Cocoa is a key crop for many Indonesian smallholder farmers, who own over 90 percent of the country’s cocoa production land. However, cocoa bean yields have fallen from around 750 kg/ha in the 1980s to below 400 kg/ha over the last two decades, with ageing trees, pests, diseases, poor soil health and nutrient depletion.

Despite producing 65 percent of Indonesia’s output, smallholders in Sulawesi lack access to relevant cocoa farming knowledge and farm inputs, such as fertilizers and finance. Many of these farmers are in a downward spiral of poverty, with some ready to give up growing cocoa entirely, despite increasing global demand.

**DESCRIPTION OF THE INNOVATION**

In 2014, the International Plant Nutrition Institute (IPNI) teamed up with the local sustainability programme Cocoa Care to raise the living standards and productivity of cocoa farmers in Sulawesi. The aim was to show how best management practices (BMPs) alongside balanced fertilization could improve cocoa bean yields and quality.

The principles of 4R Nutrient Stewardship, developed by the International Fertilizer Association (IFA), were central to the project: using the right source of fertilizer, at the right rate, at the right time, and in the right place.

Farmers families were trained in BMPs and nutrient management for cocoa, such as soil nutrition, pest management and pruning. They also received access to farm tools, fertilizer, compost, high-quality cocoa tree seedlings, and business management training.

Highly trained, lead local farmers, called Cocoa Carers then worked with farmers to conduct trials on their own farms over a two-year period to measure the effects of BMPs and fertilizers.

**BENEFIT FOR FAMILY FARMERS AND FOOD AND NUTRITION SECURITY**

BMPs and balanced fertilization increased both the yield and quality of cocoa, ensuring a sustainable income for smallholder families.

BMPs created improvements within three months. Adding fertilizers produced average yields of over 1,500 kg/ha, more than twice the regional average of 500 kg/ha.

With most cocoa traditionally harvested in Sulawesi between June and August, limited income usually restricts farmers’ ability to invest in inputs for the rest of the year.

Participating farmers, however, could produce crops regularly throughout the year, ensuring a continuous cash flow to reinvest or spend on food.

**ENVIRONMENTAL IMPACTS**

By teaching farmers 4R Nutrient Stewardship and soil health best practices, the project also helps protect the environment by ensuring minimal nutrient losses, improving soil health, and increasing water and carbon storage.

**LESSONS LEARNED AND RECOMMENDATIONS**

Peer learning between farmers, coupled with strong markets for quality cocoa, is leading to a rapid adoption of improved, intensive management. The project has identified the most appropriate fertilizer formulations and BMPs to increase cocoa yields in Sulawesi. To ensure critical nutrient supply, IPNI is currently working to make new formulations commercially available, and is developing farmer-owned agri-input kiosks, alongside Cocoa Care.

**SUSTAINABLE SMALLHOLDER COCOA FARMING THROUGH 4R NUTRIENT MANAGEMENT**

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