Palm Oil -

Economics of the driver of global vegetable oil markets

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agri benchmark **Global Forum**
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Why this study?

(1) Demand for vegetable oil is growing fast

(2) Many people wonder about palm oil

(3) Therefore we wonder about:

   a) How are markets connected?

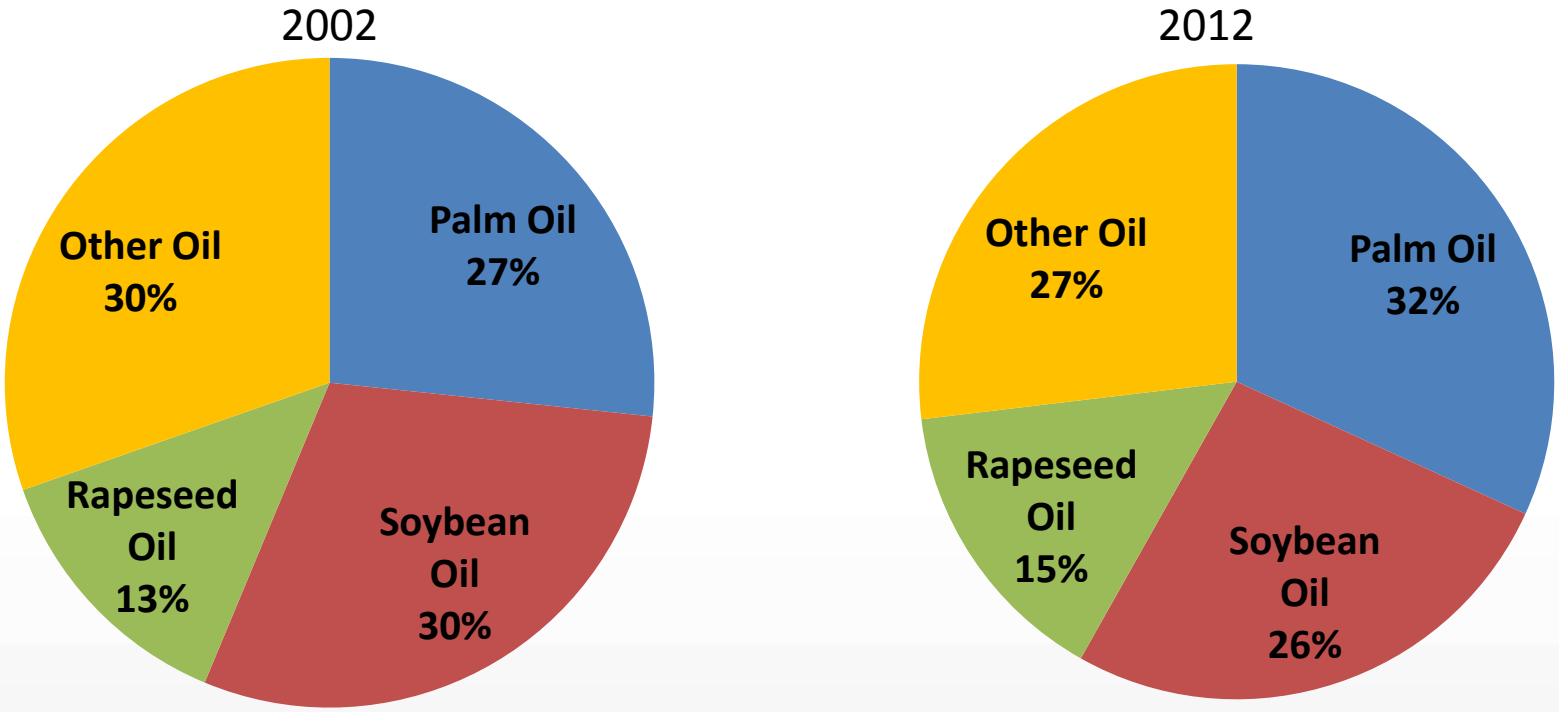
   b) How competitive is palm oil compared to soybean oil?

   c) What are the main drivers?

