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COMMUNICATION OF INNOVATIONS ON TRAWLS DEVELOPED BY CIFT

Of the 22, 906 mechanised fishing boats in India, about 3340 boats are operated from Kerala coast. Majority of the fishing boats operated in India as well as in Kerala is in the size range of 9.3 to 15 m OAL and trawling is found to be the principal fishing method adopted, though, the fishing techniques such as gill netting, purse seining and long lining are also used by a few boats. It is estimated that about 35% of the total annual marine landings (2.8 million tons) is contributed by the mechanised fishing sector. Majority of demersal trawls aims for shrimps available in the inshore waters upto 60m depth while midwater and pelagic trawls aim for the exploitation of semi-pelagic and pelagic fishery resources in Indian EEZ.

Since its inception in 1957, the Central Institute of Fisheries Technology (CIFT) had evolved several designs of trawls for the exploitation of fishery resources. Important trawl designs developed by CIFT to suit the requirements of different coastal regions and for different size classes of fishing vessels are listed below:

Type of trawl design	Size (head rope length)
1. Two seam trawl	- 9.76, 11.38 m, 11.89m, 12.02m, 12.93m, 13.68m, 17m, 18.26m, 21.33m, 22.84m, 26m, 30m.
2. Four seam trawl	- 10.08m, 10.66m, 13.38m, 13.68m, 14.12m, 16.76m, 17.36m, 18.44m, 21.02m, 21.33m, 25.74m, 26m, 32.5m.
3. Midwater trawl	- 10.5m, 11.0m, 14m, 17m, 20.57m, 50m.
4. Long wing trawl	- 27.44m, 29.26m, 32m.
5 Four equal panel trawl	- 8.68m, 32m.
6. Bulged belly trawl	- 15m, 17.5m, 20m, 21.3m, 25m, 32m, 33m, 35m, 50m.
7. Shrimp trawl	- 18m, 22m,
8. Bottom trawl	- 22m
9. High opening trawl (HOT)	- 25m, 26.4m, 32m, 35m, 38m, 40m, 45.6m, 50m.
10. Large mesh demersal trawl	- 25m, 32m
11. High speed demersal trawl (HSDT)	- 25m, 38m, 40m.
12. Six seam trawl	- 15.8m, 25m
13. Rope trawl	- 25m, 35m.
14. Sputnik trawl	- 20m
15. Semiballoon trawl	- 22m, 33m
16. Bobbin trawl	- 38 m
17. Hybrid trawl	- 38 m

Information on the development of improved designs of trawls have been published through several publications of the Institute as well as other organisations. Need based training programmes were organised besides other extension activities to impart knowledge and skills on the fabrication of trawls. On request to CIFT, several organisations and entrepreneurs in the fishing industry had received the designs of these nets and trawl nets had been fabricated with or without modifications to suit their needs and area-specific requirements. As a result of extensive efforts of various central and state fisheries departments over the last 30 years for the development of mechanised fishing, now, the established trawl net makers can read the improved designs developed by researchers on their own and they have the expertise to fabricate the trawl nets for the fishing industry.

Though the fishing industry was highly profitable in the earlier periods, now there are competitions with increased investment and operational costs, less availability of catch in selected areas, increased maintenance expenses and problems due to inadequate linkages with the development organisations. Since the cost of extension services is going up, the entrepreneurs have to maintain the linkages with organisations like CIFT to avail the consultancy services and technological support. It is seen that increased technological gaps would result in uneconomic fishing operations and wastage of resources.

Further, due to over enthusiasm, the fishing boat owners should not use bigger trawl designs than the recommended designs. For example, the fishing vessels in the size range of 12 to 15 metre OAL with 80 to 105 HP engines should not use trawl nets of 35 m to 50 m size as it would reduce the towing speed of the boat and increase the maintenance cost of engines.

For the fishing vessels in the size range of 12 to 15 m OAL and with engines of 105-165 HP, CIFT offers a new trawl design with the advent of 25 m High opening Trawl (HOT). This new gear possesses the properties of a high rising bottom trawl and semi-pelagic trawl. High density polyethylene (HDPE) net material with a diameter of 1.0m is used for fabricating the net. The design details could be obtained from CIFT on request. Flat rectangular otterboards of 1524 mm and 762 mm size and 100 kg weight each are used for the net operation. This new gear has given significantly more horizontal net opening, lesser towing resistance and higher fish catch (CPUE : 96.2 Kg/h) without excess fuel consumption when the net was experimentally operated from the CIFT vessel at a depth range of 28-44 m.

In Kerala, as a result of diffusion through the research and extension activities of CIFT, the fishing boats by and large use appropriate trawl net sizes taking into consideration the size of the boat, HP of engine and depth of operations. The smaller fishing vessels in the size range of 9.3 to 12 m OAL operating in the fishing centres such as Kollam, Cochin, Munambam, Ponnani, Beypore, Puthiyappa and Kannur use trawl designs of 13m to 20m size while 12-15m OAL vessels use trawl designs of 25-30 m. These boats use trawls with the cod end mesh sizes of 18-20mm and are found to perform better in catching prawns and fishes, though, it would be advisable to use 30-34 mm mesh size cod ends to allow the escapement of juveniles for the conservation of fishery resources.

Of late, in Gujarat coast, fishing vessels have begun to use the following new otterboards developed by CIFT to reduce the fuel consumption of engines:

1. 1050 X 620mm, 50 Kg each, V form all steel otterboards
2. 1500 X 890mm, 150 Kg each, V form all steel otterboards
3. 1370 X 820mm, 90 Kg each, V form all steel otterboards

In other fishing centres also, these otterboards could be adopted to reduce the fuel consumption significantly.

The cost of fishing operations per day has gone up (> Rs. 16.000/-day) for the larger fishing vessels (> 23m OAL) and their contribution to total fish catch is estimated to be less than 5%. The electronic equipments to detect the fish shoals at deeper waters and to measure other operational parameters of trawls are limited in use even in medium class fishing vessels which are operated to exploit the potential fishery resources available in Indian EEZ. Hence, in-depth gear research studies are planned in CIFT on the technological areas to generate appropriate technologies for the development of the fishing industry.

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