PAPEDA
SAGO PORRIDGE
STAPLE FOOD IN INDONESIA

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Introduction

- Sago tree (*Metroxylon sagu* Robbt.) grow wildly in the swamp area in Papua, Maluku, Sulawesi, Kalimantan, and Sumatera Islands.
- The people eat carbohydrate extracted from the sago pith as their staple food.
- They use sago palm leaves for roofing, its weaved-leaves for mats and many more advantages they can use from the part of the sago tree.
- Carbohydrate from sago tree can be harvested after at least four years old.
- One family can get 150 to 300 kilogram sago flour from one sago tree to supply staple food for two weeks to one month.

- It is important to develop sago especially when rice production is severely threatened by constantly reduced plantation area for other purpose.
- Sago palms are typically found in areas unsuited for other forms of agriculture, so sago cultivation is often the most ecologically appropriate form of land-use, especially in swampy areas.
- Therefore in terms of food security, sago flour can be further developed to strengthen Indonesian food security.

Papeda - Staple Food

- *Papeda* is made by “cooking” sago flour mixed by hot water and stirring constantly until it coagulates. It has a glue-like consistency and texture.
- *Papeda* has plain taste and considered lack of nutrient, therefore it is usually eaten with soup of tuna, *mubara* (*Trachinotus carolinus*) or any locally available fish spiced with turmeric, leaves of *Ocimum citriodorum* (*kemangi*) and lime.
- Vegetable consisting of sautéed flower of *Carica papaya*, leaves of *Gnetum sp* and hot chilly, is also eaten with this *papeda*.

Papeda - Staple Food

According to Ayurvedic medicine, sago porridge can be an effective and simple food to "cool and balance one's body heat" when taking strong medicine or antibiotics.

Papeda, Fish Soup and Sautéed Vegetable

Lunch with *Papeda* menu.

Sago Flour

Sago starch contains fiber and carbohydrate. Sago starch is also contain phenolic, lignin, and hydrogel, which is act as an anti-microbial and antioxidant. That is why, sago starch can be promoting as functional food for healthy life, beauty and prestigious products.

2 Tumangs - Sago Flour Packaging of approximately 15 – 20 Kgs each

NUTRITION OF PAPEDA

Dry sago of 100 grams typically comprises 94 grams of carbohydrate, 0.2 grams of protein, 0.5 grams of dietary fiber, 10 mg of calcium, 1.2 mg of iron and negligible amounts of fat, carotene, thiamine and ascorbic acid and yields approximately 355 calories.

The Future Use of Sago in Indonesia

- In year 2025 Indonesian population is estimated 300 million people. When rice production can not be increased and per capita rice consumption can not be reduced, it is estimated that Indonesia needs additional rice of about 18 million ton.

