Transfer of technologies by CARI for A & N Islands

A.D. Mongia

AGRICULTURAL Research and education in India has made tremendous headway. It has contributed substantially to the economic development of the country and general welfare of the people. It has got several accomplishments of which any country could be proud of. At the same time, it is realised that inspite of the significant achievements of agricultural research and education, the state of agriculture in several parts of India has remained by and large static and that the levels of production of most agricultural crops, including all food crops are woefully low. This is because of the big gap that remains between the levels of knowledge available in the research institutions and in the farmer's fields.

The Central Agricultural Research Institute, Port Blair took up the Lab to Land programme with 25 families during phase-I (1979-82). Keeping in view the achievements made during phase-I of the Lab to Land programme, 50 farm families were alloted in the phase-II of the programme (1982-84). During the course of operation, CARI has developed/generated the following technologies, which were transferred under the transfer of technology programme to the adopted farm families in the phase-I and phase -II of the programme.

Crop enterprise

Rice is the most important field crop of A & N Islands (12,000 ha out of the total cultivable area of 18,000 ha). With medium or long duration paddies, the average yields at farmers fields being 1.489 t/ha. Though the climatic factor of these islands are suitable for rice cultivation (average annual rainfall of 3180 mm) only 7600 ha of land is cultivated more than once. In order to replace the present practice of monocrop of conventional varieties where no consideration is given to the agronomic management. Short and high yielding varieties of rice (IET-4106, 5858, 5849, 6140 and medium long duration variety P-7) selected on the basis of intensive evaluation programme, were demonstrated along with package of practices. The demonstration conducted at the farmer's fields have shown that they are capable of yielding an average of 40.6 q of rice from a ha by adopting the following recommended package of practices.

Package of practices

(i) Raise the seedlings by dry method in seed bed suitable for hot humid areas.

(ii) Timely sowing and transplanting in May-June during Kharif.

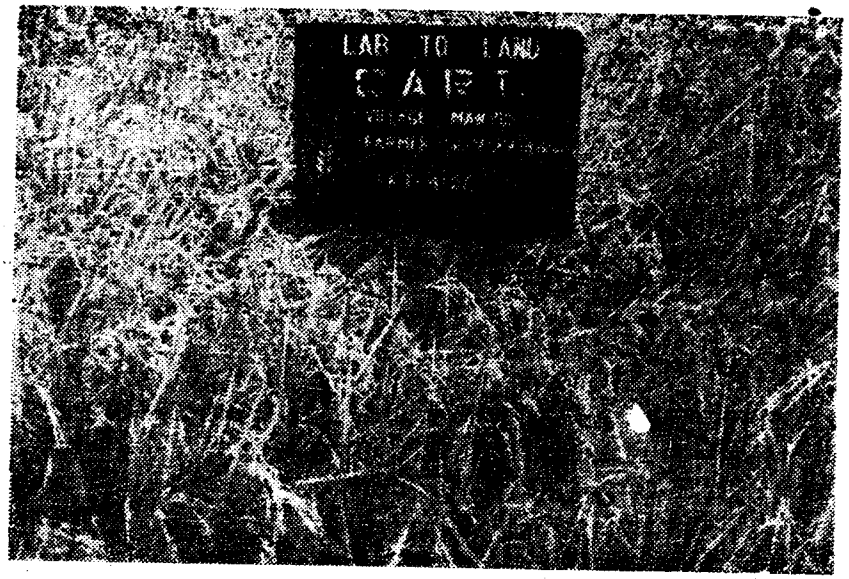
(iii) Transplant 20-25 days old seedlings, 2-3 seedlings/hill spacing of early and medium & late varieties be kept at 15 × 10 cm and 20 × 10 cm. respectively.

(iv) A lower dose of NPK (80:60:40), P & K as basic application with Nitrogen in three splits at planting, tillering and flower initiation stage be applied.

(v) Use Carbofuran granules in soil at 1.0 kg active ingredient/ha (33 kg of 3% Furadan granules or 8 to 10 kg of 10% phorate/ha) at transplanting.

(vi) Two sprays of Quinalphos (Ekalux-0.04%) after 45 and 65 days of transplanting.

Coordinator, Scientist S-2, Lab of Land Programme, CARI, Port Blair.



IET-4106, A widely accepted HYV of Rice amongst Farmers.

(vii) Dust 5 per cent BHC or Parathion @ 20-25 kg/ha at milk stage.

The results obtained with the above package of practices in South Andaman have been depicted in Table 1.