Contents

1. Overview of global vegetable oil markets

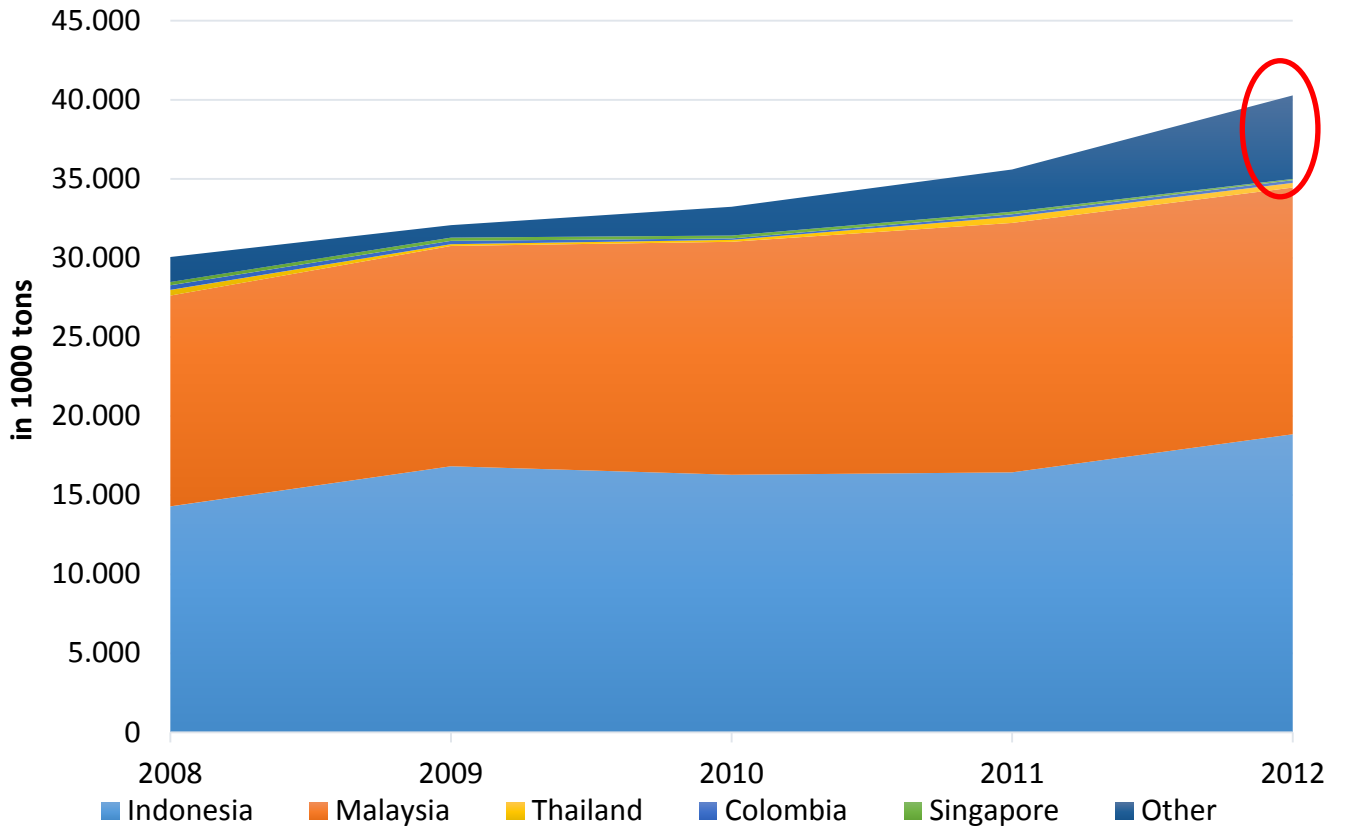
Breakdown of vegetable oil production (2002 vs. 2012)



