



**PROJECT «NETWORK FOR AGRICULTURE AND RURAL DEVELOPMENT
THINK-TANKS FOR COUNTRIES IN MEKONG-SUB REGION (NARDT)»**



Regional research

Agricultural innovations review in Sub-Mekong region countries

**Agricultural model of climate change adaptation at Giong Trom
in Ben Tre province, Viet Nam**

1. General information

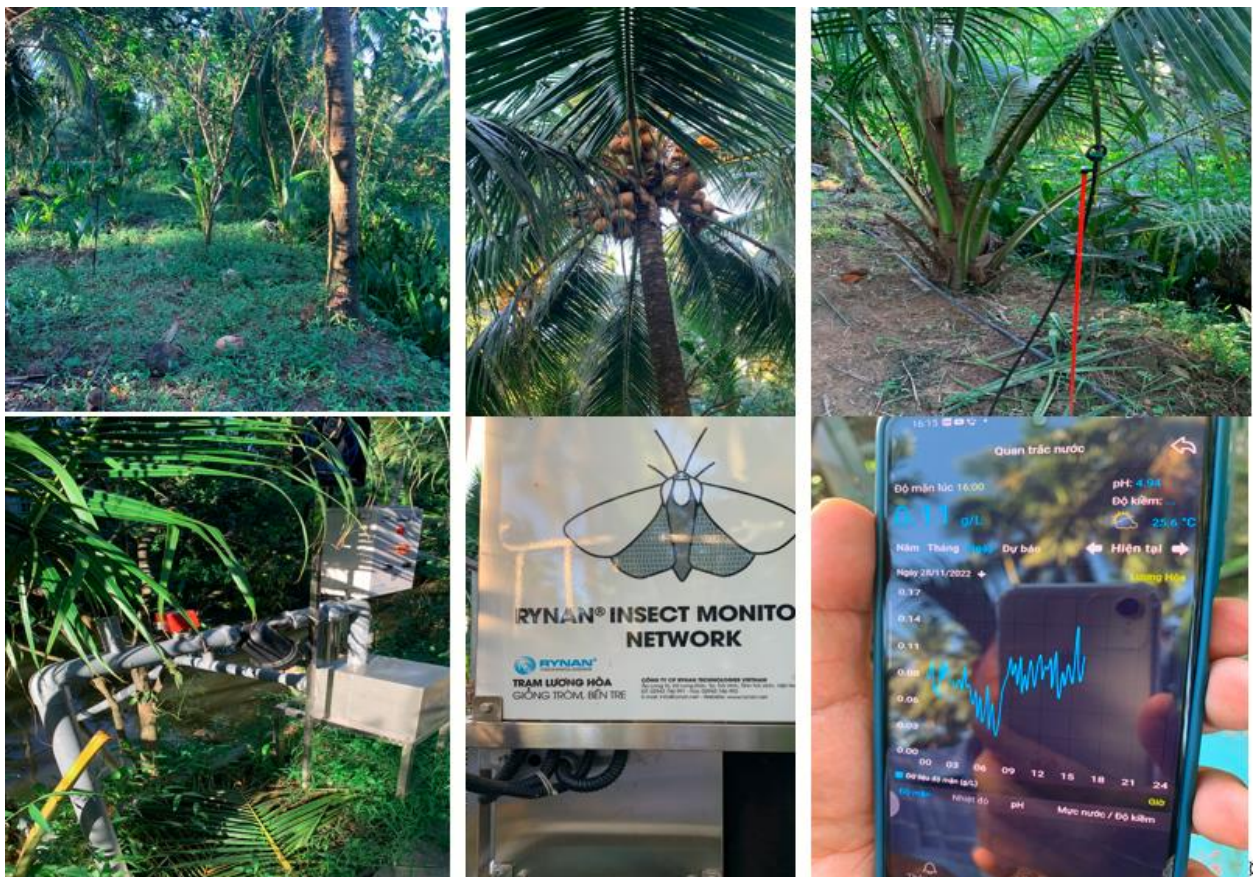
Climate change in recent years tends to be increasingly complicated and bring greatly unexpected impacts to agricultural production in the Mekong Delta, especially in coastal provinces. The largest salinity intrusion in 2016 or 2020 caused the situation of freshwater shortage for domestic use. Salinized crop areas was subject to reduce productivity or die. Many solutions preventing saltwater intrusion have been applied. However, the given production scale of farms or groups of farmers (cooperatives), the conversion of crops and livestock adapting to climate change is a "favorable" solution (suitable to natural conditions), especially for the farmers in the coastal area of Ben Tre. In order to minimize the negative impacts of saline intrusion, the farmers in Ben Tre have applied many different measures, including the planning of orchards with a local surrounding dike system that can control the salinity of the water and develop the multi-crops garden. In addition, the application of salinity and pest control devices in orchards with the support of IFAD Ben Tre's project has created conditions for households to stabilize their income and improve their living standards in recent years. It is a model of agricultural production adapting to climate change at Giong Trom Pomelo Cooperative in Luong Quoi commune, Giong Trom district, Ben Tre province. The shift from monoculture to polyculture combined with the construction of an internal surrounding dike to control salinity has helped households in the cooperative to limit damage and ensure the amount of fruit for their crops to meet consumption contracts with major trading partners.

