



## Adoption Level of Poly Culture Fish Practices in Southern Andhra Pradesh

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### ABSTRACT

The present study was carried out during 2013-2014 in the purposively selected Krishna, Guntur and Prakasam districts of southern Andhra Pradesh focused on the factors influencing adoption of fish farmers towards poly culture fish practices. The findings revealed that majority (82.86%) of fish farmers belonged to medium to high adoption category. The adoption of fish farmers towards poly culture fish practices was positively and significantly influenced by the factors like education, occupation status, socio economic status, social participation, possession of fishing equipments, annual income, size of land holding, risk orientation, scientific orientation, innovative proneness, extension participation, extension agency contact, mass media participation, size of water body, distance of water body to the residence, extent of weed infestation and negatively by their age and economic performance. Economic performance, risk orientation, scientific orientation, innovative proneness and extension participation are significant with adoption level.

**Key words :** Adoption, Fish farmers, Poly culture fish practices.

Fish has occupied an imperative place in the global market as a secure and low-priced source of animal protein with elevated customer acceptability. Andhra Pradesh has been playing a important role in fish culture since times immemorial. Andhra Pradesh ranks second in fresh water fish production, second in total value of fish and prawn produced and fifth in marine fish production. The State is contributing about Rs.3000 crores by way of marine exports, which is nearly 40% of the marine exports from India. During 2009-10, the fish /prawn produced in A.P. is 12.93 Lakh tonnes. The potential estimate of inland fish production of state has been estimated at 16 lakh tonnes as compared to the present production of 14.50 lakh tonnes only. Poly culture fish practices involves stocking and growing two or more compatible and complementary fish species like, Indian Major Carps (IMC) and exotic carps in a water body like pond to maximize the fish production by fullest utilization of all available niches in the pond ecosystem. The principle behind the poly culture fish practices is to produce maximum quantity of fish per unit area from a scientifically managed water body by stocking fast growing, economically important, compatible species having

shortest food chain utilizing the all ecological niches of the water body. In fact, hardly any systematic research has done to explore these areas.

### MATERIAL AND METHODS

The present study was carried out using *ex post facto* research design during 2013-14 in the purposively selected Krishna, Guntur and Prakasam districts of Southern Andhra Pradesh. A combination of purposive and systematic random sampling procedures was employed. The Districts were purposively selected as they have vast and diverse inland fishery resources ideally suited for taking up poly culture fish practices. Among the identified districts, number of poly culture fish farmers in each mandal obtained from the Department of Fisheries, A.P., and such mandals where more number of farmers selected purposively for the study. The technique of proportionate and simple random sampling was adopted to select the required number of respondents for poly culture fish farming practices in each mandal. A sample size of 210 respondents were selected from the identified mandals in three districts *i.e.* Krishna, Guntur and Prakasam. The dependent variable, adoption of fish farmers

towards poly culture fish practices, was quantified by using a partial adoption technique (Nagarajaiah 2002).

### RESULTS AND DISCUSSION

Majority of respondents (64.29%) belonged to medium category of adoption, while 18.57 per cent respondents belonged to high adoption category followed by 17.14 per cent respondents belonged low adoption category. Thus, it implied that majority of the fish farmers of the study area adopted the poly culture fish practices to medium to high extent, which might be due to the fact that most of the fish farmers have correct information and knowledge about poly culture fish practices (Table 1). These findings are in conformity with those reported by Nagarajaiah (2002) and Biswajith Goswami *et al.*, (2010).

#### Correlation of different independent variables with the adoption level of fish farmers towards poly culture fish practices

The age had negative and significant relation to adoption of poly culture fish practices (Table 2). The finding is similar to those of Biswajit Goswami *et al.*, (2010). Education was positively and significantly related to adoption of poly culture fish practices. Similar findings were reported by Anil Kulshrestha *et al.*, (2010). The occupation status of fish farmers was positively and significantly related to adoption of poly culture fish practices. This finding is in agreement with the findings reported by Anil Kulshrestha *et al.*, 2010. The results of the findings are in conformity with those of Singh *et al.*, (2010). Social participation had significant and positive relationship with adoption level of fish farmers. Possession of fishing equipments had a positive and highly significant relationship with adoption level of fish farmers.

Similar significant relationship was noticed by earlier researchers Nagarajaiah (2002). Annual income showed positively significant relationship with adoption of poly culture fish practices. The finding is similar to those of Biswajit Goswami *et al.*, (2010). Size of land holding had positive and significant relation with adoption of fish farmers.

Economic performance of fish farmers was negatively and significantly associated with their level of adoption. The risk orientation of farmers was positively and significantly related to extent of adoption of poly culture fish practices. These finding is line with the findings of Swathi Lekshmi *et al.*, (2005). Scientific orientation had a positive and highly significant relationship with the adoption level of fish farmers. The findings is in accordance with those reported by Rahman (2007). Innovative proneness of fish farmers showed positive and highly significant relationship with extent of adoption. Similar findings are reported by Shashidara *et al.*, (2007). Positive and highly significant relationship between extension participation and adoption level of fish farmers. This finding supports the findings of Nagarajaiah (2002). A positive and highly significant corelation existed between the extension agency contact and adoption of poly culture fish practices. These findings are in agreement with those reported by Soni *et al.*, (2012). Mass media participation had positive and significant corelation with adoption of poly culture fish practices. These findings are in conformity with the findings reported by Manjula *et al.*, (2007). The size of water body exhibited positive and highly significant relationship with the adoption level of fish farmers. The present findings are in conformity with the findings reported by Krishnaiah (1989). The relationship of distance of fish culture tank with the adoption level was positive and significant. Similar findings were reported by

Table 1. Overall adoption level of poly culture fish practices by fish farmers (n 210).

