

# Raising the Bar in Ghana's Oil Palm Fields

Palm oil is the most important edible oil crop, and oil palm (*Eleais guineensis*), the second most important perennial crop after cocoa in Ghana. In response to an increased demand for palm oil and derived products on domestic and international markets, West African countries such as Ghana are encouraging both national and foreign investors to expand and develop the area planted to oil palm in order to increase production. However, few large tracts of land suitable for oil palm that meet the present criteria for sustainable oil palm production are available. Additionally, present fruit bunch yields in Ghana are low ( $5.4 \text{ t ha}^{-1}$ , compared to  $16.8 \text{ t ha}^{-1}$  in Indonesia in 2012), which is partly explained by sub-optimal climate conditions, soil fertility constraints, and field management.

In 2012, the Southeast Asia and the Sub-Saharan Africa Programs of IPNI initiated a project modeled after successful Best Management Practices (BMP) projects in Southeast Asia. Their goal was to assess the potential to increase oil palm yields in existing oil palm plantings by implementing BMP in three oil palm plantations and 20 smallholder farms. Site-specific BMP were adapted to overcome the following major deficiencies in field management in Ghana:

- Insufficient in-field access (lack of weeded circles, paths and pruning) which leads to poor crop recovery
- Poor canopy maintenance (insufficient frond removal at harvest, insufficient pruning)
- Lack of drainage in inland valley swamps
- Presence of dense woody undergrowth that competes with palms for nutrients and water
- Low soil fertility and leaf nutrient values due to poor and insufficient nutrient management

At each site, identical pairs of blocks were identified. In each pair, one block was selected for the BMP treatment and one as the control reference plot (REF). In plantations, each plot is a commercial plantation block whilst in the smallholder farms, BMP and REF plots were approximately 1 ha. Fruit bunch yields are being recorded, and will continue to be monitored up to 2018 in order to accurately assess the contribution of BMP on yield intensification.

The average fruit bunch yield in plantations after 12 months of BMP implementation was  $13.7 \text{ t ha}^{-1}$  compared with  $12.5 \text{ t ha}^{-1}$  for control plots (REF) ( $+1.2 \text{ t ha}^{-1}$ , +9%), and for smallholder farmers, average BMP yields were  $10.6 \text{ t ha}^{-1}$ , compared with  $8.3 \text{ t ha}^{-1}$  in REF fields ( $+2.2 \text{ t ha}^{-1}$ , +21%) (Figure 1).

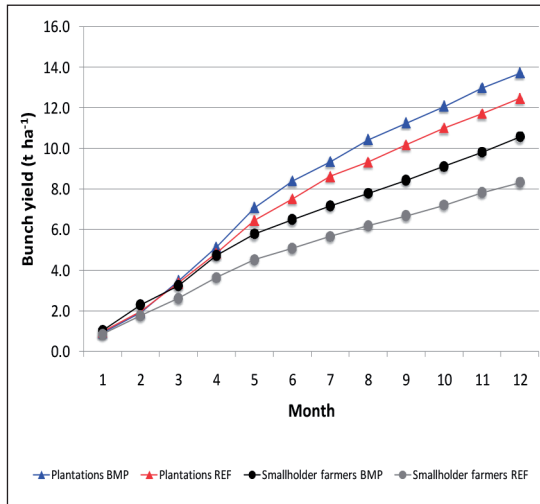


Figure 1. BMP and REF fruit bunch yields after 12 months for plantations and smallholder farmers

The short-term yield response with BMP can be explained by shorter harvest intervals and complete crop recovery after the installation of proper access in BMP fields. Improved crop recovery resulted in a greater number of bunches and larger average bunch weight (mainly due to complete collection of loose fruit). The larger increase in yield with BMP in smallholder farms can be explained by the poor initial state of the farms as compared to oil palm plantations.

Preliminary results show considerable scope to increase oil palm yields in Ghana, simply by improving crop recovery. The basic requirements to achieve full crop recovery are installation of proper access (weeded circles, paths and pruning) and tight control of harvesting intervals, particularly during the peak crop months. An additional increase in yield is expected to be achieved by the implementation of corrective fertilizer programs to improve soil- and leaf nutrient status by focusing on the 4R Nutrient Stewardship concept developed by IPNI.

To meet the projected oil demand in Ghana, yield intensification is required in existing plantings because there is limited land available for further expansion that meets the requirements for sustainable palm oil production.

*This information is derived from Rhebergen, T., M. Hoffmann, S. Zingore, T. Oberthür, K. Acheampong, G. Dwumfour, V. Zutah, C. Adu-Frimpong, F. Ohipeni and T. Fairhurst 2014. The Effects Of Climate, Soil and Oil Palm Management Practices on Yield in Ghana. In: International Oil Palm Conference 2014, Bali, Indonesia.*