



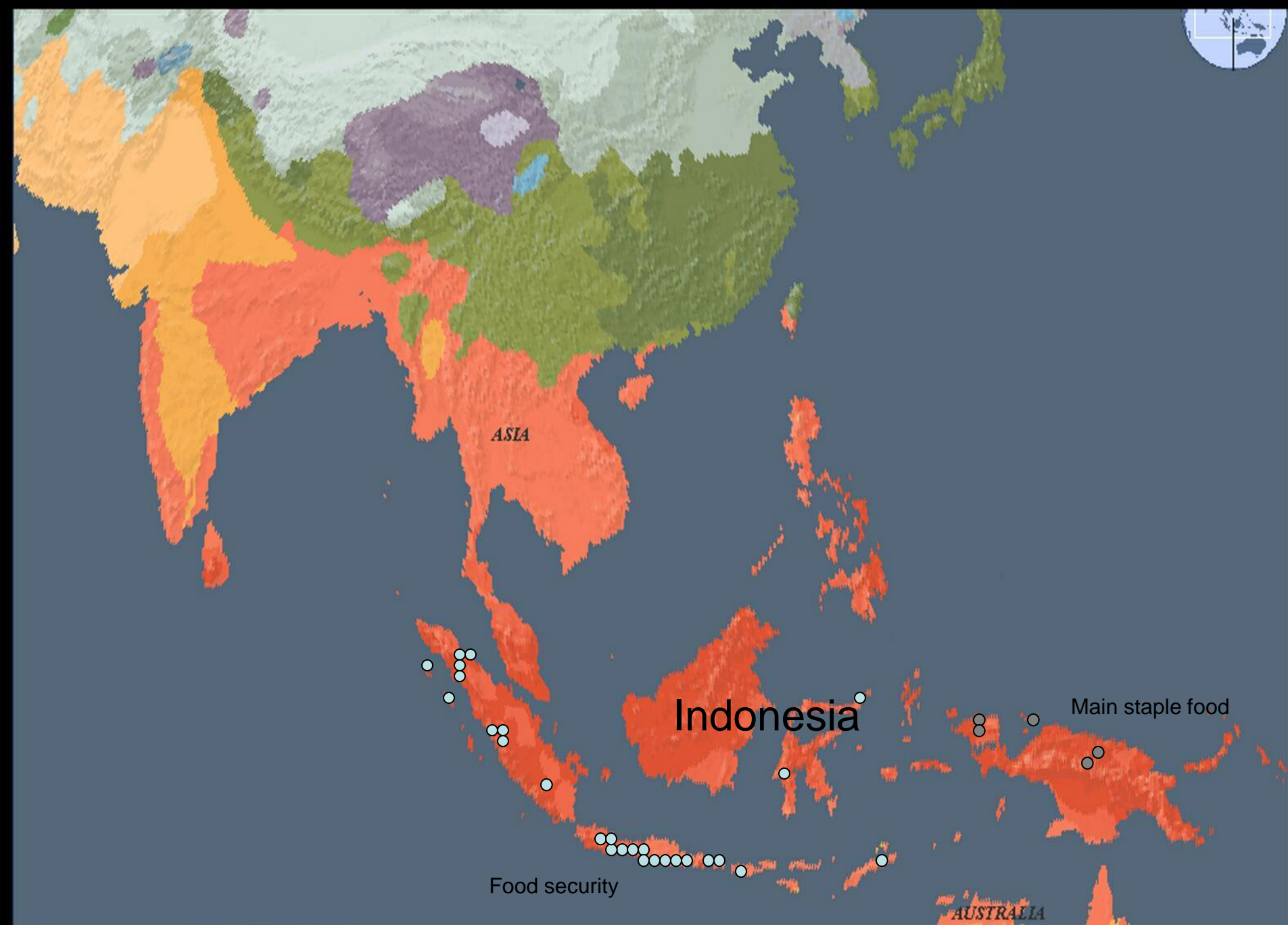
Problems of sweetpotato production in Indonesia

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Introduction

- Sweetpotato are cultivated in various agro-ecological zones ranging from humid tropic to sub alpine over 3,000 m asl. Based on phenotypic variation observed in cultivars found in wide ecological spectrum, it is assumed that a large amount of genetic variation exist in the region (Mok & Schneider 1993).
- Subsistence farmer
 - Sweetpotato for family consumption
 - average of land size is only 0.25 ha /farmer
- Commercial farmer
 - Relative large size of field
 - To serve the market



