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CENTRAL MARINE FISHERIES RESEARCH INSTITUTE
COCHIN, INDIA

INDIAN COUNCIL OF AGRICULTURAL RESEARCH

INTENSIVE CULTURE OF MARINE PRAWNS

Data on intensive culture of marine prawns carried out in the farmers' fields by the Central Marine Fisheries Research Institute under its demonstration programme

Information items		Demonstration number I	II	III	IV
A. CULTURE FIELD					
1. Location of the field	Narakkal (Cochin)	Narakkal (Cochin)	Kannamaly (Cochin)	Narakkal (Cochin)	Narakkal (Cochin)
2. Name of the owner	Mr. John (Lessee of the field)	Dept. of Fisheries, Govt. of Kerala, now kept at the disposal of Co-operative Intensive Prawn Farming Project	Mr. B. M. Edward	Mr. K. P. Mani	Mr. K. P. Mani
3. Area of the field (ha)	16	1	0.23	0.4	0.39
4. Type of field	Seasonal paddy-cum-prawn filtration field	Perennial	Perennial	Canal system in the coconut grove	Canal system in the coconut grove
5. Shape and construction of the field	Rectangular; enclosed by earthen bunds	Square; enclosed by earthen bunds	Rectangular; enclosed by earthern bunds on western, northern and eastern sides and by land on southern side	Narrow man-made canals in the coconut grove	Narrow man-made canals in the coconut grove
6. Source of water supply to the field	'Iyyath' canal of Cochin Backwater	'Appangad' canal of Cochin Backwater	Open backwaters on the eastern and northern sides	Adjoining backwater canal	Adjoining backwater canal
7. No. of sluice gates provided	Four	One	Two	One	Two
8. Type and size of sluice gate	Rectangular open type, wooden; length 3.7 m. width 1.0 m. height 1.8 m	Rectangular open type, wooden; length 3.5 m, width 1.2 m; height 2m.	Concrete gates, length 4 m; width 1.25 m; height 2 m.	Rectangular open type, wooden, width 0.75 cm.	Rectangular, open type, wooden, width 0.75 m.
9. Nature of bottom of the field	Muddy with an admixture of sand	Muddy with an admixture of sand	Clayey soil	Sandy	Sandy
10. Depth of the field (m)	0.5 at minimum low tide	0.75 at minimum low tide	0.3–1.5	1	1
B. PRE-STOCKING OBSERVATIONS					
1. Salinity of the water (‰)	—	—	2.46-2.55 in October 1977	9.9	27.2
2. Temperature of the water (°C)	—	—	33.2 in October 1977	29.4	35.6
3. Dissolved oxygen (ml/l)	—	—	1.48	2.2	8.6
C. ERADICATION OF PREDATORY ORGANISMS	Not eradicated	By cast netting, drag netting and hooks and line operation	660 kg Mahuva oil cake and drag netting	By drag netting and cast netting	Mahuva oil cake and drag netting
D. STOCKING					
1. Source of seed	From the wild, brought in by tidal currents	From the wild, collected from adjacent canals	From the wild, collected from the canals of Pudu Vypu	From the wild, collected from Pudu Vypu	From the wild collected from Pudu Vypu
2. Species of prawn/fish seed stocked	Wild stocking of all species	*P. i.*	*P. i., M. d.*	*P. i., P. m., M. d.*	*P. i., P.m,, M. d.,*