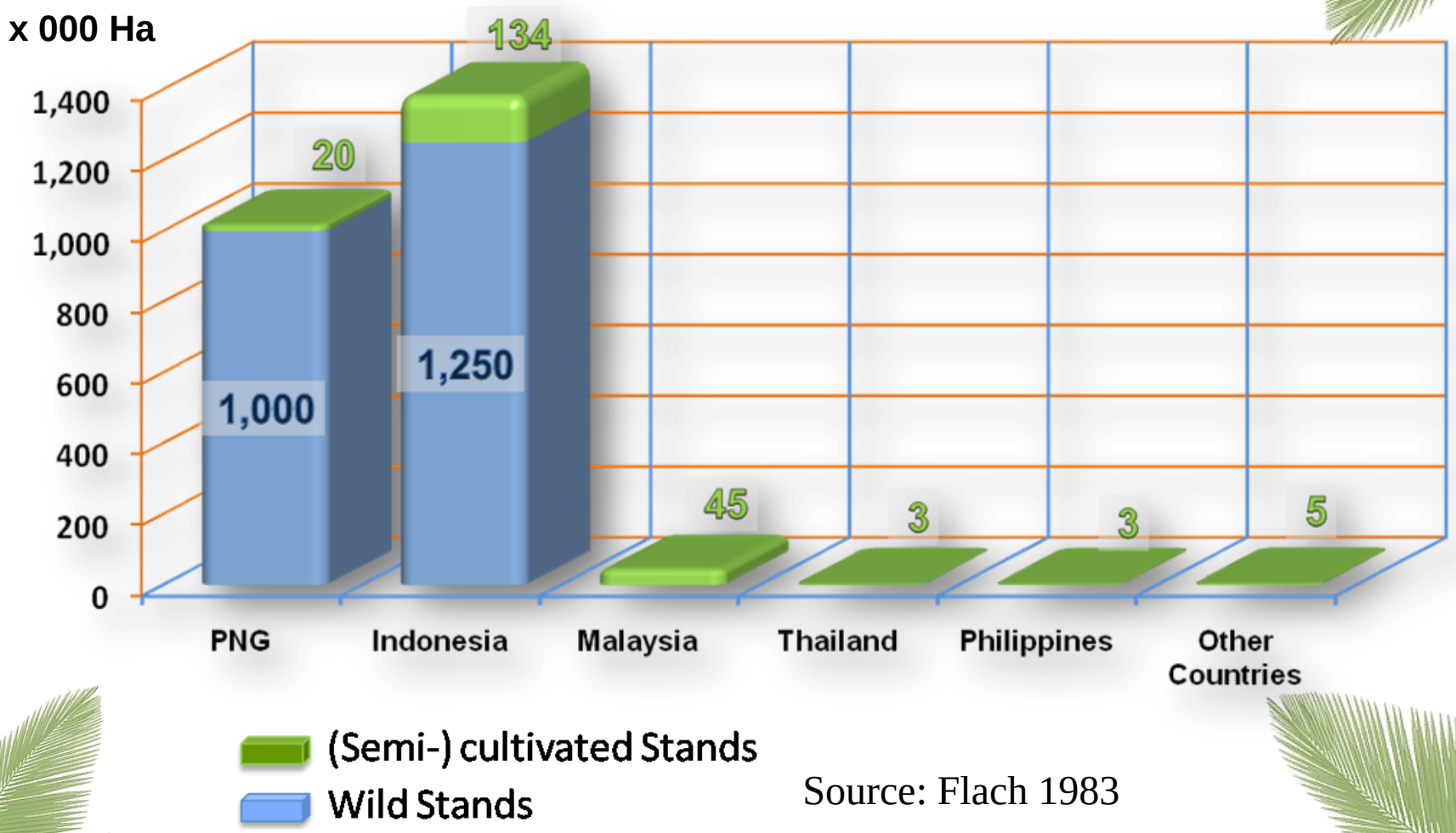
- A sago tree can produce 200 – 400 kg carbohydrate; some varieties are indicated capable to produce 800 kg per tree. Therefore an intensive sago tree plantation with 100 – 200 trees per hectare with average 300 kg carbohydrate/tree can be produced 30 – 60 ton carbohydrate/ha/year.

- There are around 4 million hectares swamp areas in Indonesia. If only 1 million hectares is carefully utilized for sago tree plantation, it supplies enough carbohydrate for the population.

Other Potential Use of sago

- One of the potential uses of the sago palm is for ethanol production.
- However since the priority of food security, has to be focused on human food, while energy for industry and transportation can be gained from other sources such as under utilized natural wind, sun rise, water, gas and other non food plants.
- Therefore utilization of carbohydrate from sago palm for energy should be strongly avoided.