ASIA

Indonesia

Main staple food

Food security

AUSTRALIA



Year	Harvested Area (000 ha)	Production (000 MT)	Yield (t/ha)
2000	194.3	1,827.7	9.4
2001	181.0	1,749.1	9.7
2002	177.3	1,771.6	10.0
2003	197.5	1,991.5	10.1
2004	184.5	1,901.8	10.3
2005	178.3	1,857.0	10.4
2006	176.5	1,854.2	10.5
2007	176.9	1,886.9	10.7
2008	174.6	1,881.8	10.8
2009	183.9	2,057.9	11.2
2010	181.1	2,051.0	11.3
2011	178.1	2,196.0	12.3
Average	182.0	1,918.9	10.6

Source: Bureau Agricultural Statistics, 2010

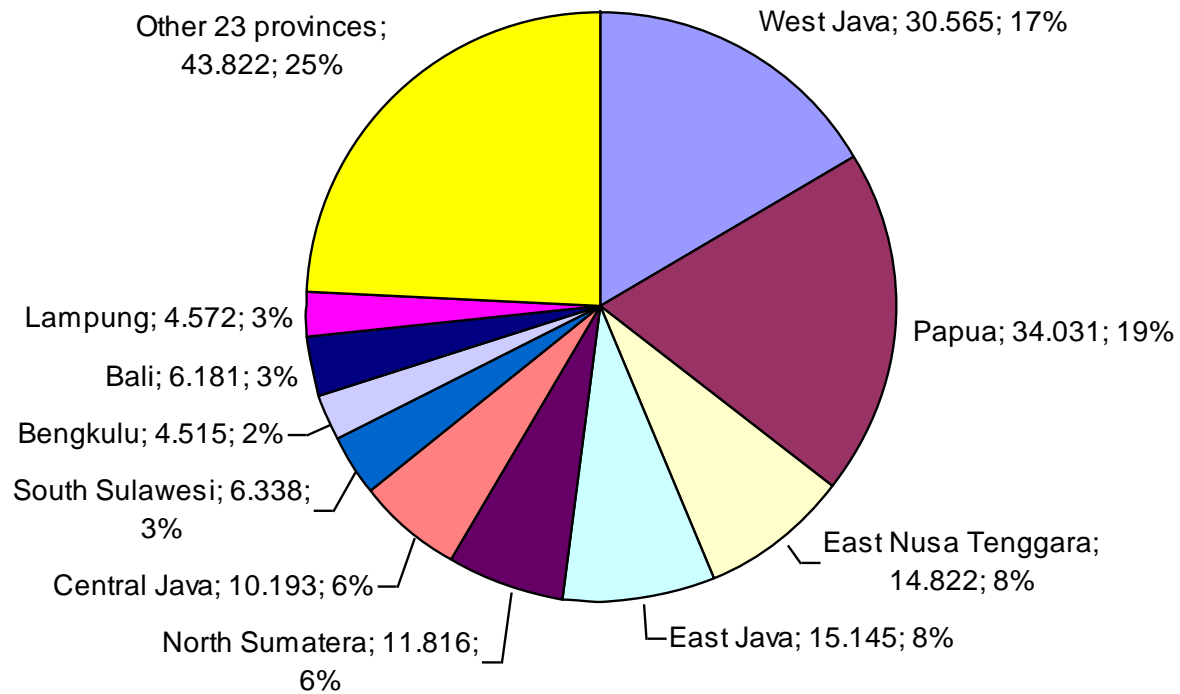
Average harvested area :
181,997 ha / year

Average Production :
1,918,874 metric tons /year

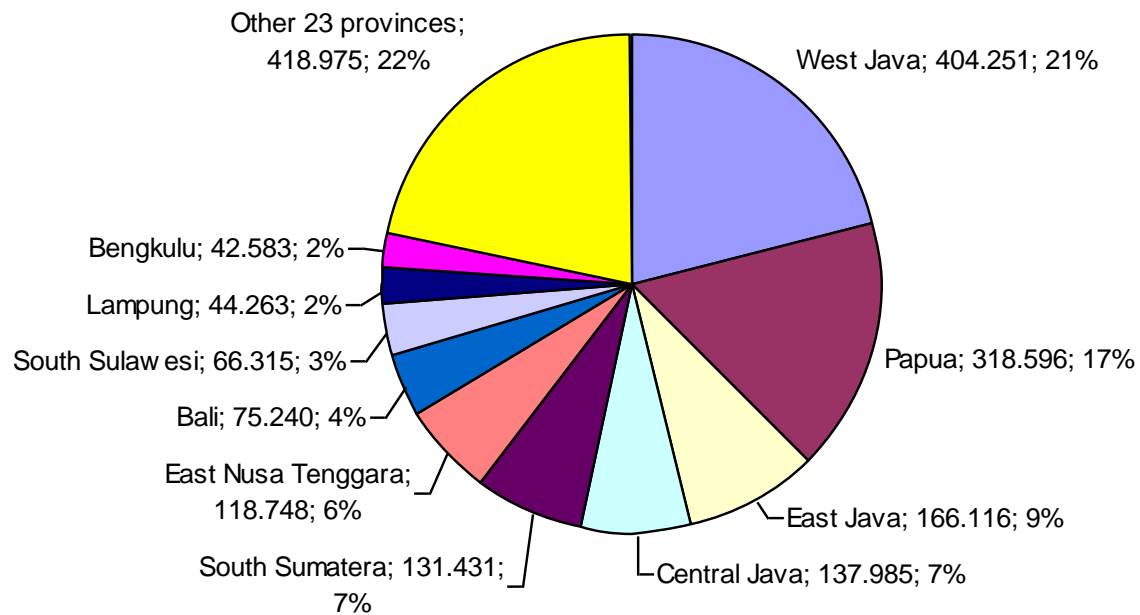
Average yield of farmer level: 10.6 tons/ha, at 4th rank in Asia: after Japan, South Korea, China, and higher than India, Vietnam, and Philippines (Mariscal 1997)



