Strip intercropping to reduce climate hazard impacts in Bicol Region, Philippines

Source
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Climatic hazards, typhoons, mixed cropping, strip cropping

Country of first practice
Philippines

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Sustainable Development Goals
No poverty, sustainable cities and communities, climate action and life on land

Summary
The objective of strip intercropping is to enhance the farmer’s resilience against extreme weather events, and at the same time generate additional income through higher crop yields and greater profitability. Furthermore well managed strip cropping systems have greater soil and water conservation potential than mono-cropping systems, thus are environmentally friendly.

Description
The good practice technology was tested during wet and dry season 2010/11 in the upland agro-ecological zone in Bicol region on a 1,000 square meter lot on farmer fields, using the planting materials and other farm inputs provided by the project.

Strip intercropping is the practice of producing two or more crops in narrow strips located throughout the length of the field to maximize productivity. The strips are wide enough that each strip can be managed independently. At the same time, they are narrow enough that each crop can influence the microclimate and yield potential of the adjacent crops.

Since the implementation of the technology involves several crop combinations, crops should be based on their growth duration namely long duration (LD), medium duration (MD), and short duration (SD). The growth duration is an indicator for utilization of soil nutrient, soil moisture and capacity to withstand stress and plays a useful role in achieving yield advantage.

Higher yield advantage can be expected when the maturity period of the component crops is different. With a diversified plot, the farmer increases his chances of dealing with the uncertainty and/or the changes created by climate change. Aside from the different crop combinations, improved varieties were used.

1. Implementation of the technology
It is recognized that the growth duration of a crop in an intercropping system plays an important role in achieving high yield. Higher yield is expected when the maturity period of the intercrops is different and the crops are planted in correct time spacing.

With these considerations, the project introduced strip intercropping GPO using a combination of long-duration (LD), medium-duration (MD), and short-duration (SD) crops and improved crop varieties. The following crops were used as intercrops:
1.1 LD crops
Eggplant, upland rice, sweet potato, squash, tomato, and pepper.

1.2 MD crops
Okra and peanut.

1.3 SD crops
Green corn, pole sitao, and snap bean.

Following are the different crop combinations introduced in the pilot communities for three cropping seasons:

- LD + MD + SD: eggplant + okra + green corn and eggplant + okra + pole sitao;
- LD + LD: upland rice + sweet potato, squash + eggplant, squash + tomato, squash + pepper, tomato + pepper, and squash + eggplant;
- LD + MD: eggplant + okra and squash + peanut;
- LD + SD: squash + snap bean, squash + pole sitao, eggplant + snap bean, eggplant + pole sitao, tomato + snap bean, eggplant + green corn, squash + sweet corn, and pepper + sweet corn;
- MD + SD: peanut + green corn; and
- SD + SD: sweet corn + snap bean, green corn + pole sitao, and green corn + snap bean.

Fertilizer was applied based on the result of the soil analysis.

2. Results and finding: economic benefits, social and cultural acceptability and farmers feedback

Data showed that strip intercropping of varying growth durations gave a higher marginal benefit and cost ratio (MBCR) compared to crop combination of same growth durations. Across sites and across locations, combination of long duration (LD) and short duration (SD) crops had higher MBCR value of 3.16 than LD+MD (3.04), MD+SD (2.85), and SD+SD (2.04). Lowest MBCR value of 1.37 was obtained from LD+LD combination.

Although tested only once during the 2011 wet season cropping in Gubat, Sorsogon, combining strips of LD+MD+SD in the same plot produced the highest MBCR of 4.98. Despite the abnormal climatic condition (above normal rainfall) that occurred during the three cropping seasons, the GPOs have produced acceptable yield.

3. Further reading

- Amano, Luis O., Amano, Viola L., Candelaria Angelo P. 2011. Good practice options for DRR and CCA for rainfed and...
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4. Agro-ecological zones
• Temperate, cool

5. Objectives fulfilled by the project
• Women-friendly;
• Resource use efficiency; and
• Pro-poor technology.