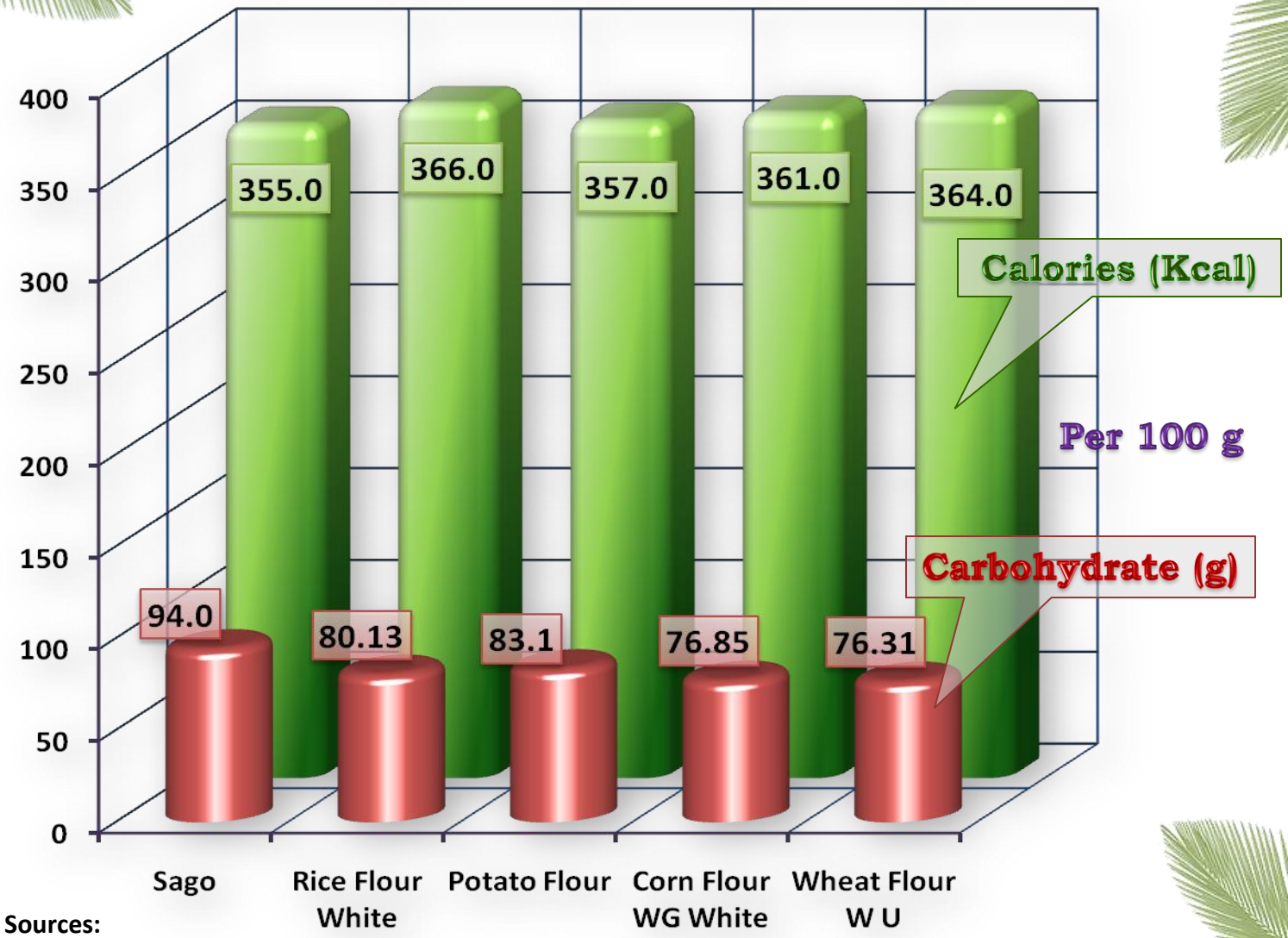
Sago Palm Area in The World



Source: Flach 1983

Sago and Other Flour

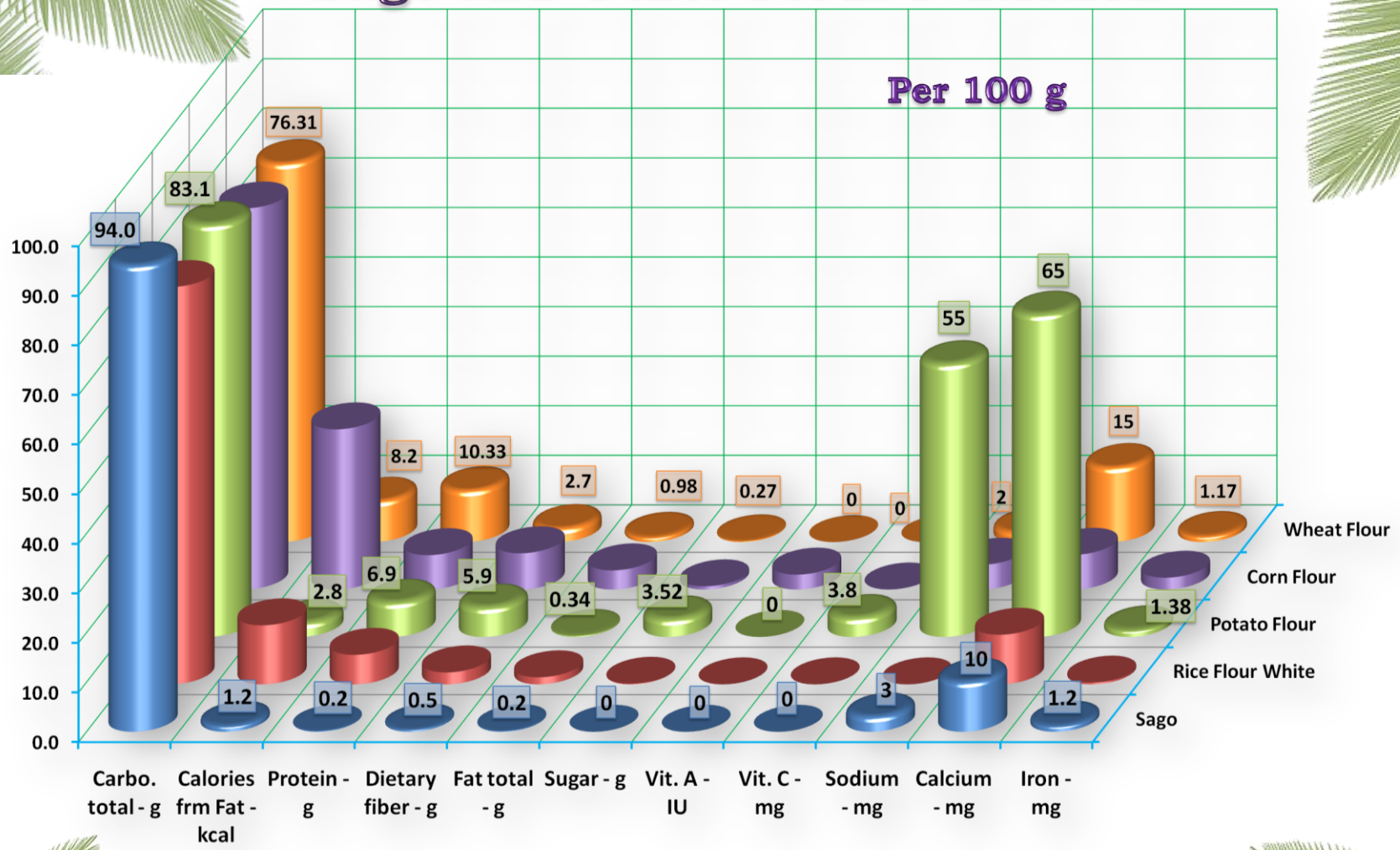
Calories and Carbohydrate



Sources:

1. Calorie Database - http://calorie-data.com/foods/view/11-023
2. USDA SR23 2010 Nutritional Data

Sago and Other Flour Nutrition



Sources:

