Integrated crop management: A revolutionary approach to increase rice production in Indonesia

Not too long ago, in the swamp lands of South Sumatra, Indonesia, attempts to grow rice crops during the dry season proved to be grueling for farmers. Production during the monsoon season was moderate, but the dry season was beleaguered by chronic damage from rodents and weeds and crippling labor shortage.

According to Dr. Harmanto, Director of the Assessment Institute for Agricultural Technologies (AIAT) in South Sumatra, the moderate yield during the wet season and practically zero yield during the dry season meant that rice farmers obtained low income, making their families more vulnerable to hunger and poverty.

Out of the 778,000 hectares of land in South Sumatra, around 266,000 hectares are considered tidal swamps, which are influenced daily by the incoming low and high tides of seawater. These lands are now seen as a "new frontier in agricultural development."

The Indonesian government sought to find strategies to improve on the rice yield gap and the degradation of agricultural lands caused by poor environmental management by optimizing the potential of the swamp lands for rice production in an environmentally sustainable manner.

Integrating the best crop management approach

The Indonesian government began a new collaboration with the International Rice Research Institute (IRRI) through a project called CORIGAP (Closing rice yield gaps in Asia with reduced environmental footprint), which works on closing rice yield gaps without compromising environmental sustainability. The project is funded by the Swiss Agency for Development and Cooperation (SDC) and by the government of Indonesia.

In 2013, through the CORIGAP project, a partnership was forged among IRRI, the Directorate of Food Crops, the provincial agricultural services, and AIAT-South Sumatra.

The CORIGAP approach includes water-saving techniques, savings on labor for crop establishment using a legowo drum seeder, ecologically based rodent and weed management, and improved postharvest management of rice. This new approach promotes environmentally sustainable rice production.

A key focus was increasing the intensity of rice production in the tidal swamps of South Sumatra. In 2012, in the Telang and Saleh deltas of South Sumatra, the average rice yield in the monsoon season was only 3.9 tons per hectare and only 30 hectares of rice was grown in the dry season.

CORIGAP demonstration plot in Mekarsari Village in Telang Delta.

A box dryer using husk energy in Saleh Mulia Village.

Increasing yield, closing gaps

During the 2013 dry season, the CORIGAP team set up sites in farmers' fields to demonstrate effective weed and rodent management and introduce the drum seeder that reduces labor costs during crop establishment.

In 2014, 300 hectares of rice was grown during the dry season in the Telang and Saleh deltas, and field demonstration sites during the monsoon season produced yields of more than 6 tons per hectare.

The number of hectares that was planted with rice during the 2015 dry season rose to approximately 20,000 hectares in the delta region, with yields of up to 2.5–3 tons per hectare, whereas, just a few years back, rice cultivation in this area was practically nonexistent. During the monsoon season, the yield of farmers reached 4.5–6 tons per hectare.

The CORIGAP project also supports the efforts of Yogyakarta AIAT by reaching farmers who would benefit from integrated best management approaches for increasing rice productivity. One of CORIGAP's local partners, Mr. Budi Raharjo, was recognized by the Indonesian Ministry of Agriculture for his contribution to the development of the flatbed dryer (FBD) and its successful dissemination in South Sumatra. He was conferred the 2015 Agriculture and Food Innovation Award during the commemoration of World Food Day on 17 October 2015.

In addition, the increase in rice productivity eliminates the need to clear land for cultivation, thereby reducing the incidence of wildfires. In the past years, the haze caused by wildfires posed serious environmental effects and health threats to people.

CORIGAP's approach to rice farming ties in well with the Indonesian Ministry of Agriculture's national policy of GP-PTT (Gerakan Penerapan Pengelolaan Tanaman Terpadu or Implementation Action of Integrated Crop Management), which is implemented in every province by the AIAT. By helping farmers close the rice yield gap, the quest for Indonesia's rice self-sufficiency is a step closer.

A farmer in Sido Harjo Village, Saleh Delta, uses a legowo drum seeder to sow seeds for proper crop establishment.

A plot in Mekarsari Village, Telang Delta, demonstrates good water management and ecologically based rodent management.

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