

# Extent of Trial of Improved Designs of Lobster Traps

P. N. KAUL and M. K. KANDORAN

Central Institute of Fisheries Technology, Cochin - 682 029

The mean extent of trial of an improved design of lobster trap by 45 fishermen was 26.46. The cost of local traps and number of seasons used were both significantly negatively associated with the extent of trials; its relationship with the annual catch by indigenous trap approached significance. These three variables accounted for 59% of the variance in the extent of trial.

Studies in the development of improved lobster traps (Mohan Rajan & Meenakumari, 1982) compared various designs with regard to efficiency. As a result of such studies, it was decided that the modified pot traps be subjected to a field trial with actual fishermen along the south-west coast of India in the districts of Kanyakumari and Trivandrum. The trial stage in the adoption process (Rogers, 1962) is very important as the consideration of its results, determines future adoption on full scale or rejection. This paper reports the results of the trial by the fishermen and explores its relationship with selected variables.

## Materials and Methods

The respondents were 45 lobster fishermen who had received improved traps through various government agencies on subsidy for the purpose of field trials together with their indigenous traps made of palmyrah leaves or coconut split fibres. The extent of trial was measured by the formula.

$$Et = \frac{T_m}{T_t} \times 100$$

where  $T_m$  = no. of improved traps used by the fishermen

$T_t$  = Total no. of lobster traps used

$Et$  = Extent of trial

The data were collected by personal interviews using a structured interview schedule. Various techno-economic and sociological variables were also taken into consideration. Some of these were measured quantitatively and others qualitatively depending upon the nature of the data.

## Results and Discussion

Firstly, the quantitative variables will be presented. Table 1 shows the means and standard deviations of eleven such variables including the extent of trial. It is seen that the mean extent of trial is 26.46 which indicates that roughly, one-fourth of the existing total number of traps were replaced by improved traps as a trial (S. D. = 22.58), on an average.

Table 1. Means and standard deviations of the variables measured quantitatively

Variable	Mean	S.D.
Extent of trial	26.46	22.58
Age	39.64	12.16
Size of family	5.56	1.79
Years of experience	18.42	11.57
No. of members in the family engaged in lobster fishing	1.58	0.78
Cost of local trap (Rs.)	13.62	5.99
No. of catamarans owned	1.27	0.72
No. of seasons used	1.76	0.43
Period of lobster trap fishing (in months)	7.22	0.47
Annual catch by modern trap (in kg per trap)	20.47	12.95
Annual catch by indigenous trap (in kg per trap)	9.27	6.13
Average sale price of lobster tail per kg (in Rs.)	86.00	10.00

Table 2 shows the coefficients of correlation of ten variables with the dependent variable. It is seen that cost of local traps (in Rs.) and number of seasons used are both

Table 2. *Coefficients of correlation of extent of trial with the other variables*

Independent variable	r
Age	0.12
Size of family	0.08
Years of experience	0.16
No. of members in the family engaged in lobster fishing	0.15
Cost of local trap (Rs.)	-0.47
No. of catamarans owned	-0.04
No. of seasons used	-0.77
Period of lobster trap fishing (in months)	-0.18
Annual catch by modern trap (in kg per trap)	-0.24
Annual catch by indigenous trap (in kg per trap)	-0.292
Average sale price of lobster tail per kg (in Rs.)	-0.11

significantly negatively correlated with the extent of trial. In other words, the less the cost of local traps in a locality, and the less the number of seasons for which the improved traps were used, the greater was the extent of trial. At first sight, the second result appears to be a little puzzling; however, it may be that due to wear and tear or due to seasonal variations, the proportion of local traps might go up, with the result that the corresponding proportion of improved traps may decrease. It is of some interest to note that the cost of local traps is influential in the extent of trial; this may be because of the felt need for replacement being stronger with less costly local traps which may also be less efficient, but this needs further study.

The correlation between the annual catch by indigenous trap (in kg per trap) and the extent of trial seems to approach significance at the 5% level and this relationship is also negative in sign. The remaining variables studied do not have any significant relationship with the extent of trial.

A multiple regression analysis of the above mentioned three independent variables with the extent of trial yielded an  $R^2$  of 0.59 ( $F = 19.89$  with 3,41 d.f.) significant at 1% level. This shows that about 59% of the

variance in extent of trial is explicable by these three variables; the regression equation is

$$Y = 96.62 - 0.30x_1 - 37.24x_2 - 0.96x_3$$

where  $Y$  = extent of trial

$x_1$  = cost of local trap (in Rs.)

$x_2$  = seasons of use of improved trap

$x_3$  = annual catch by indigenous trap (in kg per trap).

The coefficient of correlation between  $x_1$  and  $x_2$  was 0.53, between  $x_1$  and  $x_3$  0.16, and between  $x_2$  and  $x_3$  was 0.47.

Table 3 gives the  $t$  values for the qualitative variables studied. None of the values is significant. Table 4 gives the  $F$  values for two variables, namely, source of information about improved traps and sources of improved trap. Both are not significant. Thus we conclude that the extent of trial over various categories of these variables does not differ significantly between them.