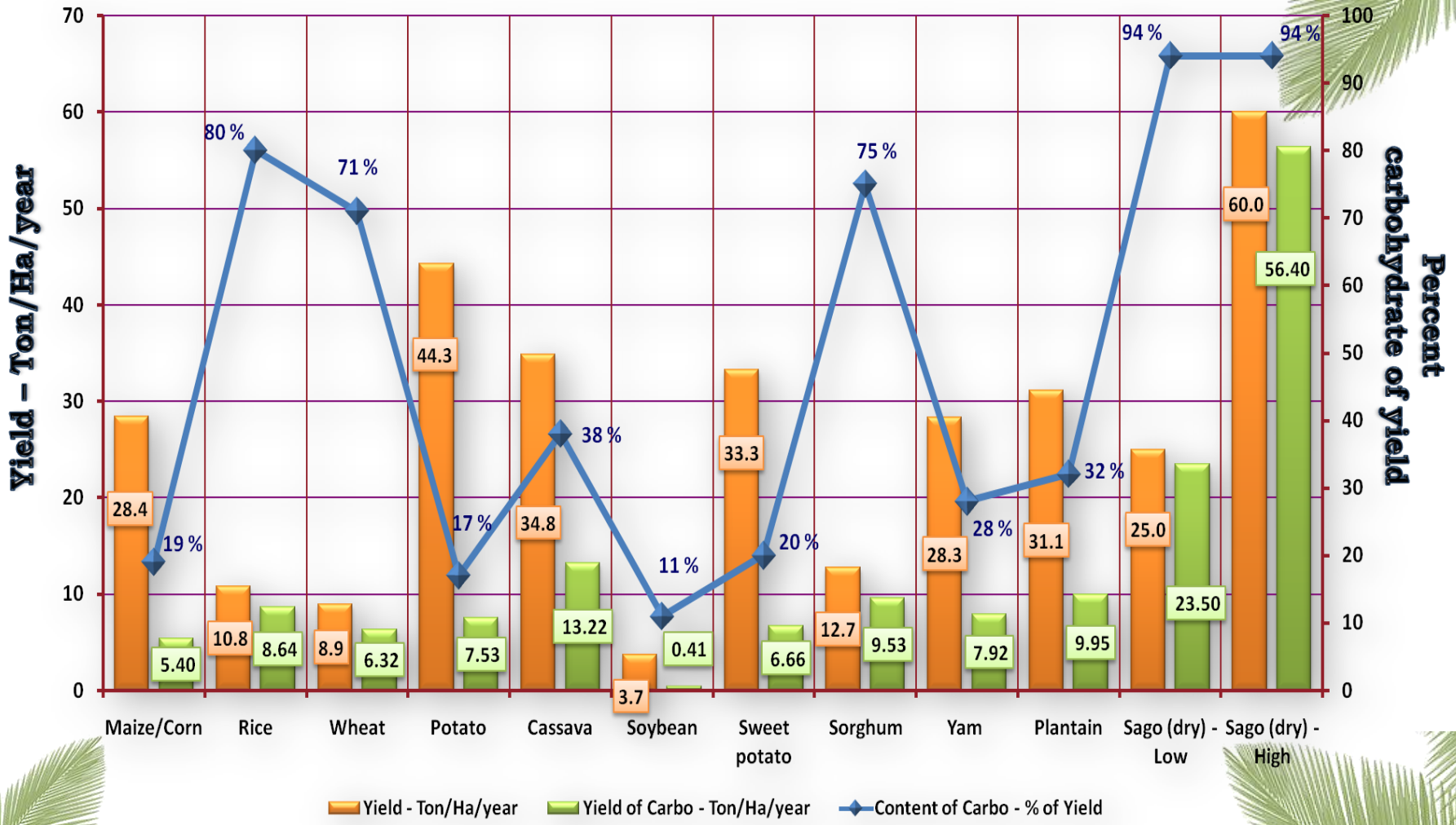
1. Calorie Database - http://calorie-data.com/foods/view/11-023

2. USDA SR23 2010 Nutritional Data

Wheat Flour White Unenriched

Corn Flour Whole Grain White

Carbohydrate Productivity of Sago and Other Staple Foods
(in World's Most Productive Farms)



Sources:
http://en.wikipedia.org/wiki/Staple_food
http://en.wikipedia.org/wiki/Sago

Conclusion

- Sago starch contains fiber and carbohydrate. Sago starch is also contain phenolic, lignin, and hydrogel, which is act as an anti-microbial and antioxidant. It can be promoted as functional food for healthy life, beauty and prestigious products.
- Sago palm plantation may provide an alternative way in order to create crop fields from tropical peat swamp forests.
- The plantation may result in large production of starch to be used as source of carbohydrate instead of rice, for the purpose of food diversification.
- Sago palm plantations may also play an important role in the prevention of global environment against the greenhouse effect.

Planting of Sago Palm Seedlings


Very Vigor Sago Plantation
in Kendari – Southeast Sulawesi

Crushing and threshing, and/or hand kneading of the pith to release the starch

washing and straining to release and extract the starch from the fibrous pith

Extracted Sago precipitation process

Starchy water is collected and remained in this container for a while. Fine flour will be precipitated. It separates into the bottom while swampy water on top

Sago Flour in temporary packaging

Extracted Sago Flour

THANK YOU