Palm oil in a fast growing market outperforms all other vegetable oils

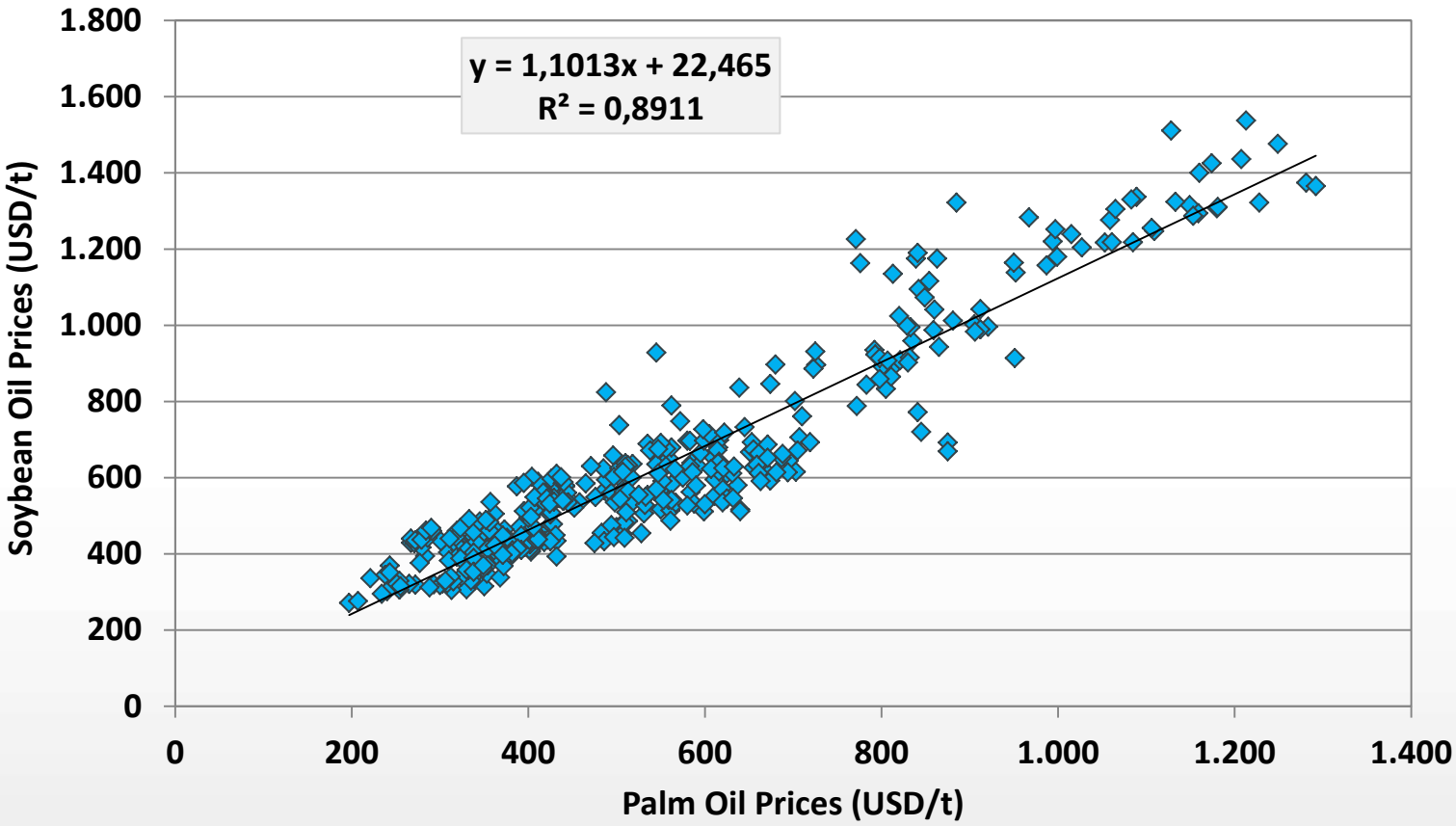
Source: FAOSTAT

Main palm oil exporters (2008 – 2012)



Source: UN COMTRADE

Markets for soybean & palm oil: closely connected



Source: World Bank, pink sheets (2014), own calculations

2. Palm oil production system

Steps of palm oil production system

1. Seed preparation
2. Nursery (9-12 months)
3. Land Preparation
4. Immature (0-36 months)
5. Harvesting (3-20 years)

Pre nursery

Main nursery

Immature

Investment crop establishment app. 10.000 USD/ha

Harvesting:
Cutting & collecting Fresh Fruit Bunches (FFB)

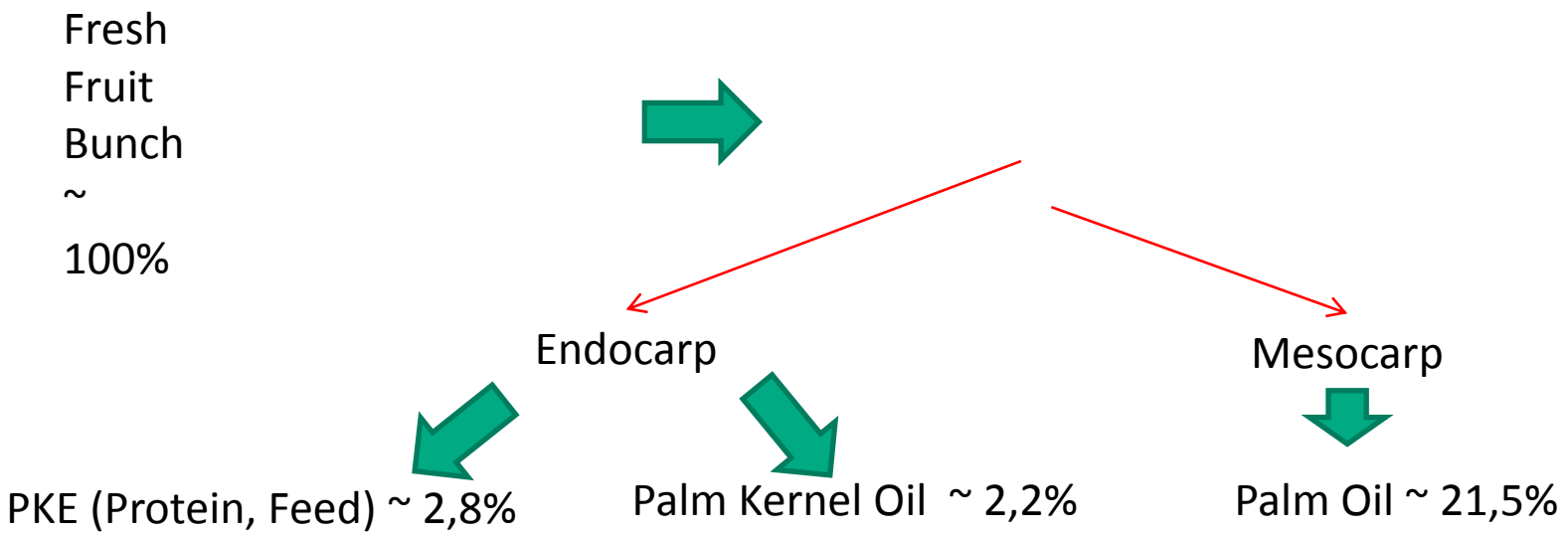
(1) Labor input: 110 hours/ha (or 45 h/ac)
(2) Annual raw material production (FFB) : 23 t/ha
(3) More or less year-round harvesting

