INTERNATIONAL PLANT NUTRITION INSTITUTE

Sustainable Intensification With Best Management Practices (BMP)

Oil Palm in Southeast Asia

PIPOC 2011 | KLCC
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Sustainable Intensification with BMP in Oil Palm

Background

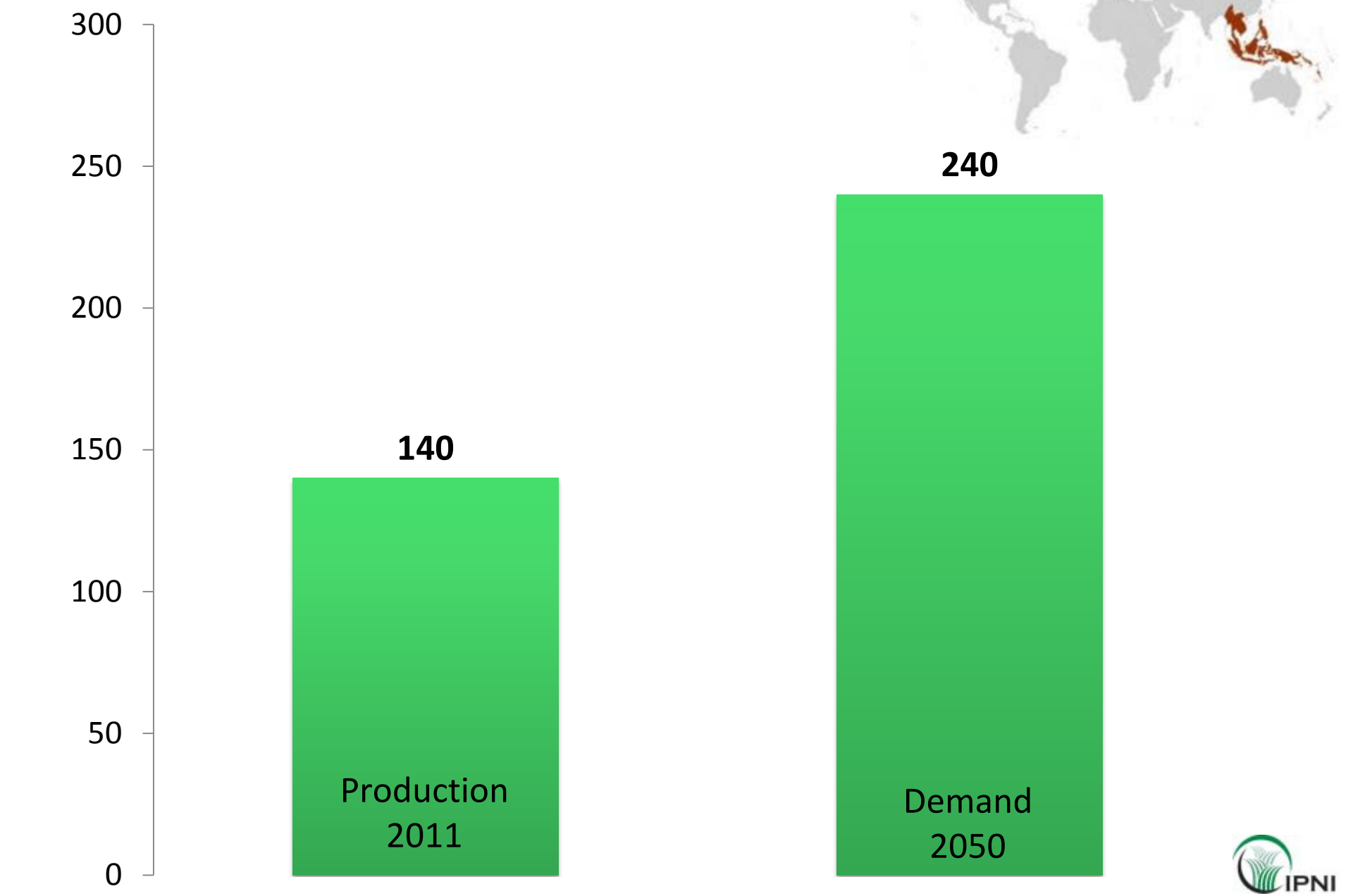
Concepts

Results

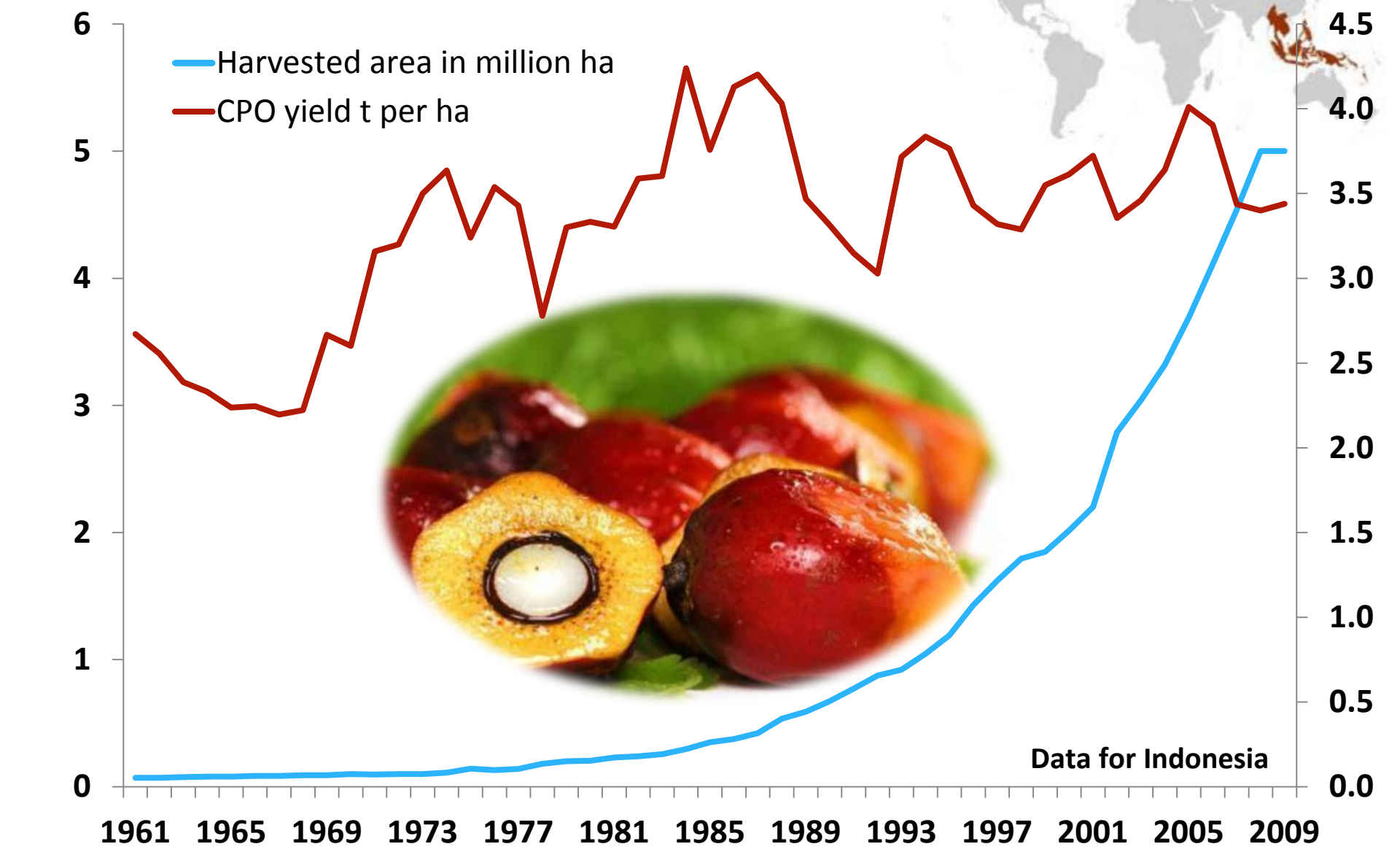
Implications

Sahara Estate, Sampoerna Sungai Rangit Plantation – Kalimantan, Indonesia – Photo: T. Oberthür

Background: *Global Vegetable Oil (million tons)*



Background: *Oil Palm Area and Yield Evolution*

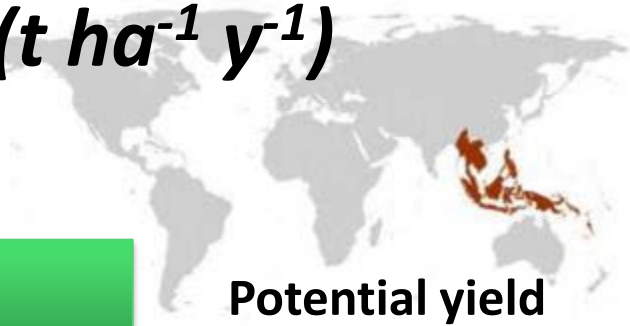


Source: FAO STAT, 2011

Background: *IPNI Southeast Asia Strategies*

- Sustainable intensification of existing production systems
- Develop intensive and sustainable systems in marginal lands

