MARINE FISHERIES INFORMATION SERVICE

TECHNICAL AND
EXTENSION SERIES

No.19
May 1980

CENTRAL MARINE FISHERIES RESEARCH INSTITUTE
COCHIN, INDIA

INDIAN COUNCIL OF AGRICULTURAL RESEARCH

TECHNIQUES FOR THE COLLECTION AND TRANSPORTATION OF PRAWN SEEDS*

A series of field experiments were conducted to determine the best and low cost methods for large scale collection of prawn seeds, optimum seed density per litre of water while transporting, suitable containers for packing and transporting seeds, and to know the effect of long distance travel by road on seeds. *Penaeus indicus* seeds of size range 20–30 mm were used for the experiments.

A shallow scoop net made of velon screen,mounted on a metal frame of size 1 x 1.5 m was found to be the most efficient gear for large scale seed collection in shallow creeks and backwaters. A velon screen of 1 x 1.5 m was also successfully used for the purpose. The best time of collection for seeds was found to be the early morning hours at the lowest tide.

Maintenance of optimum number of seeds in the containers while transporting is very essential because mortality rate increases as the number exceeds the optimum level. Experiments were done with varying number of seeds (from 25 to 250) in containers under similar conditions. The results indicated that 50 number of prawn seeds of the size 20–30 mm per litre of water is the optimum number under unoxygenated condition. In this case no mortality was observed until 24 hours. However, at 36th hour a 10% mortality was found. Under the same conditions when 100, 150, and 250 seeds were packed, they died at the rate of 15%, 50% and 55% respectively even at the 12th hour.

Seeds when transported at the rate of 100 per litre of water with continuous oxygenation showed no mortality during the first 24 hours, but mortality at the rate of 3%, 15%, 75% and 100% was observed at 36th,48th,60th and 72nd hours of experiment respectively. However, the seed density in the container may be regulated according to the size of seeds, distance to be travelled and duration of transportation. It is not advisable to change the medium in the container during transportation as it generally leads to mass mortality and if at all a change of the medium is needed, it should have the same characteristics of the medium in which the seeds are originally packed. The salinity range of the media at which the experiments were conducted was between 24.6 and 28.7‰.

Regarding suitability of containers, although polythene bags, jerry cans, earthenwares, special seed transportation jars (Fig. 1) and metal containers were tested and found suitable for keeping seeds in healthy condition for longer periods, earthenwares were found to be the best for long time storing (More than 4 days) as they can maintain the temperature. Thick polythene bags of 15 litres capacity can be conveniently used with 10 litres of water and 3 litres of oxygen filled. Each of the bag may be kept in empty kerosene tin with specially made top lid and hinges for the sake of easy handling. If metal containers are used, it is advisable to wrap them with gunny bags to maintain the temperature during transportation.

Temperature plays an important role in the survival of seeds during transportation by open vagons. From the present experiments, it is found that although prawn seeds can tolerate wide range of temperature, the maximum tolerance of *P. indicus* seeds is 38°C. The lower limit of the water temperature at which the prawn seeds were kept during the experiment in healthy condition was 22.7°C. No experiment was conducted below this level of temperature.

During the entire period of transportation, no feed need be given as any attempt to do so will pollute the media and lead to mass mortality of seeds. It is also found that *P. indicus* seeds can hardly live in condition where oxygen content of the medium is 0.2 ml/L or less. The level of dissolved oxygen enough for the survival of prawn seeds in healthy condition is found to be above 2.5 ml/L. Oxygen depletion in the medium can be understood by the behaviour of the seeds. Under such conditions, the prawn seeds are found swimming in the surface layers of the water and also they jump and stick on the sides of the container. If such a condition is observed, immediate oxygenation will be required. If there is no facility for oxygenation on the way, the container should be opened, the old gas present in it expelled out and fresh air allowed in. Then the container is to be shaken well for mixing the fresh air with water.

During the transportation experiments, the container used was a special type of transparent polythene seed

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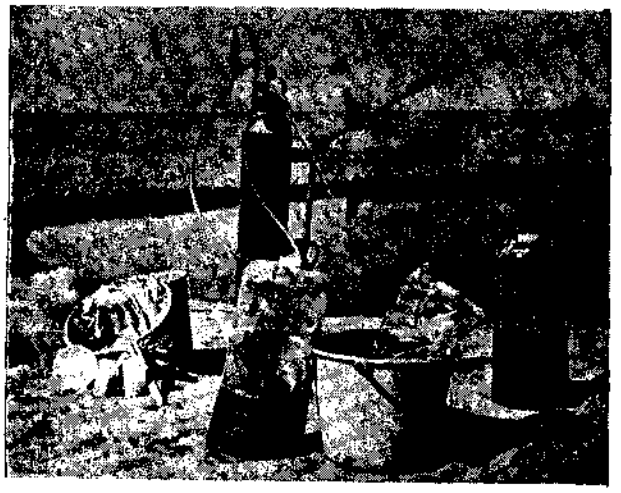

Fig. 1 Polythene jars for transportation of seeds along with other equipment.

transportation jar (Fig. 1) of 14 litres capacity in which 10 litres of water and 500 *P. indicus* seeds were packed and 4 litres of oxygen was filled in. The total distance travelled was over 700 km. and the time involved was 4 days. Reoxygenation was done at every 24 hours after completely expelling the old gas present in the container. At 48th hour, the mortality was less than 5%. About 15% mortality was observed at the end of the experiment.

Following the perfection in the seed transportation techniques, over 36,000 *P. indicus* seeds were transported from Narakkal to Quilon, which involved a total distance of over 200 km and the duration from packing to release was about 20 hours. The containers used for the packing were thick transparent polythene bags of dimensions 50 x 30 cm. Each bag had six litres of water and 500 seeds with 3 litres of oxygen filled in. The packing procedure was simple. After putting the water and the seeds in the bag, the air occupying the rest of the space in the bag was squeezed out. Then holding the mouth of the bag tightly in one hand, the tube from the oxygen cylinder was inserted into the medium and oxygen bubbled through it. When the required quantity of oxygen was allowed in, the tube was removed and the mouth of the bag was tied air-tight and transported. Automatic stirring of the media due to travel by road or rail help in mixing of oxygen within it, thus enabling the seeds to remain in healthy condition.