The average of harvested area (ha) by Province, 2000-2011

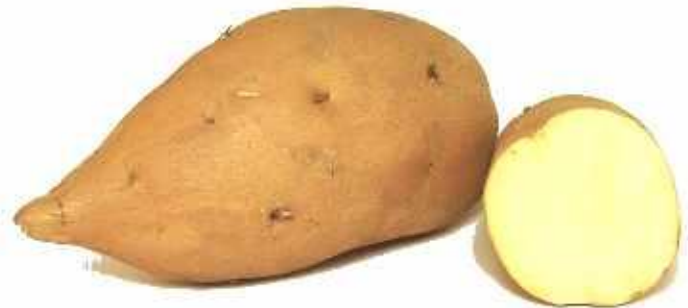


The average of production (ton) by Province, 2000-2011



Challenges to increase productivity

1. Low adoption of improved variety by farmer
2. Practicing low-input agricultural production
3. Pest and disease
4. Quality of planting material
5. Soil fertility



Weevil (*Cylas formicarius*)

- Attack storage root, leaves, and vine
- No the effective way to control just prevention
- Wide spread in sweetpotato areas in Indonesia including Papua (Jayawijaya district after *El Nino* resulting long dry season in 1997)

Source of weevil spreading



Infested storage root and plant residues

Scab (*Elsinoe batatas*)

Cause yield loss >50% (Fliert 1999)

- Lesions appeared on main vein on undersurface of leaves cause distortion and twisting
- Proliferating when the rain is more frequent
- Symptoms of scab on vine and leaves plant will be gradually disappear as dry season comes and than completely disappear at the end of dry seasons.

Viruses

(Fliert 1999)

- Living and multiply inside their hosts
- Symptom of virus include dwarfing, leaf curling, and the appearance of purple pigment, yellowish spots, yellow veins or mosaic pattern
- Be transmitted to plant by aphids, whiteflies, and mites

How importance virus in other countries

- Causing more than 50% yield losses in Central Luzon, Philippines (Jayasinghe and Laranang 1999)
- Causing up to 90% yield loss in East Africa (Hand *et al.*, 1981)
- Field survey in Java, Lampung, and Papua indicated that at least seven kind of sweetpotato viruses (Machmud 1998)

Common practise to retain the planting material

- Vine tip cuttings are usually used for planting in Indonesia, sweetpotato is propagated through vegetative planting material hence carrying the risk of transmitting of pest and disease
- Common practise for farmer to repeatedly uses cuttings as planting material over several seasons



Soil nutrition deficiency

- Sweetpotato is grown at the marginal lands and the low fertile soil
- Subsistence farmers do not practice any applying fertilizer to their crop, but relied on residues from previous crop or intercrops
- Commercial farmer apply both inorganic and organic fertilizer but improperly application

- The Integrated Crop Management (ICM) program for Farmer Field School (FFS) in Indonesia was conducted by ILETRI, CIP, UPWARD, Mitra Tani Identified that such as:
 - No counseling activities in sweetpotato cultivation, so that farmer cultivation based on their experience
 - There was tendency to imitate pattern of fertilization of paddy
 - Most farmers applied nitrogen (N) and Phosphate (P)

Recommendation to sustain
performance of sweetpotato

1. Use pest and diseases resistant varieties

- control sweetpotato weevil

2. Use virus free planting material



Sweetpotato meristem growing in test tube (DPI&F)



Stem cuttings for planting (V.Amante)

3. Proper cultural management