00	0	0.00
17	Recommended dose of NPK fertilisers for one acre of rice crop is (48:24:16 kg/acre)	15	12.50	105	87.50
18	Recommended chemical for controlling brown plant hopper (Acephate, Carbofuran granules)	87	72.50	33	27.50
19	Recommended chemical for controlling panicle mite (Dicofol, Profenophos)	19	15.83	101	84.17
20	Recommended chemical for controlling stem borer (Cartap 4g, Acephate)	109	90.84	11	9.16
21	Recommended chemical for controlling leaf folder (Cartap 4g-granules)	69	57.50	51	42.50
22	Recommended chemical for controlling blast (Carbendazim, Bavistin)	120	100.00	0	0.00

S.No.	Statements	Knowledge			
		Known		Unknown	
		F	%	F	%
23	Recommended nursery area required for one acre of main field is (5 cents)	97	80.84	23	19.16
24	Recommended seed rate for transplanted rice per acre (30 kg/acre)	102	85.00	18	15.00
25	Recommended seed rate for DSR rice per acre is (10-15kg)	95	79.17	25	20.83
26	Recommended seed rate for SRI paddy per acre is (2kg)	11	9.16	109	90.84
27	Recommended spacing for SRI paddy is (25×25 cm^2)	0	0.00	120	100.00
28	Recommended dosage of carbendazim for treating 1kg of seed is (2 gr)	67	55.84	53	44.16
29	Recommended dosage of pseudomonas for treating 1kg of seed is (10 gr)	27	22.50	93	77.50
30	Amount of Zinc sulphate should be applied at last ploughing (20 kg/acre)	119	99.17	1	0.83
32	Quantity of $ZnSO_4$ should be applied as foliar spray (2 gr/lit)	78	65.00	42	35.00
33	Amount of PPFM bacteria per acre (200 ml)	0	0.00	120	100.00
34	Recommended amount of Oxadiargyl (topstar) at 8-10 DAS (30-40 gr/acre)	119	99.17		0.83
35	For the control of both grassy and broad leaved weeds, recommended quantity of Bispyribac sodium (nominee gold) (100ml/acre)	105	87.50	15	12.50
36	Optimum Number of paddy hills per square meter to get higher yields during *Kharif (*33 hills/sq.mt)	119	99.17	1	0.83
37	Time of organization of field days	85	70.84	35	29.16
38	Purpose of organization of on farm trials	120	100.00	0	0.00
39	Green manure crops will increase nutrient efficiency in soil	120	100.00	0	0.00
40	Pheromone traps will monitor the insect pest in rice field	50	41.66	70	58.34
41	Formation of alleys or pathways of 20 cm width for every 2m of planting reduces BPH attack	120	100.00	0	0.00
42	Trichocards (Biocontrol agents) should be released at three times in the field (60,000 eggs)	0	0.00	120	100.00
43	Pheromone traps @ 5/acre should be kept to monitor yellow stem borer	88	73.34	32	26.66
44	Panicle initiation, Flag leaf and Milky stages in rice crop are moisture sensitive stages	120	100.00	0	0.00
45	Excess use of nitrogenous fertilizers increases insect pests	120	100.00	0	0.00
46	Potash plays a key role in grain filling and increase grain weight in rice	102	85.00	18	15.00

Table 3. Relationship between selected independent variables with extent of knowledge of NFSM-Rice beneficiaries (n=120)

S. No.	Profile Characteristics	'r' value
1.	Age	0.202*
2.	Education	0.920**
3.	Land holding	0.122NS
4.	Farming experience	-0.075NS
5.	Training received	0.916**
6.	Socio-politico participation	0.242**
7.	Extension contact	0.930**
8.	Mass media exposure	0.947**
9.	Decision making	0.366**
10.	Achievement motivation	0.880**
11.	Risk orientation	-0.499**
12.	Market orientation	0.351**
13.	Scientific orientation	0.970**
14.	Innovativeness	0.941**

NS = Non significant
** Significant at 0.01 level of probability
* Significant at 0.05 level of probability

Table 4. Multiple linear regression analysis of profile characteristics of NFSM-Rice beneficiaries with their extent of knowledge

(n =120)

S.No.	Profile Characteristics	Regression	Standard	't' Value
1.	Age	-0.031	0.016	-1.897
2.	Education	1.903	0.091	20.811**
3.	Land holding	-0.072	0.094	-0.768
4.	Farming experience	0.035	0.017	2.111*
5.	Training received	-0.024	0.133	-0.180
6.	Socio-politico participation	0.294	0.147	1.998*
7.	Extension contact	0.001	0.068	0.000
8.	Mass media exposure	0.012	0.101	0.120
9.	Decision making	0.093	0.091	1.029
10.	Achievement motivation	-0.159	0.146	-1.089
11.	Risk orientation	0.259	0.091	2.850**
12.	Market orientation	0.068	0.052	1.320
13.	Scientific orientation	-0.045	0.066	-0.685
14.	Innovativeness	-0.061	0.068	-0.889

a = 79.83 R^2= 0.868
NS = Non significant
* Significant at 0.05 level of probability
**Significant at 0.01 level of probability
From the above table the MLR equation can be fit as

Y= 79.83 -0.031x1 + 1.903**x2 -0.072x3 + 0.035*x4 -0.024x5 + 0.294* x6 + 0.001 x7 +0.012 x8 + 0.093x9 -0.159x10 + 0.259** x11 + 0.068 x12 -0.045x1 3 -0.061x14

experience, socio-politico participation risk orientation were contributed significantly to the prediction of knowledge of the beneficiaries on NFSM-Rice Programme.

Conclusion

Majority of the beneficiaries were having medium knowledge followed by low and high. Significant amount of beneficiaries were having low knowledge on bio fertilisers, usage of boron, trichocards, PPFM bacteria. Out of fourteen independent variables education, training received, socio-politico participation, extension contact, mass media exposure, decision making, achievement motivation, market orientation, scientific orientation and innovativeness were significant at 1% level of probability, whereas age was significant at 5% level of probability. Risk orientation was negatively significant, land holding was non-significant and farming experience was negatively non-significant with the knowledge. The Multiple Linear Regression analysis indicated that all the fourteen independent variables put together contributed for 86.80 per cent of variance especially education, farming experience, socio-politico participation and risk orientation had significant relationship with extent of knowledge.The results regarding the knowledge of the beneficiaries on NFSM-Rice programme revealed the importance of usage of Potash Mobilising Bacteria (PMB) and Zinc Solubilising Bacteria (ZSB), usage of boran, trichocards (biocontrol agents) should be released at three times in the field (60,000 eggs), amount of PPFM bacteria per acre (200ml) recommended spacing for SRI paddy. Hence the Department of Agriculture should organize the trainings on above extension activities for enhancement of knowledge of the beneficiaries for better utilization of the NFSM-Rice programme.

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