3. Date(s) of stocking	November to April, during every high tide	18-2-78 to 31-3-78	15th, 19th and 26th November 1977	28-12-77, 30-12-77 and 3-1-78	24-2-78, 28-2-78, 1-3-78 and 2-3-78
4. No. stocked	Not known, uncontrolled stocking	40,250	*P. i.* 20,700: *M. d.* 2,300	*P. i.* 19,000; *M. d.* 12,000; *P. m.* 20	*P. i.* 18,000; *P. m.* 52; *M. d.* 12,000
5. Average size of seed (mm)	—	55	15	*P. i.* 43; *M. d.* 33; *P. m.* 83	*P. i.* 45; *P. m.* 85; *M. d.* 35
E. CULTURE OPERATION–MONITORING OF WATER QUALITY AND GROWTH OF STOCKED PRAWNS					
1. Duration of culture	15th November to 15th April	105 days	122 days	112 days	84 days
2. Manuring	Nil	Nil	Nil	Nil	Nil
3. Artificial feed	Nil	Nil	Nil	Groundnut cake, 16 kg	Groundnut cake 12 kg
4. Salinity of Pond water(‰)	—	9.5–25.8	0.45–21.39	9.9–24.5	24.5-27.2
5. Temperature(°C)	—	28.8–36.4	32.3–34.5	29.4–34.9	32.0-37.6
6. Dissolved oxygen (ml/l)	—	5.2–9.9	2.96–8.10	2.2–8.2	3.9-11.6
7. Growth of stocked prawns					
1st month after stocking (mm)	—	30	*P. i.* 35 *M. d.* 35	*P. i.* 9	—
2nd month after stocking (mm)	—	25	5 10	—	—
3rd month after stocking (mm)	—	20	50 10	—	—
F. HARVESTING					
1. Date of harvest	During every full and new moon period from 2nd half of December	6 days from 2-6-78	28–3–1978	26-4-78	18-5-78 to 21-5-78
2. Harvesting method	Sluice net; cast netting and hand picking at the final harvest	By cast net	By drag net and cast net	By dewatering, cast netting and hand picking	Cast netting and hand picking
G. PRODUCTION					
1. Prawns:					
a. Total weight (kg)	11,754 *(P. i.*4100; *P. m.* 67; *M. d.* 7194 *M. m.* 393)	595*(P.i.*521-*P.m.*5; *M. d.*69*)*	49.3 *(P. i.* 25; *P. m.* 2.2; *M. d.* 22.1)	123.4 (*P.i.* 86.8; *P.m* 0.5; *M. d.* 36.1)	196.7 *(P. i.* 159.7; *P. m.* 2; *M. d.* 33; *M. m.* 2*)*
b. Total estimated No.	—	*P. i.* 30,218	*P.i.*9,349;*M.d.*9,672	*P. i.* 7896; *P. m.* 11; *M. d.* 17,350	*P. i.* 13,587;*P. m.* 39; *M.d.* 12,540
c. Size range (mm)	*P. i.* 41–145; *M. d.* 36–70; *M.m.* 65–75	*P. i.* 121–150	*P. i.* 62–150	—	*P. i.* 89-134; *P. m.* 123-210;*M. d.* 52-87
d. Average size (mm)	—	—	*P. i.* 96.2; *M.d.* 71.7	*P. i.* 113; *M. d.* 73; *P. m.* 174	*P. i.* 120; *M. d.* 75; *P. i.* 11.75; *M. d* 2.6
e. Average weight of prawns (g)	*P. i.* 8; *M. d.* 2;	*P. i.* 17	*P. i.* 10.5 (large specimens) 1.8 (small specimens)	*P. i.*-11; *M. d.* 2.1; *P. m.*-45	*P. m.* 52.6

2. Fishes (kg)	Not available	55	40.5	82.5	68
3. Total production Prawn & fish (kg.)	11754+	650	89.8	205.9	284.7
H. VALUE REALISED					
1. Price of prawn per kg (Rs.)	*P. i.* 20; *P. m.* 40; *M. d.* 3.25; *M. m.* 5.50	*P. i.*26.75; *P. m.* 56; *M. d.* 3.75	Processed *P. i.* 12.50 *P. m.* 15; small Prawn–8	*P. i.* 16.47; *P. m.* 51.50 *M. d.* 6.79	*P. i.* 18; *P. m.* 40; *M. d* and *M. m.* 5
2. Total value of prawns (Rs.)	1,10,222	14,494.18	472.90	1,657.70	3,128.05
3. Price of fishes per kg (Rs.)	NA	—	4.00	2.70	2.00
4. Total value of fishes (Rs.)	NA	—	160.00	174.80	136.20
5. Total value of the yield (Rs.)	1,10,222 (prawns alone)	14,494.18	632.90	1,832.50	3,264.25
I. ESTIMATED EXPENDITURE	80,000				
1. Lease amount (Rs.)	—	—	—	—	—
2. Eradication (Rs.)	—	300	200	20	90
3. Seed (Rs.)	—	1,285	230	152	126
4. Harvesting (Rs.)	—	1,686	100	171	171
5. Wages (Supervision watch & ward duty) (Rs.)	7,300	1500	—	300	300
6. Maintenance of the field (Rs.)	11,000	2,050	—	40	86
7. Miscellaneous (Rs.)	1,500	195	—	224	276
8. Total expenditure (Rs.)	99,800	7,016	530	907	1,049
J. NET PROFIT (Rs.)	10,422	7,478.18	102.90	925.50	2,215.25
K. REMARKS	During June - October paddy was cultivated. Total expenditure incurred on paddy cultivation was Rs. 25,395 yield of paddy was 32,549 kg. valued at Rs. 34,583 for paddy and Rs. 1,600 for hay, the total receipt from paddy cultivation being Rs. 36,183.	Capital expenditure on bunds, reclamation and construction building not included in the estimated expenditure.	Culture operation was hampered by unprecedented rains in November and overflow of fresh water into the field	Mr. K. P. Mani is an ex-trainee of Krishi Vigyan Kendra for Mariculture, Narakkal	