Background: *Oil Palm CPO Yields (t ha^{-1} y^{-1})*



>18	Potential yield
>12.2	Selected progeny
10-11	Attainable commercially
>8	Malaysian plantation group
>6	Best Indonesian plantations
3.6	Last 5 year national average Indonesia

Source: Donough et al., 2010

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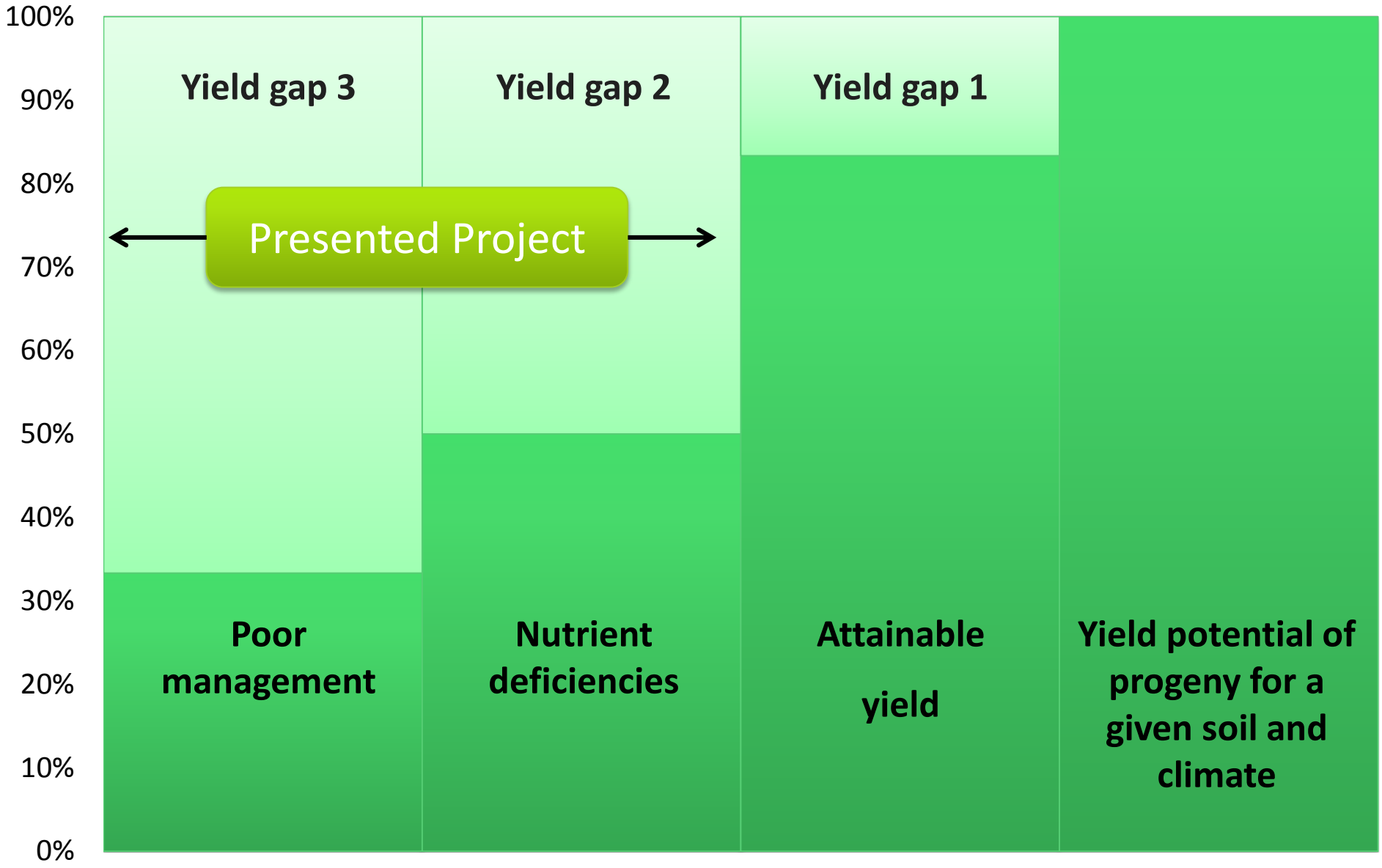
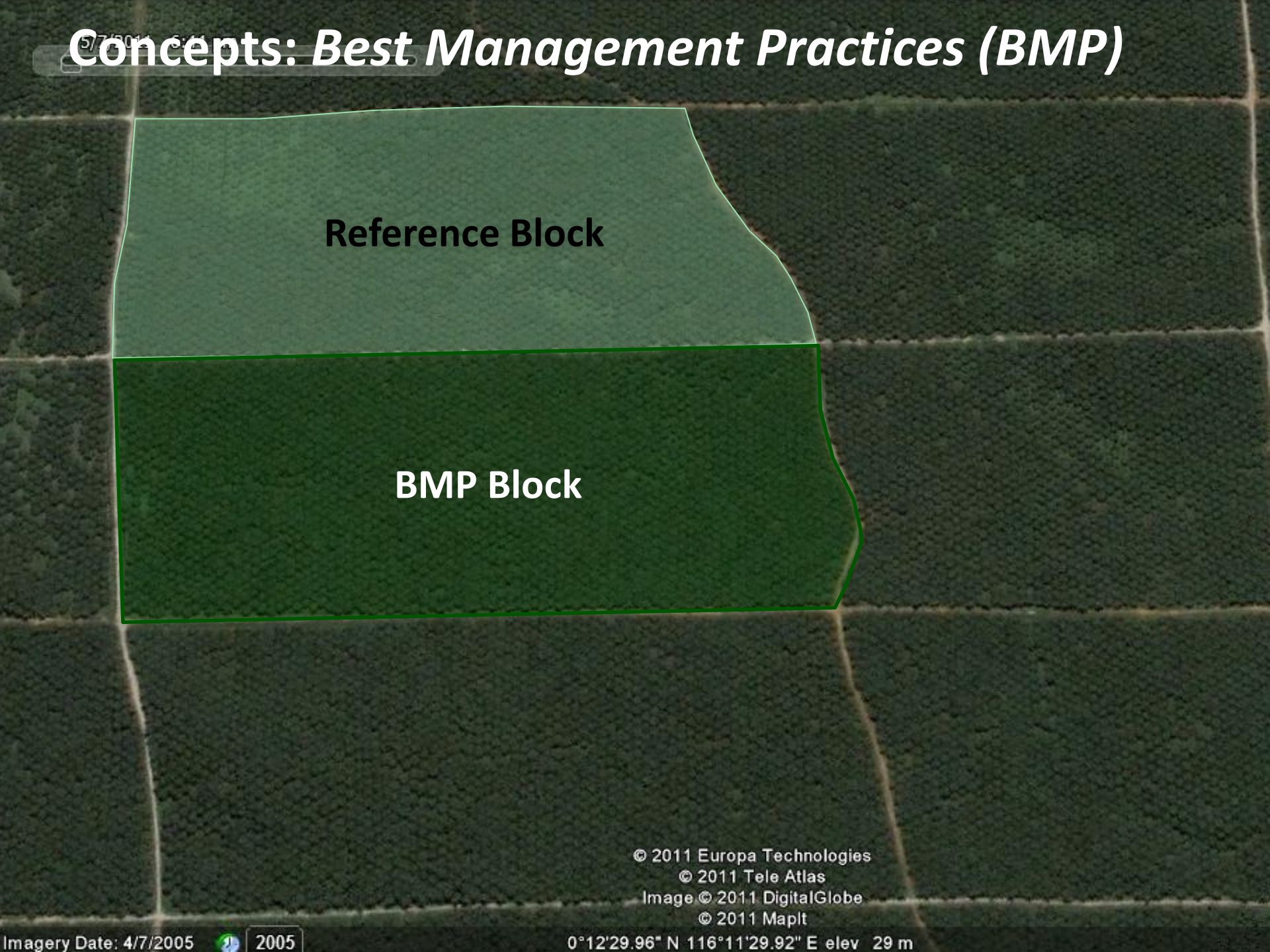
Photo: T. Oberthür