A persual of the table would reveal that the performance of variety IET-4106 and P-7 was better in South Andaman as compared to Little Andaman. The differences in yields are due to the Edaphic factor. The soils of South Andaman are heavy in texture as compared to soils of Little Andaman which are lighter in texture and have lower nutrient and water holding capacity.

Technology on salt tolerant rice

All along the coastal line, due to constant inundation of sea water, tidal marsh and inland saline soils have been formed which are expected to be around 4000 ha in area. These soils have been rendered unsuitable for cultivation due to high salinity added during high tide. Under the transfer of technology programme of CARI, demonstrations on such soils were taken up in South Andaman on the farmers field with salt tolerant rice varieties. Among the varieties tested, cultivars CSR-4 being photo insensitive was found most suitable for uplands, while CSR-1 being a long duration and photo-sensitive was

Table 1

Yield attributes of rice demonstrations

Variety of rice	Duration (days)	Grain yield (q/ha)	Locality	Special features if any
IET-4106	101	44.8	South Andaman	Suitable for upland and Direct sowing
IET-5849	105	45.8	—do—	—do—
Bala	107	41.5	—do—	Grain is bold, early maturing suitable for upland
Jaya	130	41.8	—do—	—do—
Jayanti	125	43.9	—do—	—do—
Indira	125	47.5	—do—	Suitable for medium land
P-7	120	39.5	—do—	—do—
IET-5848	105	33.1	Little Andaman	Less prone to insect-pest
IET-6148	115	35.3	—do—	—do—
P-7	115	36.5	—do—	—do—
IET-4106	101	36.6	—do—	—do—

A Chouldari farmer growing Meghna & CSR-1 Paddy in saline area.

extensively tried in low lands. The yield attributes obtained with package of practices advocated by the Institute are given in Table 2.

Package of practices

(i) Flooding, drainage and bunding before transplanting.

(ii) Shallow transplanting at a close spacing of 15 × 10 cm with 30 days old seedlings, 3-4 seedlings/hill.

(iii) Light dose of fertilizer 60 : 60 : 20 (N : P : K) is recommneded with P & K as basal application and in three split application.

(iv) Maintain sufficient water level (5.7 cm) till maturity.

(v) Use of Agrochemicals for control of insect pest and disease as scheduled for high yielding variety programme.

Introduction of technology on potato cultivation

In Andaman potato is a scarce commodity and is imported from the mainland and its availability depends upon the mainland shipping services. Long queues of consumers for potato at market places is a common sight in Port Blair. Before the advent of CARI, it was taken for granted that potato cannot grow in the islands till CARI took up a trial on potato cultivation in the year 1979 in collaboration with CPRI, Simla under the present programme of the Lab to Land. The performance of potatoes, particularly in North Andaman, were found to be quite encouraging. The salient features of potato cultivars tried on the farmer's fields are tabulated in Table 3.

Package of practices

(i) The soil should be well prepared and pulvarised.

(ii) Plant certified potato tubers free of pest and diseases.

(iii) Plant the tubers in rows where first furrows are made and later these are

Table 2

Yield potentials of salt resistant cultivars of rice

Variety	Duration (days)	Grain yield (q/ha)	Locality tried	Special features
CSR-4	102	36.7	Tidal and inland saline soils of South Andaman	Suitable for uplands
CSR-1	135	30.9	—do—	Suitable for lowlands

Table 3

Yield attributes of potato cultivars

Variety	Yield (q/ha)	Locality	Special features
Kufri Jyoti	87.10	North Andaman	Susceptible to brown rot
Kufri Sindhuri	260.00	—do—	Resistant to brown rot
BSC-1753	135.00	—do—	Early maturing

covered up by the soil and made in to ridges. The ridges should face North.

(iv) Use soil mulch for reducing temperature to facilitate better germinating conditions.

(v) Proper drainage must be ensured to off set the off season heavy rains.

(vi) To take advantage of the residual moisture, the potato should be planted in the month of November.

(vii) Use seed tubers of 50-60 gm. Cut the large tubers longitudinally from bud end to stem end. Each piece should have at least two eyes.

(viii) Treat seed pieces in Dithane M-45 (1 kg in 450 litres of water) before planting to protect them from infection of soil-borne diseases.

(ix) Plant potato seed at a spacing of 20-25 cm from plant to plant and 50-60 cm between the rows.

(x) Apply nitrogen @ 120-150 kg per ha, half at planting and other half 30 days after planting. Phosphorus application @ 75-100 kg/ha and potash @ 80-100 kg/ha at planting is recommended.

