Bivalve larvae settled in the hatchery as spat have to be reared for a short period in the nursery until they reach a size which can tolerate field culture conditions. Land based and field based systems are used for nursery rearing of bivalve seed. Common land based systems used are down wellers, upwellers and race ways. On-bottom, off-bottom containers, floating up-wellers and floating rafts are the common field based systems for nursery rearing. Micro-nursery (upwelling and down welling), one of the land based culture systems used for bivalve seed production needs continuous circulation of seawater, regular cleaning and monitoring of seeds. Even though the fabrication of these systems are costly, survival and growth rates of spat are better. Therefore these systems are successfully used in USA (especially in the Gulf of Mexico, Georgia, North and South Carolina) for nursery rearing of hard clam species, Mercinaria mercinaria and single oyster (cultchless oyster seed) of Crassostrea virginica. This system is also used in countries like Canada, France and Australia for bivalve seed rearing.

In the case of commercially important bivalves such as green mussel Perna viridis, brown mussel Perna indica, edible oyster Crassostrea madrasensis, pearl oyster Pinctada fucata and short neck clam Paphia malabarica fertilization is external and the fertilized egg takes 18 hrs to develop in to D shaped larvae. In 17-21 days the larvae attains eyespot larval stage after passing through morula, D veliger and umbo stages. Then it passes through the pediveliger and planitigrade stage and reaches the spat stage. The typical bivalve larval life stages as recorded for the commercially important green mussel is given (Fig. 1). Micro-nursery system: This consists of one down-welling and one upwelling sub systems and each with separate reservoir tanks and pumps for providing water circulation (Fig 2). In the down-welling system eyed stage larvae of mussel, oyster or clam can be stocked at high density for settlement and further growth. When the settled spat reaches 4 mm size it can be transferred to upwelling system for further rearing.
**Down welling system:** This unit has 2000 litre capacity divided into 4 compartments of equal size (Fig.3). Downwellers are the containers or vessels designed to rear the eyespot larvae until they metamorphose to spat. Each compartment has eight PVC wells each of 30 cm diameter and 25 cm height. Wells are provided with air lift mechanism for pumping water to the well from the compartment system. There are downwellers with 150 µ, 250µ, and 750µ mesh which can be used in succession as the growth of the bivalve larvae proceeds. Spat is allowed grow in the down welling containers or wells till they reach 4 mm size that can be transferred to 2 mm upwellers.

Through all the 32 wells water passes from surface to down the system through the mesh (down-welling). Eyed stage bivalve larvae can be transferred directly to down-welling wells with 150 micron mesh. A 30 cm diameter down-weller can accommodate up to 0.3 million eyed larvae. Eyed stage will settle in the wells and can be grown till 2 mm (15-20 days) size by changing to 250 µ and 500 µ wells. On the 20th day the spat are transferred to 750 µ mesh and grown there till they reach 4 mm (15-20 days).

**Up-welling system:** It has two race way compartments with a total 1500 litre volume capacity (Fig.4). Each compartment has 8 wells provided with the bottom mesh of 2 mm size. Here spat can be grown from 4 mm to seed size of 20 mm in 60 days. Water flows from these compartments up through the mesh (upwelling) of the wells upwards to the middle drainage section through a half inch pipe and from where water is drained to the reservoir. Stocking rate in the upwelling wells is from 50000-100000 depending on size and species.

Seawater with required feed is circulated through the systems from the reservoir by two dedicated pumps of 0.2 hp. Required quantity of the feed proportional to the stocking density and size of the spat is directly poured in to the respective reservoirs of upwelling and down welling systems. In the micron nursery usually the feed given is ratio of 2:1:1 Chaetoceros calcitrans: Isochrysis galbana:Nanochloropsis salina.

About 0.1 million spat can be nursery reared to seed size (8-12 mm) in a micron meshed nursery within 45
days and 17-20 mm on 60 days. On the other hand, spat reared in hatchery shows only limited growth and low stocking density. Seed grown in the micro-nursery nursery can be used for seeding ropes or used for on-bottom farm nurseries for further growth.

Every alternate day the wells are cleaned by spraying seawater through a nozzle connected to 0.5 hp pump and water is fully drained from the compartment and reservoirs and refilled with fresh seawater so that all the accumulated waste materials are removed.

There is a high demand for bivalve seed especially mussel and oyster seed as the quantity of seed available from the wild are erratic. Also, most of the time when it reaches the farmer it is of lowered quality. Bivalve seed of required quality and quantity can be made available using the present technology.

Crambionella annandalei is a rhizostomatid jellyfish (class Scyphozoa) and locally known as Munthakaya (Fig.1). The swarms of this species was considered a menace to coastal fisheries as it caused damaged to fishing nets and hindered the fishing operations. However, the species is emerging as a targeted fishery resource along the coast of Andhra Pradesh due to increased demands of processed oral arms of jellyfish in south-east Asian countries and delivers additional income to coastal fisher folk involved in this activity.

An estimated landing of 0.02 lakh tons of the species was recorded in 2017, which increased to 0.033 lakh tons in 2018. The fishermen operate a gillnet (Polusuvala) from traditional crafts (motorized and non-motorized) at water depths of 10 to 40 m to catch jellyfish. The fishing season is during the period from March to July with the peak fishing season being June and July. On an average about 60-70 boats with 6-7 persons in each boat are going to the sea everyday to catch jellyfish. Fishermen often cut off the umbrellas while at the sea and only the oral arms are loaded into the boat (Fig.2). Sometimes when catches are less they bring the whole