

# ASEAN CLIMATE RESILIENCE NETWORK (ASEAN-CRN) PROMOTION OF RESILIENCE IN RICE AND OTHER CROPS

The **ASEAN Climate Resilience Network (ASEAN-CRN)** is established to promote the adaptive capacity of ASEAN Member States to climate change and enhance the resilience of major crops for food security. The ASEAN-CRN links policy makers to scientific institutions, universities, national research institutions in agriculture, and international organizations; it serves as a dialogue platform in the region that promotes climate resiliency through exchange of information, expertise, and experiences on climate smart agriculture (CSA).



## PRIORITY CROPS



RICE



MAIZE

## CLIMATE CHANGE HAZARDS



### INCREASING FREQUENCY OF FLOODS AND DROUGHTS

Higher rainfall intensity and a shorter rainy season cause floods and droughts in crop-growing regions, particularly in Indramayu in West Java. Floods may increase the occurrence of pest infestations, which has already damaged an average of 233,251 ha. of paddy area from 2009-2011. Furthermore, drought has damaged an average of 193,156 ha. in the same period.



### ERRATIC RAINFALL PATTERNS

The onset of the rainy season is changing over the years. Farmers can no longer rely on their prior experience or local knowledge to determine the beginning of the rainy season to prepare for planting.



### INCREASING TEMPERATURE & CHANGING SEASONAL PATTERNS

Increasing temperature leads to increasing evapotranspiration and a higher demand of water for crop growth and development. Changing rainfall patterns may reduce water availability for paddy fields.



## CSA PRACTICES IDENTIFIED IN NATIONAL STUDY



### • Crop insurance.

Crop insurance based on indemnity loss has been tested through field trials in some districts in Indonesia. Ruled by a ministerial decree, it aims to protect farmers from losses caused by crop failure resulting from natural hazards, pest and disease infestations, climate change impacts, and other risks. A subsidy of about 80% is given to purchase premium issued by JASINDO, a state-owned crop insurance company. Research on crop insurance based on climate index is in progress in Indramayu. The majority of the research activities aim to teach farmers and train local government officers about climate index insurance.

### • Web-based planting calendar.

MOA operates a web-based planting calendar that provides a nationwide map to guide farming practices at the sub-district level based on seasonal climate predictions of the growing seasons. The information provided includes planting dates, areas prone to flood and droughts, pest and disease infestations, and seed and fertilizer recommendations. The web-based system is updated thrice a year, and the information can be accessed through the website as well as short message services via smartphones. Paddy Standing Crop Monitoring (PSCM) is being developed using satellite implementation Moderate Resolution Imaging Spectroradiometer (MODIS) that captures standing crop based on stages of growth of rice plants (Vegetative 1, Vegetative 2, Generative 1 and Generative 2). PSCM is useful for better management of rice plants.

### • Innovations on cropping strategies.

This entails the application of new and superior paddy varieties that are tolerant to environmental exposures (floods, droughts, salinity), the use of balanced or organic fertilizers for specific locations to improve land fertility; and the improvement of row spacing to optimize fertilizers applied to soil and increase solar radiation acceptance.

### • Silage production for animal feed.

Silage is used as animal feed and can reduce feeding cost in cattle production. It is produced using maize stalks as base material. Producing silage adds value to maize farming and allows farmers to access alternative markets. Particularly through public-private partnership (PPP) as in the example of milk producer Nestle who partnered with Dupont-Pioneer to source silage.

### • Relay planting of maize using hybrid cultivars.

Relay planting is introduced to increase the frequency of maize planting from once a year to four times a year. New drought-tolerant cultivars, such as Bima, Lamuru, Sukmaraga, and Anoman among others, that have shorter maturity were developed and introduced to farmers to support adaptation to environmental exposure.

## MAIN INSTITUTIONAL CHALLENGES FOR SCALING-UP CSA PRACTICES

### • Implementation of crop insurance and web-based planting calendar require sufficient farmers' knowledge on the two programs.

Low education and poor economic condition may hinder the successful implementation of the two programs. Crop insurance is a new concept to farmers and the local government. The premium is still high and a financial institution dedicated to agriculture is still lacking. The capacity needs of the extension workers and farmers could be addressed by training and socialization.

### • Limited investment in mechanization to reduce post-harvest loss.

The availability of affordable farm machinery is limited and farmers lack access to finance to invest in mechanization.

### • Market preference for traditional varieties.

New rice varieties have been developed and released to the market but adoption by farmers is low. Wholesalers and collectors prefer certain varieties based on consumer preferences. Farmers are reluctant to adopt new varieties without a demand from their buyers.

## PRIORITY CSA PRACTICES FOR KNOWLEDGE EXCHANGE IN ASEAN



Cropping calendar, stress tolerant varieties



Post-harvest processing for grain and silage, Sustainable Corn Production in Sloping Areas (SCOPSA)

## AREAS FOR REGIONAL COLLABORATION

- Enhance the application of crop insurance based on weather index. A series of capacity building activities, particularly information sharing, expertise exchange, and regional network of data access on crop insurance should be developed, initially between Indonesia and Vietnam which both expressed interest in crop insurance approaches.

## ASEAN - GERMAN PROGRAMME ON RESPONSE TO CLIMATE CHANGE (GAP-CC)

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