(xi) Hoe and weed when the crop is 15-25 cm high.

(xii) Spray 2.5 litre Dursban 20 per cent EC or 1.5 lit. of Thiodan (35 per cent EC) or 500 ml Bidrin (85 WSE) or 1.20 litres of Birlane (24 per cent EC) 5 per cent Heptachlor or 5 per cent Aldrin in 1125 lit. of water/ ha against various pests.

(xiii) Drench soils with 0.15 Captan around base of plants and foliar spray of Bavistin (600 lit/ha) alternated with Dithane M-45 (2 kg/ha) + Urea (1%) will keep free from diseases.

Humspore—An obstinate disease of cattles.

Livestock enterprises

Control of Humspore disease among livestock of A&N Islands

The manifestation of Cauliflower like skin outgrowths and chronic ulcervative dermatitic lesions on various parts of the body of cattle predominantly on hump or neck is popularly termed as Humpsore disease. This disease is a chronic, obsti-

nate dermatitic condition caused by a filarial parasite invading the deeper layers of skin, scientifically termed as *Stephanofilaria* sp. The disease assumes enzootic importance in the islands (nearly 30%) and is responsible for immense economic loss on account of reduced health and productivity. The recurring economic loss to the A & N Islands on account of this disease was estimated to be 33 lakhs rupees while non-recurring loss was assessed to the tune of 4.3 lakh rupees. (based on livestock census-1972). As a part of the All India Coordinated Research Project on studies on biology and control of stephanofilarial dermatitis among domestic animals of A & N Islands, transfer of technology programme on control of this obstinate disease was undertaken under the Institute's Lab to Land programme which has since been approved for Lab to Land Newsreel coverage (Film Division).

About the technology employed under the lab to land programme

Since the disease is only localized to inner lining of the skin known as dermis and does not involve systematic circulation, topical application of the drug in the form of an ointment was preferred, as it also further acts as a fly repellent for the vector population. The active ingredient *viz.* organicphosphate not only acts against the nematode parasite located in the dermis region of the infected sores, the same kills the fly population pesting the sores. As treatment of an individual diseased animal may only bring out a temporary cure, on account of the danger of continuous reinfection from the transmitting agents, fly control measures with insecticidal spray on the fly breeding grounds like dung heaps, compost pits and cattle byres etc. was advocated. The drug employed were either 6 per cent Neguvon (Bayer) or 6 per cent Nuvan or 6 per cent Dimecron with boric acid or sulphanilemide and Dimethylpthlate prepared in white soft vaselene base. The drug is vigorously applied with fingers on the diseased part of the animal, so that the ointment gets dried on the sore immediately and do not pose any problems on its licking by animals. Application twice a day, before the animals are let loose, and after the animals return from grazing, has been practised. Treatment continued till lesions of the disease transform from ulcerative conditions to quiescent stage when the skin is covered with a scab formation. Once the scab formation is noticed, skin emollients coupled with fly repellents like shark liver oil and Neem oil mixture in equal parts is applied over the skin for a week to ten days so that the chances of reinfection are checked. Simultaneously spraying of the cattle sheds, compost pits, and dung heaps with 6 per cent Cythion is undertaken in the area, so that fly population of the area is brought under control. For eradication of this disease from any particular area, this line of treatment before and after rainy season is practised in effecting total cure.

Control of gaint african snail (A polyphagous pest of Agri-horticultural crops of A & N Islands)

The giant african snail, *Achatina fulica* Bowdich, a big sized nocturnal bisexual land snail is a serious menace to agri-horticultural crops of A & N Islands. In the seeding stage, they destroy most of the plants. Though the main season of their activity is rainy season, in other seasons they lie in inactive stage in their hiding places. It is, therefore, necessary to carry on the control measures all round the year.

About the technology of control of giant African snail

(a) *Chemical control* : Five per cent Metaldehyde pellets are quite effective in controlling the snail population when applied on cleaned pathways around the area to be protected. The snails on coming in contact get paralysed and start secreting mucus and as a result of dehydration they get killed. Application of these pellets require broadcasting over cleaned pathways.

(b) *Biological control* : Ducks were found to play an important role in biological control of these giant african snails. Experiments undertaken at the institute with the ducks showed that these ducks, when grown under backward system relish the egg masses and the young ones of these snails by picking from their habitat. Bigger sized snails when offered after breaking the shell in pieces, are also relished by the ducks. Duck keeping in the giant african

(Contd. on page 12)