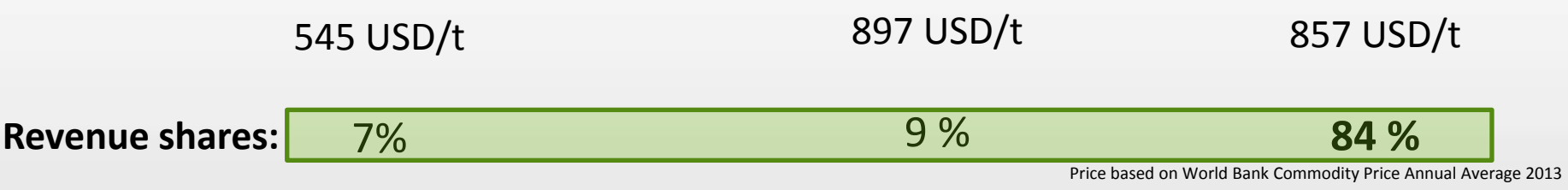
3. Economics of palm oil production vs. soybeans

Challenge to estimate cost of vegetable oil production

1. **Both harvested products – fresh fruit bunches and soybeans – are multi-output products.**
2. **Hence: For a CoP analysis total cost need to be allocated to different outputs.**
3. **One option: revenue shares.**

Allocating cost by revenue shares of palm oil





Price based on World Bank Commodity Price Annual Average 2013

Allocating cost by revenue shares of soybeans

Soybeans
100%

Protein meal
(feed) ~ 70%

Soybean Oil ~ 18%

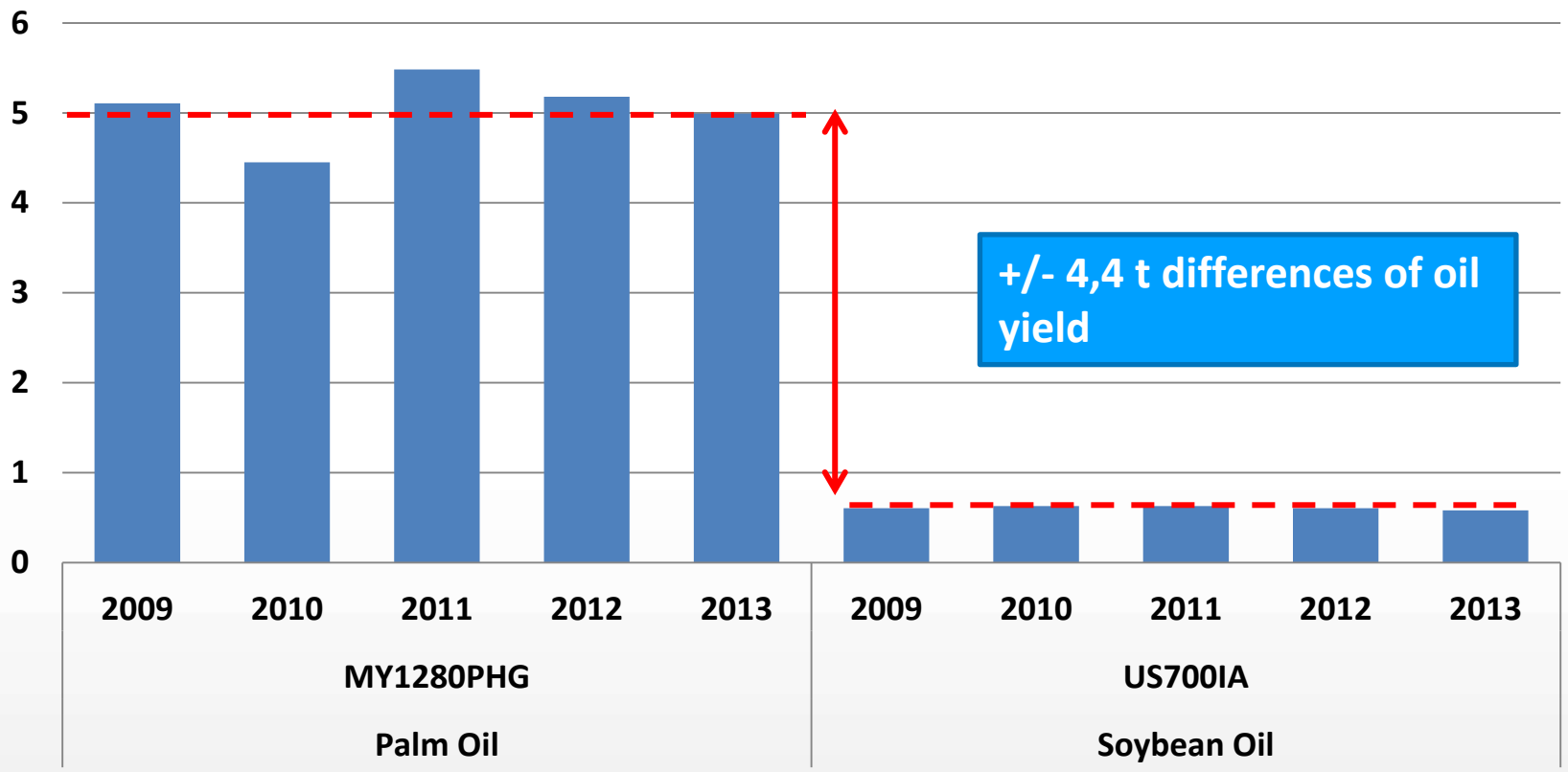
	545 USD/t	1.057 USD/t
Revenue shares:	66%	**34%**