Concepts: *Yield Gap*

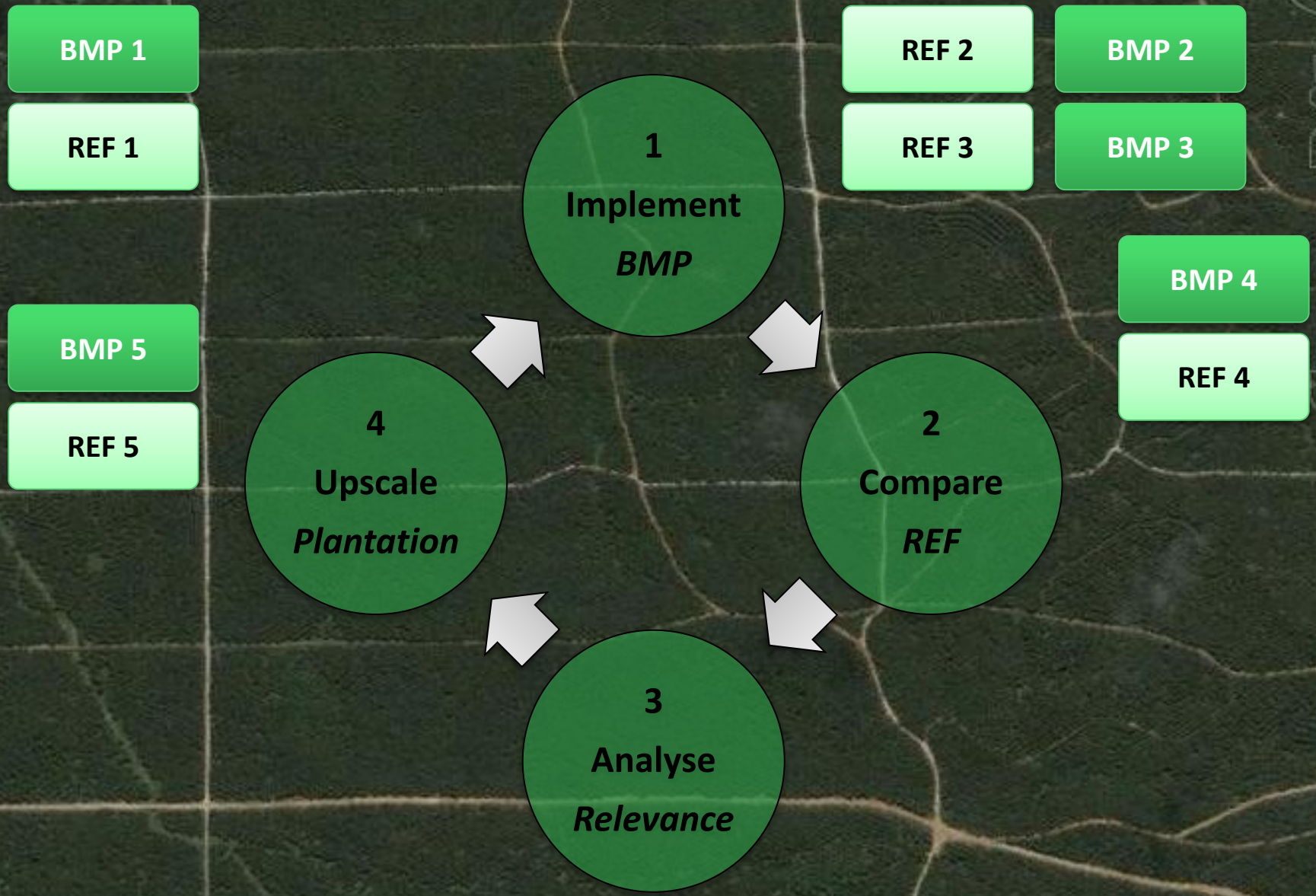


Source: Fairhurst et al., 2006

Concepts: *Best Management Practices (BMP)*



