How to improve oil palm smallholders' life

Research by the Plant Production Systems Group, Wageningen University in SenSor and SUSPENSE programs

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Major assumptions

- Demand for palm oil will increase
- Further expansion & deforestation
- Increasing yield of existing fields
  - Are BMPs increasing yield & cost effective
  - Are benefits of BMPs sufficient to make certification worthwhile?
  - How to fund replanting for smallholders?

Is there room for yield improvement?

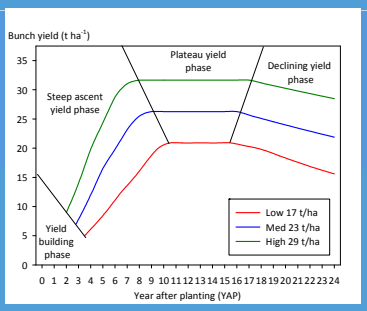
Actual average oil palm yields Indonesia:

- Smallholder: 3 ton oil/ha
- Large plantation: 6 ton oil/ha
- Potential yield: 9 ton oil/ha (PALMSIM)

Huge yield gaps!!

Intensification with BMP can double the yield → save forest

Yield gap in oil palm (Fresh Fruit Bunches)



Graph by Thomas fairhurst after Ng 1976

Aims:
Increase slope
Enlarge plateau
Delay decline
Less steep decline

Potential yield assesment through crop simulation model

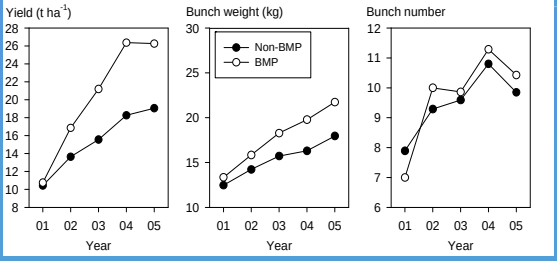
Potential-actual yield = yield gap

"Indonesia palm oil production without deforestation and peat conversion by 2050"

- Based on Millennium Ecosystem Assessment scenarios
- Indonesian market share of 40-60% of global demand
- Current plantations excluding those on peatland
- Potential yields based on crop simulation model (PALMSIM)

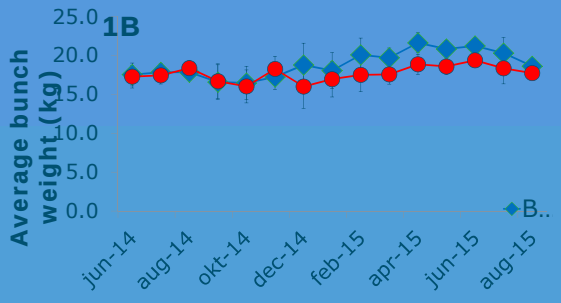
Source: Dian Afriyanti et al. 2016 Science of the Total Environment (2016) 562–570

Close yield gap in plantations through BMP



Tiemen Rhebergen and Thomas Fairhurst in INPI led trials: 60 paired blocks in 6 locations in Indonesia

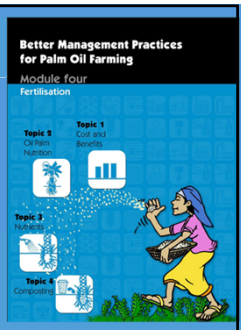
Also effect of BMPs in smallholders



Lotte Woittiez

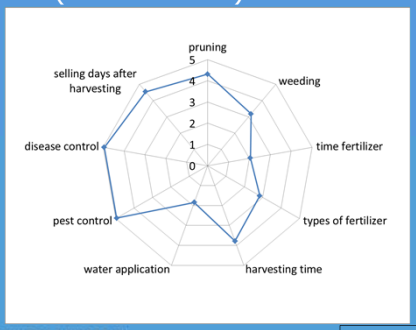
BMP Manual with SNV

- PhD student Lotte Woittiez (WU-PPS) made a smallholders manual for BMP including workbooks with pictures and cartoons



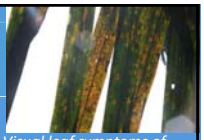
- SNV negotiates with Indonesian government to make it the standardised extension material

Smallholders do not apply BMP in NE Thailand (100 farmers)



Siriluk Somnuek, PhD thesis, AIT, 2015

Fertiliser use by smallholders in Jambi and Sintang



Visual leaf symptoms of potassium deficiency (confluent yellow spotting)

Investigation in

- Soil and leaf samples → low K
- Visible K deficiency symptoms

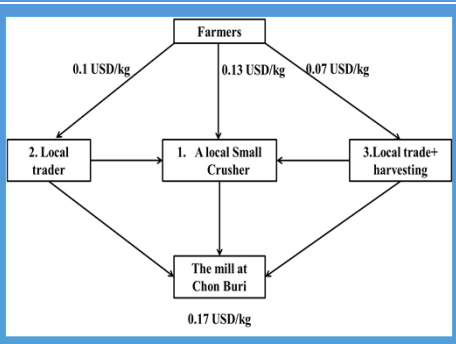
→K fertiliser needed

- Use of K fertiliser to low because:

1. Smallholders (and cooperatives) lack knowledge
2. K is the most expensive component so K containing fertilisers are expensive;
3. Many fake fertilisers in the market;

Woittiez, Slingerland & Giller, presentation of a paper at PIPOC conference Malaysia 2015

Farm gate prices where marketing lacks



Source: Somnuek, Slingerland & Grunhubel, Asian Pacific review, 2015

RSPO can play a role

- Access to knowledge (training)
- Access to inputs at affordable prices
- Access to credit
- Access to markets
  - to absorb the additional yield
  - and to pay for higher quality

- Are benefits of BMP application sufficient to cover costs of certification?
- RSPO commissionned research to us through SenSor on cost-benefit analysis of certification.

RSPO and marketing

- Indonesia: many mills saturated

→RSPO independent farmers become preferred suppliers

→RSPO → access to inputs & BMP → increase yields

- Thailand: mills in the south suffer from undersupply and have to accept FFB of any quality
  - →RSPO bind independent smallholders to the certified mill, guaranteeing its supply
  - →RSPO improves quality of FFB offered to mills
  - →better FFB → decrease waste streams of the mills → environmental sustainabilitty increases

How to make replanting affordable

- Intercropping
  - Double row planting→ more space for intercropping for longer period
  - Oil palm and livestock combinations→ Saves fertiliser
  - Will generate money during lagtime when palm oil does not produce fruits yet→ need less credit
  - May have ecosystem service benefits
  - May balance income when oil palm prices fluctuate
- Banks may offer cheaper credit for RSPO certified farmers

Thank you for your attention