2. Model development

Giong Trom Pomelo Cooperative was established in 2013 with an initial number of 12 members and has expanded to 80 members with a variety of activities. To be able to maintain all kinds of services for households, cooperative members have mobilized capital from cooperative members about 300 million VND. In 2016, the cooperative signed a successful output sale agreement with VinEco Agricultural Development Investment Production Co., Ltd., making an important contribution to stabilizing the output of green-skinned pomelo products in Giong Trom area. In addition, the cooperative continues to reorient the production plan by finding and linking more with cooperative groups and individual households growing pomelo in the area with the association of 28 more pomelo growing households with a large area from 0.5 - 1.2ha; link production and consumption for cooperatives such as: Binh Hoa Agricultural Cooperative) Luong Hoa citrus cooperative as well as green skin pomelo cooperative groups in Long My commune, Giong Trom district.

Currently, the cooperative's green skin pomelo products have been cultivated according to VietGap standards to ensure safety and high quality. The cooperative has established a technical team with 5 members who are masters, engineers specialized in agriculture and the best pomelo growers to guide members on how to care for, fertilize, and prevent pests and diseases for each type of tree. The members of the cooperative always pay attention to providing adequate nutrients for plants according to the 4 right principles, including: the right type, the right dose, the right time and the right method. Accordingly, depending on the stage of flowering and fruiting, the cooperative members will apply appropriate fertilizers. Therefore, the cooperative has linked up with reputable input suppliers and made general purchases for households in the area at a lower price than that in the free market and with better quality.

Pomelo Garden adapted to climate change in Giong Tom, Ben Tre province



Source: IPSARD, survey in 2022

In recent years, in order to cope with climate change and especially to cope with saline intrusion in orchards, the members of cooperative have applied an internal surrounding dikes and multi-crops garden of circular agriculture. A typical example is the model of a pomelo garden of the director of the cooperative Nguyen Van Bay. His

orchard has an area of about 4 hectares with 1,500 green-skinned pomelo trees planted with many different types of trees to create very reasonable cultivation layers. The highest layer is the fruit-bearing coconut tree, followed by the green-skinned pomelo tree combined with sugar tangerine, and the lowest level is the ancient coconut tree and vegetable tree. Especially between the plantings are ditches for fish and water palm trees to be able to absorb the salinity in the water. All create an eco-cool that limits water evaporation and keeps plants moist, reducing the amount of daily watering. An installed sprinkler system can help the gardener control the irrigation regime through a mobile phone.

In particular, with the support of the IFAD Ben Tre project, Mr. Bay's orchard is equipped with a system to monitor water salinity and warn him of situation of pests.

With a salinity monitoring system, farmers can actively take water into the orchard when the salinity is low and store water in the garden for times when the river system is highly saline. The pest warning system helps farmers to take timely pest control measures to ensure the quality of fruit. With just a smartphone, cooperative members can access complete information about the salinity of water before making a decision to use the water in the canal system around the garden for irrigation or to pump water into the dike-surrounding garden. Similarly, they can monitor the situation of pests and diseases in the garden to take effective control measures.

Product sorting and packaging in Pomelo Cooperative of Giong Trom



Source: IPSARD's survey in 2022.

In addition to building a typical model for cooperative members to strive and benefit from digital technology equipment, the cooperative has trained in waste sorting, in which organic waste is composted in the garden to create organic fertilizer. and fertilizing crops and improving soil. Currently, the Board of Directors of the cooperative also encourages households to strive for multi-crop and multi-service agricultural production, and has mobilized members to organize many supply services such as providing essential goods, business eco-tourism in the garden, shuttle bus service for tourists to experience at the orchards, etc.

With the fruit consumption service for members, the cooperative has built product showrooms, sorting and packing warehouses to supply goods to supermarkets and specialized stores throughout the country as well as promoting online sales, especially in special situations such as the time of the COVID-19 epidemic.

The cooperative negotiated an appropriate shipping price and expanded the scope of e-commerce platforms. During the epidemic, the members of the cooperative were trained in online sales and now they know how to take pictures, record videos, and livestream to introduce products. This is really a new consumption channel and solves the problem of devaluation season, increasing production value by 15-30%.

3. Opportunities and challenges

The model of production linkage at Giong Trom Pomelo Cooperative with technical support from IFAD in response to saltwater intrusion can be typical model in combining solutions for sustainable agricultural development, circular agriculture and can help diversification of farmers' income and activities in the process of "nature-based" production in the Mekong Delta. Therefore, the model can be widely applied to good collective economic organizations or fruit farms in the provinces. With limited financial conditions, not all households can invest in saltwater and pest warning devices, so the form of participating in cooperatives is a suitable and effective solution. Thereby, members can share necessary information as well as carry out "buying and selling together" to find added value and economic efficiency.

However, to replicate the model to other households in the cooperative in terms of building internal dikes (household gardens) requires a large investment compared to the financial potential of the household, especially poor and marginal households. poor. Therefore, there needs to be capital support programs for these subjects as well as investment linkages between households in the cooperative.

4. Conclusion

The model of growing green-skinned grapefruit in Giong Trom is a model sponsored by the IFAD Ben Tre project to support local fruit growing households to cope with climate change, specifically saltwater intrusion in the region. Although the model has only been invested in for one household, information about salinity and pest status can be shared among households in the area to serve community benefits. For a large agricultural production region like the Mekong Delta, adapting to climate change is the way to survive and develop in the future. Adaptation models to this phenomenon are similar to the model at Giong Trom Pomelo Cooperative, Ben Tre province, which has helped farmers preserve and develop orchards not only through formal solutions. farming (multi-storey, circular) but also construction solutions (dykes, digital technology equipment) and market (modern consumption channels supermarkets and online). These climate change adaptation measures can be widely deployed to individual households or collective economic organizations in the province or in the region if there is support from the Government, national projects which are international or domestic funding. Even with collective economic organizations or residential communities, it is possible to mobilize the potential of each member and socialize so that they can form sustainable farming methods, minimizing the effects of pollution, negative impacts of climate change in general and saltwater intrusion in particular.