GREEN FARMING STRATEGIC VISION : 26

(Volume 6 Number 2 March-April, 2015)

Upland Farming : The Next Green Rovolution

MARI ROWENA C. TANQUILUT*

Associate Professor IV and Director for Research and Development

Pampanga State Agricultural University, Magalang, Pampanga 2011, Philippines

***E-mail** : rowietanquilut@yahoo.com*

The Consultative Group on International Agricultural Research or CGIAR (1996) describes upland farming as the growing of crops in an ecosystem that is extremely diverse, including fields that are level, gently rolling or steep, at altitudes up to 2,000 meters and with rainfall ranging from 1,000 to 4,500 millimeters annually. The soils range from highly fertile to highly weathered, infertile and acidic. In the Philippines, uplands are those that have a slope of 18 percent or higher and are “declared as public forestlands including those covering foothills to the forest zone line“. They also include plateaus with elevation higher than 600 meters and lands with more than 50 percent slope which are declared as protected forests.

Agriculture in the Philippines is rapidly changing, as new farming techniques and varieties come into use. The deterioration of the environment and natural resources such as deforestation, land degradation, misuse of pesticides and chemicals, and the loss of genetic resources coupled with the fast growing population in the country prompted the Department of Agriculture to refocus its strategies to ensure food security and availability. Upland (rice) farming is considered as an important initiative in attaining the goal of food (rice) sufficiency. Moreover, upland environment provides an opportunity to solve the household-based food availability, income and nutrition especially in the rural communities. Moreover, upland farming is preferred because farmers have limited access to irrigation and low opportunity cost of land (DARFU 10). The uplands contribute significantly to food security in Southeast Asia. Almost two-thirds of the global upland (rice) area is in Asia. About 100 million people now depend on upland rice for their daily subsistence.

It is estimated that around 50 percent or 14.3 million hectares of Philippines' total land area are within the 18 to 50 percent slope based on Bureau of Soils and Water Management record. Philippine uplands are known to be habitats of 24 million people who are mostly suffering from poverty and prone to environment-related disasters. Among the problems in uplands are landslide, soil erosion, bio-diversity loss, and lack of soil fertility. Watersheds also suffer from reduced water storage which affect water supply in irrigated areas especially during the dry season. (Business Diary, 2012) Most of these areas have been degraded and about 70 percent have soil erosion problems. Due to erosion, more than 350 large scale dams have experienced siltation, thus reducing irrigated land area by about 20 to 30 percent (Cruz, 2010, as cited by Peñalba, *et al.,* 2012). Soils there have been badly eroded and degraded as a result of the slash-and-burn agriculture that for many years followed logging (www.worldbank.org). Altogether these conditions greatly affected productivity. The steeper the slope gradient, the more severe such production problems tend to be. In many slope land areas productivity is falling and there is decline in yields (www.apo-tokyo.org). One way to address these challenges is an integrated farming system, which incorporates both livestock and resilient crops using the Sloping Agricultural Land Technology (SALT).

The advantages of SALT are that it is a simple, applicable, low-cost, and a timely method of farming uplands. It is a technology developed for Asian farmers with few tools, little capital, and little learning in agriculture. Contour lines are run by using an A-frame transit that any farmer can learn to make and use. A farmer can grow varieties of crops he is familiar with and old farming patterns can be utilized in the SALT system. (www.pcaarrd.dost.gov.ph) Moreover, SALT is a form of alley farming in which field and perennial crops are grown in bands 4-5 m wide between contoured rows of leguminous trees and shrubs. The latter are thickly planted in double rows to form hedgerows. The cuttings are placed in the alleys between the hedgerows to serve as mulch and organic fertilizer or green manure (www.fao.org). In order to address the issue on water unavailability, resilient crops like pigeonpea, peanut, mungbean and the like can also be integrated in the SALT, as these crops are drought tolerant.

Furthermore, farmers may also be trained to develop their skills on climate forecast application. Basic to the choice of the appropriate upland farming system is the farmer's awareness and understanding of the climate change phenomena. This will help them in adjusting their cropping calendar and choosing rice varieties adapted to the weather forecasts. For instance, if El Niño or La Niña is predicted, they should be able to adjust their crop management practices accordingly. Their willingness to change their farming practices is crucial to take advantage of the benefits and opportunities posed by climate change (Peñalba *et al.,* 2012)

***ENGR. MARI ROWENA CASTAÑEDA-TANQUILUT is an Associate Professor IV at Pampanga** State Agricultural University, Magalang, Pampanga, Philippines and currently designated as the Director for Research and Development since 2012. Engr. Tanquilut graduated with the degree for both BS and MS Agricultural Engineering at University of the Philippines at Los Baños (1991 and 2007, respectively). She is the Project Leader / Project Manager/ Study Leader in numerous R&D projects, being funded by the Department of Agriculture (Central Office, Bureau of Agricultural Research and Regional Field Office), Commission on Higher Education and the United States for Agency International Development (USAID). She also held the designations as Asst. Director for R&D (2010 to 2012) and Chair of the Department of Agricultural Engineering (2008 to 2010) at Pampanga Agricultural College (now PSAU). She also held designations as College Secretary (1995 to 2001) and Coordinator of Student Affairs (1998 to 2001) at Benguet State University, Philippines where she worked there as faculty for almost 10 years.