Sl. No.	Adoption categories	Fish farmers	
		Frequency	Percentage
1	Low (up to 63.58)	36	17.14
2	Medium (63.59 to 84.19)	135	64.29
3	High (84.20 and above)	39	18.57

Table 2. Correlation of different independent variables with the adoption level of fish farmers towards poly culture fish practices.

Sl.No	Independent variables	Correlation Coefficient
(n 210)		
<b>A. Personal variables</b>		
X1	Age	-0.1452*
X2	Education	0.2617***
X3	Family type	0.0800NS
X4	Family size	0.0956 NS
X5	Fish farming experience	-0.0612 NS
X6	Occupation status	0.1871**
<b>B. Socio economic variables</b>		
X7	Caste	0.0540 NS
X8	Socio economic status	0.2775***
X9	Social participation	0.1696*
X10	Possession of fishing equipments	0.2439***
X11	Annual income	0.1589*
X12	Size of land holding	0.1580*
X13	Economic performance	-0.2675***
<b>C. Psychological variables</b>		
X14	Risk orientation	0.2725***
X15	Scientific orientation	0.2425***
X16	Innovative proneness	0.2964***
<b>D. Communication variables</b>		
X17	Extension participation	0.2924***
X18	Extension agency contract	0.2604***
X19	Mass media participation	0.1943**
<b>E. Situational variables</b>		
X20	Size of water body	0.2834***
X21	Distance of water body to the residence	0.1536*
X22	Duration of water availability	0.0460 NS
X23	Source of water	-0.0342 NS
X24	Extent of weed infestation	0.2521***

NS = Non significant

\*= Significant at 0.05 level of probability

\*\* = Significant at 0.01 level of probability

\*\*\* = Significant at 0.005 level of probability

Balasubramaniam 1988. A positive and highly significant relationship was exhibited between extent of weed infestation and adoption level of poly culture fish practices. Similar findings reported by Nagarajaiah (2002). Family type, family size, caste and duration of water availability had positive and non significant association with adoption level. Fish farm experience and source water had negative and non significant relation with adoption level of poly culture fish practices.

#### **Multiple regression of the socio-personal - economic, psychological and communication variables on the dependent variable**

The multiple regression analysis was performed to find out the extent of contribution of each variable towards adoption level. It can be seen from the given Table 3 that the variable, risk orientation, scientific orientation, innovative proneness, extension participation were positive and had significant contribution to the adoption level of respondents at 0.05 per cent level of probability and economic performance were positive and significant contribution to the adoption level of respondents at 1 per cent level of probability. The  $R^2$  value was 0.583 that revealed that 58.3 per cent variation in the adoption level of poly culture fish practices was explained by the 24 independent variables selected for the study (Table 3). The results of this study are in line with the observations carried out by Nagarajaiah (2002).

#### **CONCLUSIONS**

The study revealed that majority of the fish farmers adopted

Table 3: Multiple regression of adoption level of fish farmers towards poly culture fish practices.  
(n 210)

Sl.No	Independent variables	Regression coefficient	SE of reg. Coefficient (b)	't' value
<b>A.Personal variables</b>				
X1	Age	-0.0599	0.1076	0.557
X2	Education	-0.4865	0.7396	0.658
X3	Family type	0.1862	3.6599	0.051
X4	Family size	1.6366	3.7447	0.437
X5	Fish farming experience	-0.5588	0.6091	0.917
X6	Occupation status	-0.2811	1.1648	0.241
<b>B.Socio economic variables</b>				
X7	Caste	-2.3684	1.2859	1.842
X8	Socio economic status	-0.2827	0.6375	0.443
X9	Social participation	0.4291	0.5836	0.735
X10	Possession of fishing equipments	-0.0624	0.6397	0.098
X11	Annual income	-1.7006	1.4639	1.162
X12	Size of land holding	1.5095	1.8568	0.813
X13	Economic performance	0.1584	0.0492	3.219**
<b>C.Psychological variables</b>				
X14	Risk orientation	0.4848	0.2313	2.799*
X15	Scientific orientation	1.1489	0.5553	2.268*
X16	Innovative proneness	0.6579	0.2788	2.035*
<b>D.Communication variables</b>				
X17	Extension participation	1.3803	0.6842	2.017*
X18	Extension agency contract	-0.2488	0.5957	0.418
X19	Mass media participation	-0.0172	0.2588	0.067
<b>E.Situational variables</b>				
X20	Size of water body	1.7810	0.9565	1.862
X21	Distance of water body to the residence	0.6311	0.6929	0.911
X22	Duration of water availability	1.8265	1.0403	1.756
X23	Source of water	-0.9910	0.9593	1.033
X24	Extent of weed infestation	1.3109	0.9942	1.319

$R^2 = 0.5835$

$f = 3.06$

'a' value = 7.448

\* = Significant at 0.05 level of probability

\*\* = Significant at 0.01 level of probability

the recommended technologies of poly culture fish practices from medium to high extent. The variables like education, occupation status, socio economic status, social participation, possession of fishing equipments, annual income, size of land holding, risk orientation, scientific orientation, innovative proneness, extension participation, extension agency contract, mass media participation, size of water body, distance of water body to the residence and extent of weed infestation reflected the positive association; the age and economic performance reflected negative association with the extent of adoption level. The study recommends this also helps their socio economic conditions. That the economic benefits of poly culture need to be intensely highlighted to encourage fish farmers to adopt poly culture fish practice.

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