Concepts: *BMP Implementation*



Concepts: *BMP Examples*

	Crop recovery	Canopy management	Nutrient management
Yield making			
Yield taking			

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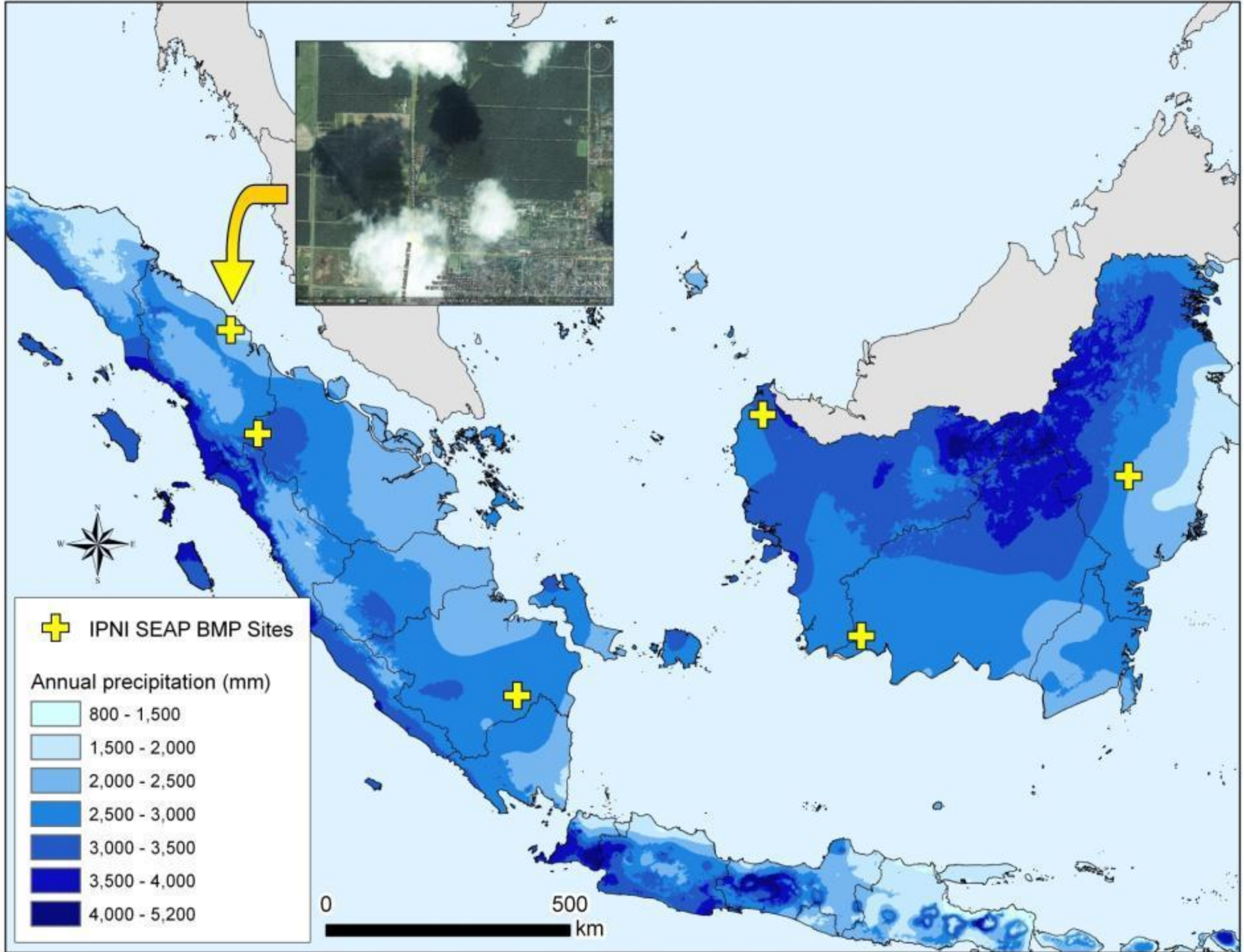
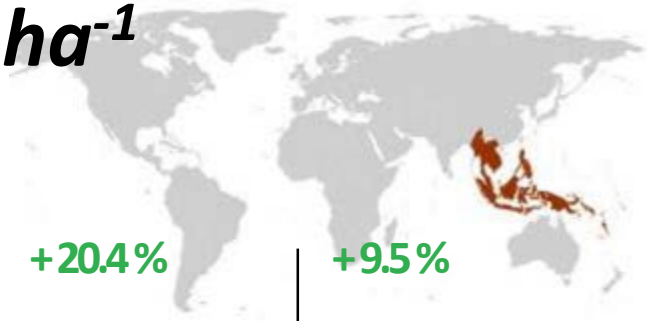
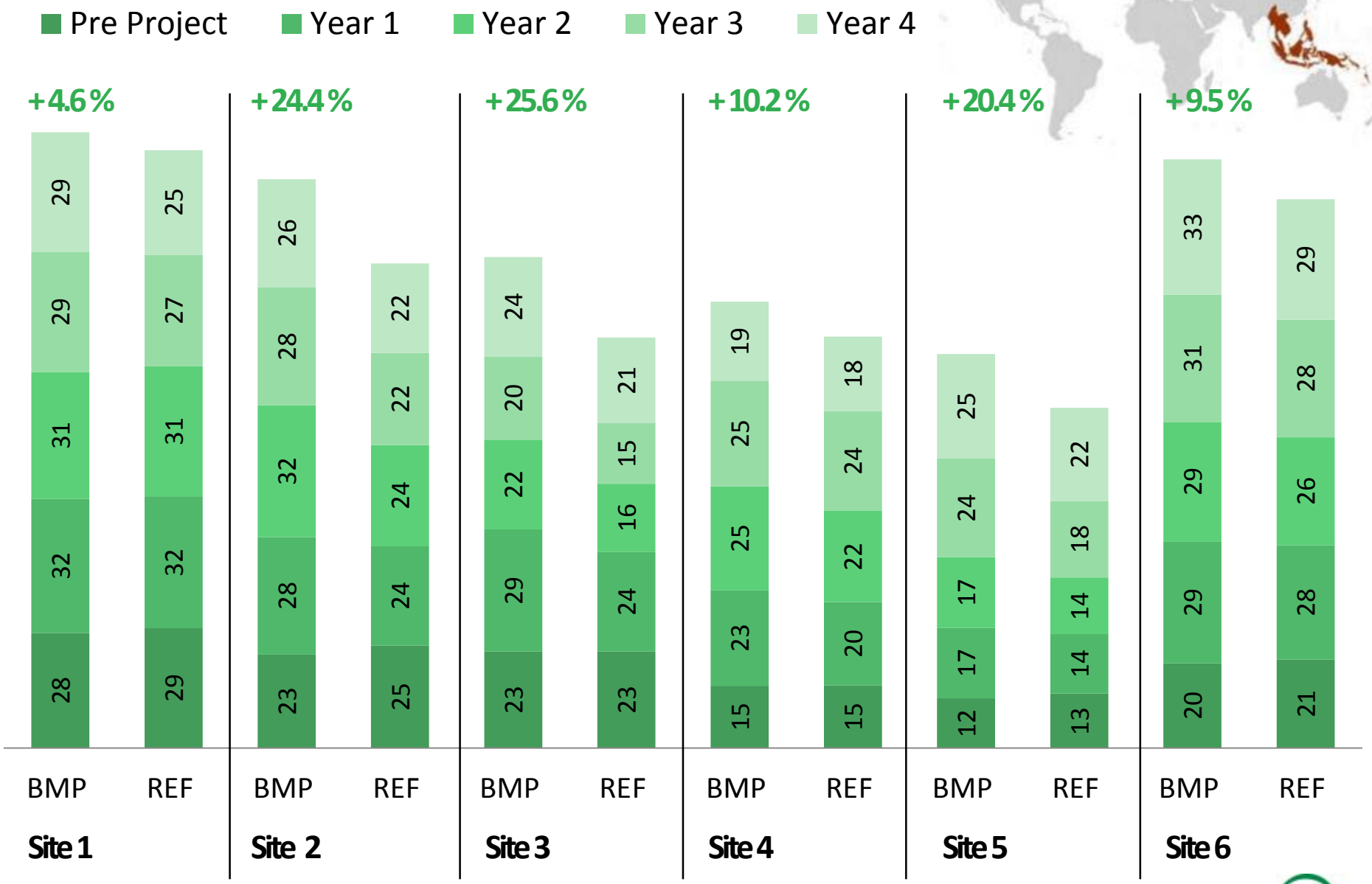