Tables 5 and 6 show the merits and demerits of the indigenous traps as reported by the respondents. The main merit is that the raw material for these traps is cheap and available in plenty (60.27%) whereas the main demerits are that it has a very short life (38.46%) and is often lost during operation (28.21%).

Tables 7 and 8 show that the main merits of improved traps are that the service life is 2 to 3 years (41.29%) and the catch is double than that of indigenous trap (32.11%). The main demerits are that it is very costly (41.94%) and is associated with corrosion problem (25.81%). The general impression about modern trap is that it is good (97.78%) and excellent (2.22%). Regarding future full replacement of indigenous traps with modern traps, 64.44% said that they would be replacing slowly, whereas 35.56% stated that they had no money for replacement. With regard to the continuation of the improved traps when the present ones are worn out, 86.67% stated that they would continue whereas 13.33% stated that they would continue if money is available.

The fishermen gave many suggestions as follows for improving the efficiency and use of improved traps. Different sizes of the trap

Table 3. *t* values of classification on the basis of various variables vis-a-vis the extent of trial

Education	N	Mean	S.D.	t
Illiterate	22	28.46	25.39	0.66
Literate	22	24.74	20.35	
Matriculate	1	20		
<i>News paper reading</i>				
Not reading	22	28.46	25.39	0.58
Reading	23	24.54	19.20	
<i>Radio listening</i>				
Sometimes	43	26.27	22.89	-0.26
Regularly	2	30.56	19.64	
<i>Minimum catch of lobster in</i>				
March	8	20.92	12.25	-0.82
April	35	28.36	24.68	
May	1	10.71		
January	1	20.00		
<i>Decision for future</i>				
Will continue if money is available	6	25.04	13.26	-0.16
Will use the modern trap	39	26.48	23.80	
<i>Other types of fishing engaged</i>				
Nil	31	27.97	26.47	0.74
Trap fishing	6	19.79	6.78	
Dredging of shells	1	16.67		1.36
All types of fishing	2	24.04		
Trap fishing and lines	1	44.44		27.27
Trap fishing, lines, and dredging of shells	1			
Lines and natho-livala operation	1	20.00		10.71
Trap fishing and gill netting	1			
Trap fishing, gill netting and lines	1	37.50		-1.81
<i>Types of indigenous traps used</i>				
Palmyrah leaves	22	17.04	13.24	
Coconut split fibres	23	35.49	26.03	

are required (39.13%), smaller sizes of the traps are also required (4.35%), loan has to be given for procuring traps, traps should be available at reduced rate, width of the trap be reduced while maintaining the length, and the trap may be wrapped with plastic twines to avoid plastic coating (2.17% each). 47.83% gave no suggestions. The suggestions for improving lobster fishing were:

Table 4. *F* values for extent of trial vis-a-vis two variables

<i>Sources of information about improved traps</i>				
	N	Mean	S.D.	F
CIFT	32	17.65	10.25	2.94
State Fisheries Department	7	47.12	39.70	
Friends and relatives	6	49.33	14.85	2.00
<i>Source of modern traps</i>				
MPEDA	19	14.60	8.68	2.00
Co-operative Society	10	58.20	25.92	
MPEDA and CIFT	14	19.61	10.14	16.67
State Fisheries Department	1	40.00		
State Fisheries Department and MPEDA	1	16.67		

Table 5. *Merits of indigenous traps*

	N	%
Raw material is cheap and available in plenty	44	60.27
Fishermen can easily fabricate the trap	11	15.07
Light weight and so easy for transportation	10	13.70
Fabrication can be done locally and indigenously	4	5.48
No capital investment required	2	2.74
Very low cost of fabrication	2	2.74

Table 6. *Demerits of indigenous traps*

	N	%
Very short life	45	38.46
Often lost during operation	33	28.21
Collapses due to current	17	14.53
Poor catch	16	13.68
Stones have to be put for weight	3	2.56
More labour involved for fabrication	3	2.56

Table 7. *Merits of improved traps*

	N	%
Catch is double compared to indigenous trap	35	32.11
Service life is 3 years	29	26.61
Service life is 2 years	16	14.68
Strong	10	9.17
Not lost in current	10	9.17
Catch is 3 times compared to indigenous trap	9	8.26

Table 8. *Demerits of improved trap*

	N	%
Very costly	26	41.94
Corrosion problem	16	25.81
Very heavy and so difficult for transport	8	12.90
Not easily available	6	9.68
Fabrication is difficult and requires workshop	4	6.45
Capital investment is required	2	3.23

subsidy and loan are required for improved traps (49.02%), subsidy should be available

for improved traps (15.69%), loan should be available for purchasing improved traps (3.92%), facilities should be provided for repairing improved traps (3.92%), fishermen should be supplied with improved traps, catamaran and improved traps should be supplied to fishermen, net fishing for lobster has to be stopped, catching lobster by piercing has to be stopped, different sizes of traps may be introduced, modern traps be supplied to more fishermen, and there should be co-operative societies to purchase lobsters from fishermen (1.96% each). 13.73% did not give any suggestions.

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