P. i. Penaeus indicus; *P. m. P. monodon*; *M. d. Metapenaeus dobsoni*; *M. m. M. monoceros*

The Central Marine Fisheries Research Institute is carrying out a series of demonstrations on intensive culture of marine prawns with a view to transfer the technology developed by it to the actual farmers and to promote prawn culture on scientific lines. The results of some of these demonstrations conducted between October, 1977 and May, 1978 in different ecosystems around Cochin are presented above. Data on the prawn culture operations carried out by the traditional method in a paddy field in Vypeen Island, near Cochin, are also included for facilitating comparison between the traditional practice and the intensive culture of selected species of fast growing prawns. Results of other demonstrations will be given in the ensuing numbers of this series. It is hoped that the information would be useful to the entrepreneurs.

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Information relating to potential area available, existing practice, potential species and seasons of availability of seed for coastal acquaculture in different maritime states of India

State/Union Territories	Potential inshore area (0-18m) available for open sea-farming (million ha)	Estuarine and brackish water area (million ha)	Area utilised at present for commercial brakish water fish culture (ha)	Important commercial species encountered in the brackish water fish culture	Present yield Kg/h/year	Species of fishes and shellfishes that could be used for intensive culture	Main Seasons of availability of seed					
							Fishes	Prawns	Mussels	Molluscs Edible oysters	Pearl oysters	Clams and cockles
Gujarat	4.752	0.376	88	2	35.5	1, 2, 3,4, 11,12, 18, 19, 20, 23, 24, 25,28, 29, 30, 31, 32	All months	Feb.-Apr & Sept.	NA	Apr.-May., July-Sept.	Mar.-Jun., Oct.-Feb.	Sept.-May
Maharashtra	0.593	0.081	—	—	—	1, 2, 3, 4, 6,7, 12,14, 16, 17,20, 22, 23, 25, 26, 27, 28, 30, 31, 32	Nov-June & Sept.	Oct.-Dec.	NA	Sept.-May	—	Sept.-May
Goa	0.119	0.019	NA	1, 2, 3, 4, 10, 11, 14	500	1, 2, 3, 4, 10, 11, 12, 14, 15,16, 20, 22, 23, 28, 29, 30	Oct.-May	Oct.-Dec., Feb.-May	NA	NA	—	NA
Karnataka	0.259	0.008	4,800	2,11,14, 15	258	1, 2, 3,4, 5, 10,11,12, 14, 15, 16, 20, 22, 23, 25,26, 27, 28, 30, 32	All months	Oct.-Apr.	Mar.-Oct.	All months	—	All months
Kerala	0.259	0.243	5,117	1, 2, 3, 4,8, 10, 11,13,14, 15,16, 20	700	1, 2, 3, 4, 10, 11, 14, 15, 16,19 20, 21, 22, 23, 24,25, 27, 28, 30, 31, 32	Oct.-Dec., Apr.-Sept.	Nov.-Dec., Feb.-May	Oct.-Nov., Jun.-Aug.	Oct.-Dec., Mar. Jun.	Apr.-May., Sept.-Oct	All months
Tamil Nadu	1. 606	0.080	—	—	—	1, 2, 3, 4, 10, 11, 13, 14, 20, 21, 22, 23, 24, 25,26, 28, 29, 30	Apr.-Jun., Oct.-Feb.	Feb.-May., Aug.-Dec.	Mar., Jun.-Aug., Oct.-Dec.	Oct.-Dec., Mar.-Apr.	Apr.-May., Sept.-Oct.	All months
Pondicherry	0.067	840 ha	—	—	—	1, 2, 3,10, 11, 14, 20, 22, 23	NA	Nov.-Dec.	NA	NA	NA	NA
Andhra Pradesh	0.414	0.200	—	—	—	1, 2, 3, 4, 10, 11, 12, 14, 17, 19, 20,22, 23, 25, 26, 27, 29	Jun.-Aug., Oct.-Feb.	Sept.-Apr.	NA	All months	—	All months
Orissa	0.768	0.299	—	—	—	1, 2, 3, 4, 10, 11, 14, 16, 19, 20, 22,23, 25, 28,	May-Jun., Dec.-Feb.	Feb.-May., Aug.-Sept.	NA	All months	—	All months
West Bengal	0.078	0.405	20,000	2,4,10, 11,17,19	300	1, 2, 3, 4, 9, 10, 11, 17, 19, 20, 23	Mar.-July, Dec.-Jan.	Feb.-May., Aug.-Sept.	NA	NA	—	NA

NA— Data not available