IPNI SEAP BMP Sites
Annual precipitation (mm)
800 - 1,500
1,500 - 2,000
2,000 - 2,500
2,500 - 3,000
3,000 - 3,500
3,500 - 4,000
4,000 - 5,200
0
500
km

Results: *BMP Sites*

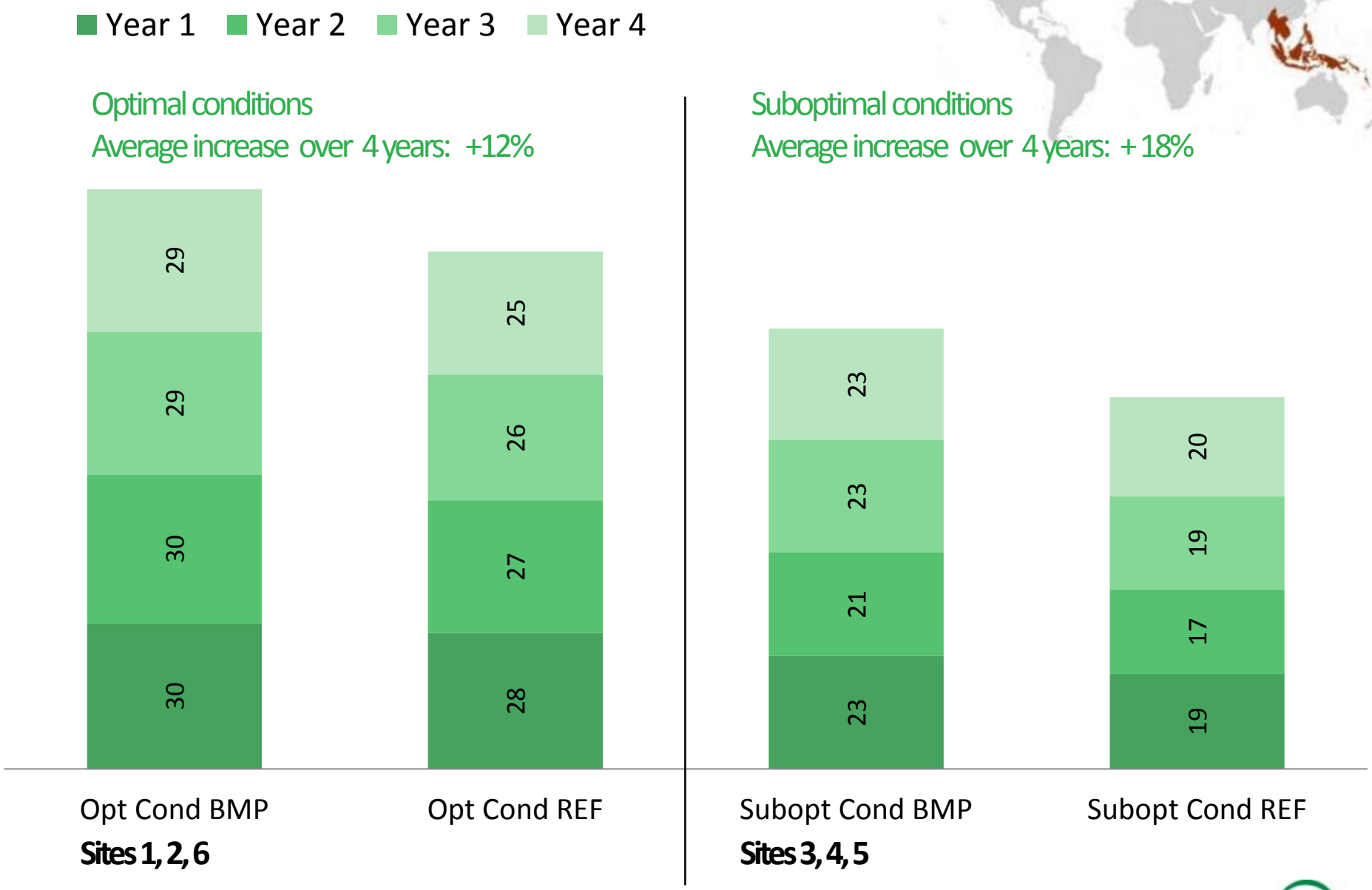
	Location	Area	Age	Prior Y	Conditions	Site factors
1	North Sumatra	266 ha	5-12	26-29	Good	Level terrain, low rainfall
2	North Sumatra	156 ha	8-13	24-25	Good	Rolling terrain, variable stand
3	South Sumatra	256 ha	15-18	16-24	Moderate	Undulating terrain, water deficit
4	West Kalimantan	143 ha	8-9	16-17	Poor	Undulating terrain, spodosols
5	Central Kalimantan	124 ha	8-9	12-13	Very Poor	Water deficit, very sandy soil
6	East Kalimantan	135 ha	3-12	23-26	Good	Rolling terrain, high rainfall

Results: *Fresh Fruit Bunch Yield t ha^{-1}*





Results: *Fresh Fruit Bunch Yield t ha^{-1}*



Results: *Summary*

- Commercially significant yield increases across main growing areas in Indonesia
- Increases in well managed plantations under optimal growing conditions
- Increases under suboptimal conditions in marginal lands when managed well

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Photo: T. Oberthür

Implications: *Sustainable CPO in 2020*

10 – 11 t ha^{-1} y^{-1}

Attainable commercially

5.9 t ha^{-1} y^{-1}

Supply demand with sustainable oil in 2020 *

3.6 t ha^{-1} y^{-1}

5 year national average Indonesia

**** Source:*** *Expansion scenarios as developed in Dros (2003)*

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Implications: *Sustainable CPO in 2020*

10 – 11 t ha^{-1} y^{-1}	Attainable commercially
6.1 t ha^{-1} y^{-1}	Site 1
6.0 t ha^{-1} y^{-1}	Site 6
5.9 t ha^{-1} y^{-1}	Supply demand with sustainable oil in 2020 *
5.7 t ha^{-1} y^{-1}	Site 2
4.6 t ha^{-1} y^{-1}	Sites 3, 4
4.1 t ha^{-1} y^{-1}	Site 5
3.6 t ha^{-1} y^{-1}	5 year national average Indonesia

** **Source:** Expansion scenarios as developed in Dros (2003)*

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Implications: *Sustainable CPO in 2020*

!NEW! **BMP – All Growth Stages, 2011 - 2018**

!NEW! **BMP – Nutrition, 2011 - 2015**

!NEW! **BMP – Plantation Intelligence, 2011 - 2014**

IPNI's Southeast Asia Program

- **welcomes collaboration with interested plantati and**
- **supports students to undertake thesis work, or t conduct internships.**

PLEASE CONTACT US …

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We are grateful to the PIPOC 2011 organizers

Data generated by IPNI and Indonesian plantation partners with support by IPNI member companies:

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Canpotex International Pte Ltd and K+S Kali GmbH

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