Price based on World Bank Commodity Price Annual Average 2013

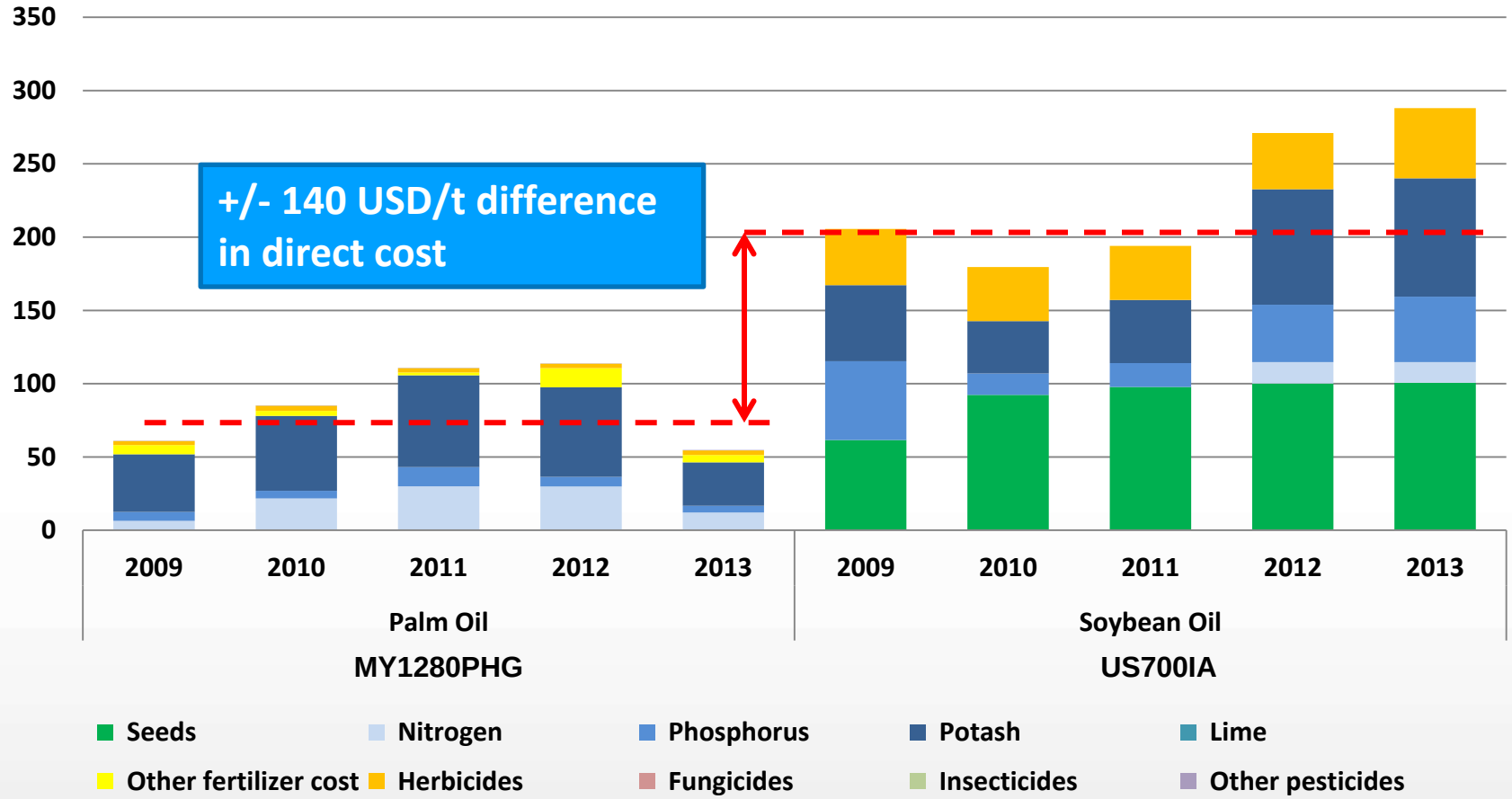
Specifics of palm oil economics

1. High up front investment in crop establishment (app. 10.000 USD/ha)
2. 20-25 years depreciation for crop establishment investment
3. No revenues in the first 3 years
4. Lock-in effect after investment

Vegetable oil yield comparison (t/ha)



