Profile of moving sand dunes covering houses and fields.

Sand Dune Farming

Rosemary Morrow

In the central coastal zone of Vietnam the sand dunes along the sea have been stripped of their vegetation by massive bombing during the war, deforestation and an increasing number of people and animals taking away whatever vegetation appears. The dunes are seen to belong to everyone for scavenging and to no one for responsible rehabilitation. The result is that along the coast there are floating sand dunes eight kilometres wide in some places and hundreds of kilometres long. The salt laden winds blow the sand inshore over houses and paddy fields. The extreme climate with a hot dry season, floods and cyclones makes the situation even more difficult. Famine occurs frequently in this region and poverty is widely spread. Due to increasing population density the land is very much needed for farming, but very little money is available for reclamation.

Innovative project

In 1992, VACVINA started an innovative project in Quang Binh province, funded by the Quaker Service Australia and Australian government funds, to see if it is possible to reclaim the sand dunes and to turn them into viable, productive and sustainable small farms. Two pilot communities Vo Ninh and Thanh Thuy were chosen and 80 families who were selected as model farms received VAC courses in sustainable intensive gardening techniques and sand dune stabilisation. In each community demonstration centres were established to grow seeds and planting material for large numbers of indigenous coastal grasses and creepers, trees and vegetables. The dunes were divided into sections and given into lease to each participating family. Families worked together in hamlets.

Dune stabilisation

The first step was to stabilise the sand dunes to minimise the impact of the strong cyclonic and salty winds. To do this, special techniques were used, borrowed from beach stabilisation in Australia. Contrary to conventional sand dune stabilisation, work began on the top of the inland dunes. Grasses and creepers were planted just off the crest of the dune on the windward side. Planting then continued inland and down the slope with three to five rows of drought, salt and cyclone resistant trees. Once the nearest dune was stabilised the family would start on the next dune closer to the sea. The windbreaks have many plants of economic value as well as local indigenous species. Fruit trees were interplanted between the windbreaks. In this way the land is being productive again and growth conditions are improved. Farmers needing fuelwood were encouraged to take it from the sides and taller branches of any existing vegetation, thus encouraging bushier, lower, lateral growth of the plants which results in increased wind resistance. However, VACVINA readily accepts that the cyclones are very strong and that there will always be destruction.

Improved production

Farmers receive no immediate yields from this windbreak system but they are assured of land tenure and hence of the later benefits. They were also given agricultural training to improve yields on the land close to their homes to reduce their need to scavenge the sand dunes and have their animals graze them. During the non-cyclone season the normal nutritional garden and paddy crops common to the VAC ecosystems throughout Vietnam are planted. However, during the cyclone season root crops such as onions, chives, garlic, ginger, sweet potato and taro are grown. Even if the land is flooded most of these will survive until the floodwater subsides and people can eat while replanting.

Another unusual technology is the use of leaking fishponds. These are located in the valleys between the dunes and close to the house. A freshwater lens situated under the sand dunes is tapped and the flow is directed from one shallow pond (about 30 cm) to the next. The flowing water is aerated and its temperature stays cool enough for pond fish. Around the ponds coconuts, bananas, sweet potato, taro, mints and herbs are planted.

Fundamental to a farming system on pure sand is the use of organic fertiliser. Therefore, the key to this cultivated ecosystem is the growing of green manure crops and keeping pigs for their manure. Grass and manure are composted and the compost is placed exactly under or around each seed or seedling. The plants are carefully watched and when the leaf colour changes to a slightly weaker green or when flowers and fruit are forming, plants are given some extra fertiliser. It is quite extraordinary to see really vigorous and healthy plants growing in pure beach sands.

Results

This innovative means of stabilising dunes and turning them into productive small farms appears to be working. The system is being carefully monitored and people from adjoining areas visiting the project would dearly love to extend the principles and practices to their moving sand dunes. Some degree of copying is already taking place. ■

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Profile of stabilised sand dunes and the garden system.