Tropentag, September 18-21, 2016, Vienna, Austria

"Solidarity in a competing world — fair use of resources"

Crop Choice and Planting Time for Upland Crops in Northwest Cambodia

Stephanie Montgomery[1], Robert J. Martin[1], Chris Guppy[1], Graeme Wright[1], Richard J. Flavel[1], Sophanara Phan[2], Sophoeun Im[2], Van Touch[1], Matthew Tighe[1]

[1] *University of New England, Agronomy and Soil Science, Australia*
[2] *Maddox Jolie-Pitt Foundation, Agriculture, Cambodia*

Abstract

Crop yields are declining in Northwest Cambodia and crop failure in the pre-monsoon season is commonplace with 70 % of farmers surveyed stating that drought is a constraint to production. Farmers currently lack knowledge to adopt more sustainable farming practices. A trial was conducted in Samlout District, Battambang Province, Northwest Cambodia to investigate the feasibility of a sowing time two months later than typical local practices. The aim of the shift in sowing time was to increase crop yield and reduce crop failure due to heat and drought stress throughout the season. A secondary aim was to compare sequences of continuous maize, and maize in rotation with peanut, sunflower, sorghum, cowpea or mungbean. The trial was undertaken for four cropping seasons over two years, during which time the maize-sunflower sequence produced the highest gross margins. Maize-sunflower returns were $514 per hectare per annum more than the typical planting of continuous maize, and over $1100 per hectare per year higher than the other maize-legume and maize-sorghum rotations. Continuous maize produced the most stable yields across the four seasons and maize-sunflower produced the second highest mean yield. Results from modelling of soil moisture suggest that a shift in sowing time may avoid the extreme heat and align crop growth stages with periods of more reliable rainfall. Site specific surface soil moisture data and rainfall was entered into the APSIM model to predict the soil profile moisture throughout the growing season. The results from both modelling and on-farm research resulted in high crop yields compared with traditional practices and expectations, and a low probability of crop failure. Crops of maize, sunflower and sorghum grew well from an early October sowing date into the post monsoon season and produced good yields on stored soil water with low plant stress due to mild seasonal conditions. This may prove to be the best option for farmers in the Northwest upland, achieved by a simple shift of sowing dates.

Keywords: Legume, maize, peanut, planting window, sorghum, Southeast Asia, sunflower

Contact Address: Stephanie Montgomery, University of New England, Agronomy and Soil Science, Department of Agronomy and Soil Science, 2351 Armidale, Australia, e-mail: smontgom@myune.edu.au