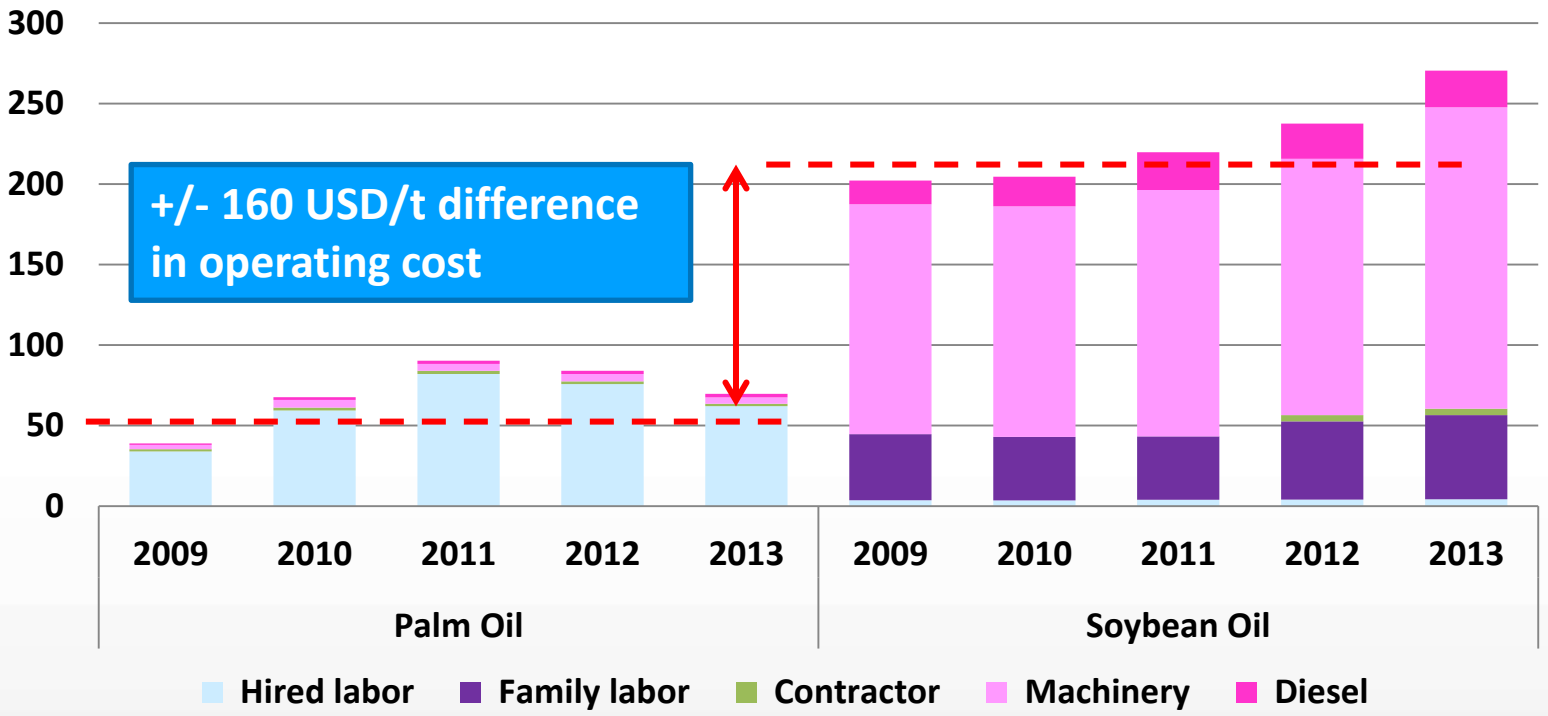
Direct cost (USD/t of oil)



(1) Clear advantage for palm oil in seeds and plant protection cost

(2) Fertilizer cost on a comparable level

Operating cost (USD/t of oil)

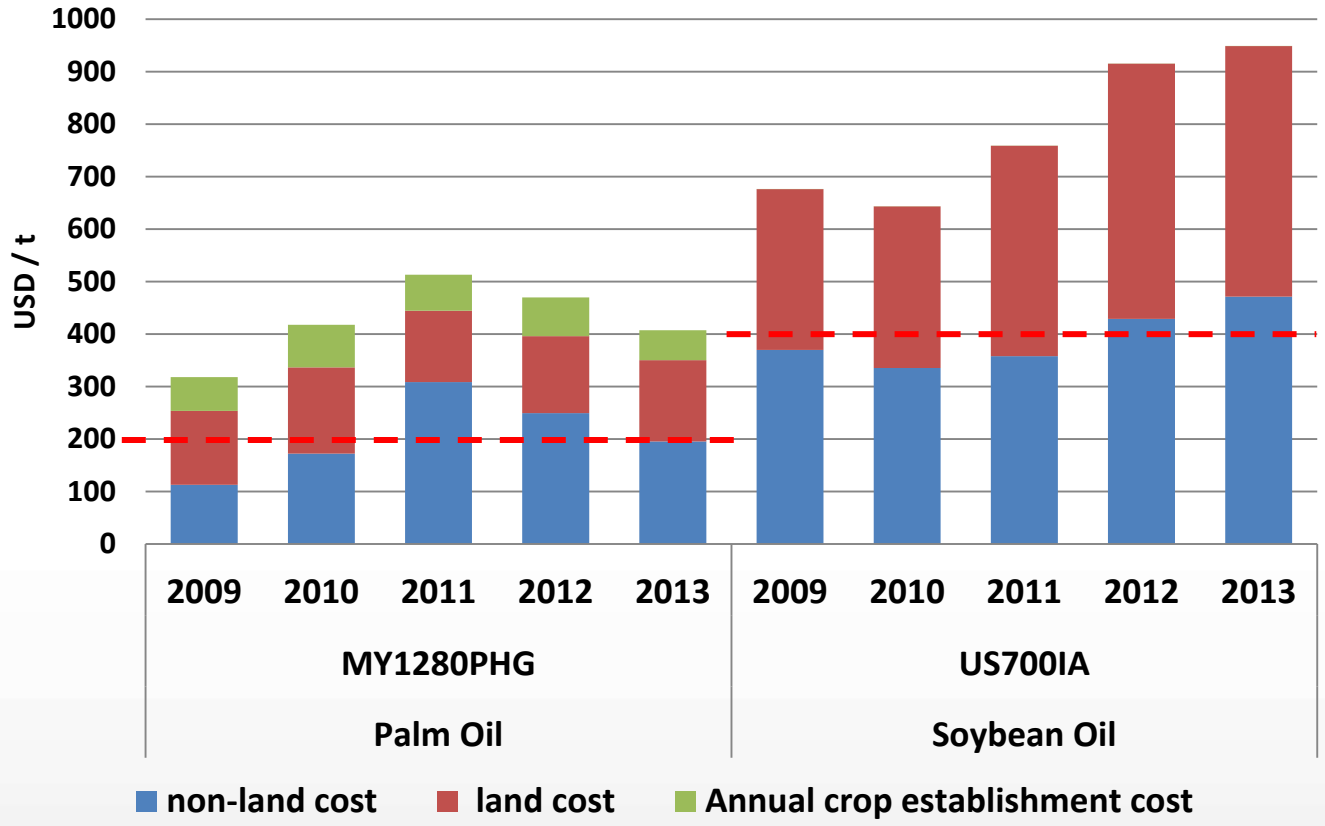


(1) Labor cost higher in palm oil than in soybeans

(2) But: almost no machinery and diesel cost

Total cost: palm oil vs. soybeans oil (USD/t of oil)

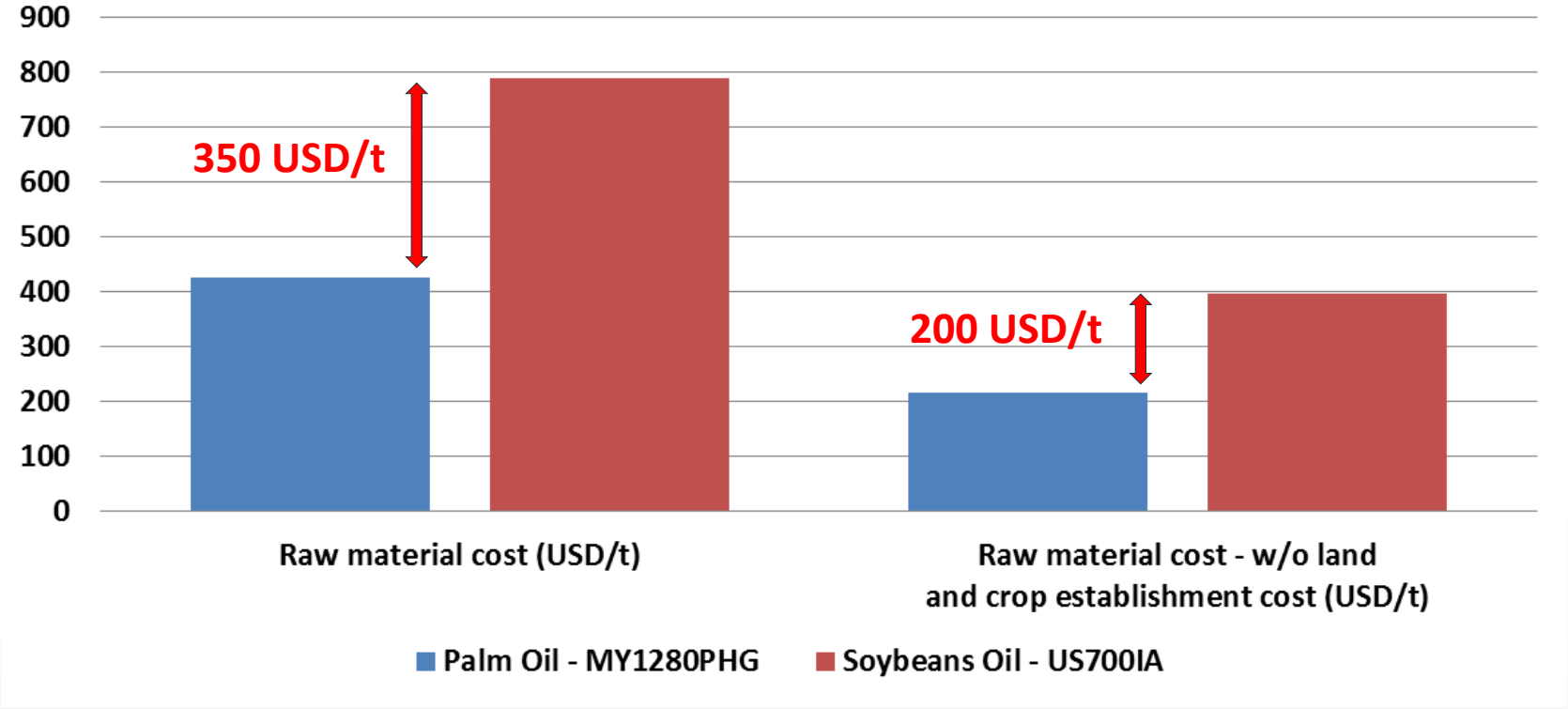
Non-land cost ~ USD 200



Non-land cost ~ USD 400

(1) Crop establishment cost in palm oil does not matter that much (app. 70 USD/t)
(2) Land cost make the difference – 150 vs. 450 USD/t

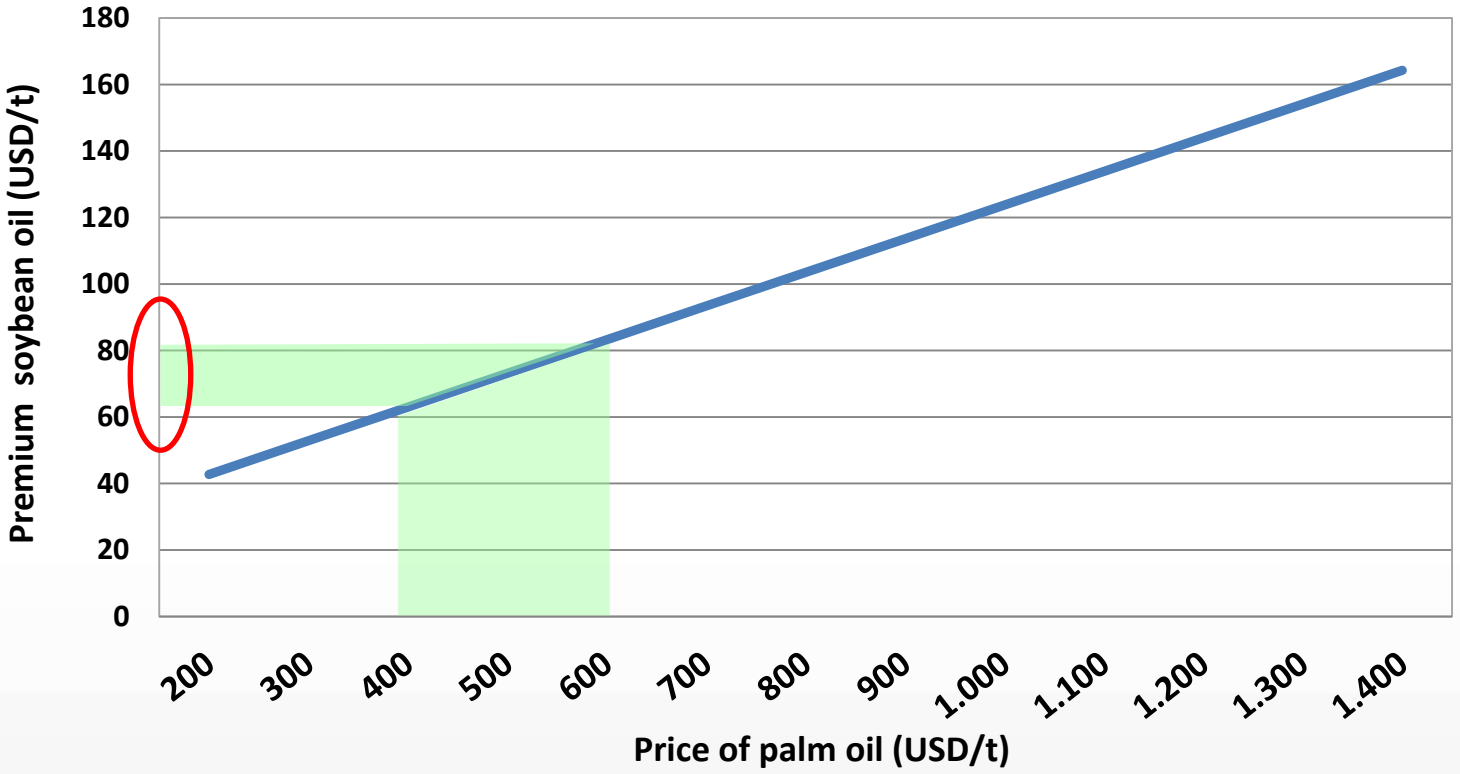
Average raw material cost (Ø 2009-2013; USD/t of oil content)



(1) Palm oil is a very competitive product.

(2) Due to recently bullish commodity markets, land cost in soybeans are very high – when prices go down again land cost will go down as well.

Soybean oil is traded at a premium over palm oil



(1) The higher the prices, the higher the premium

(2) At 400-600 USD/t (pre-boom price level) premium is at about 60 – 80 USD/t

Source: World Bank, pink sheets (2014), own calculations

Conclusions

(1) Even though soybean oil receives a premium of 60 - 80 USD/t, palm oil is an extremely competitive product.

(2) Cost advantages for palm oil in
(a) input cost,
(b) operating cost – except for labor -, and
(c) land cost.

(3) High investments in palm oil establishment don‘t matter a lot on an annual and per tonne cost basis.

(4) Future directions of global vegetable oil markets will be primarely driven by palm oil.

Thank you for your interest in *agri benchmark*.

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