

A Discussion on

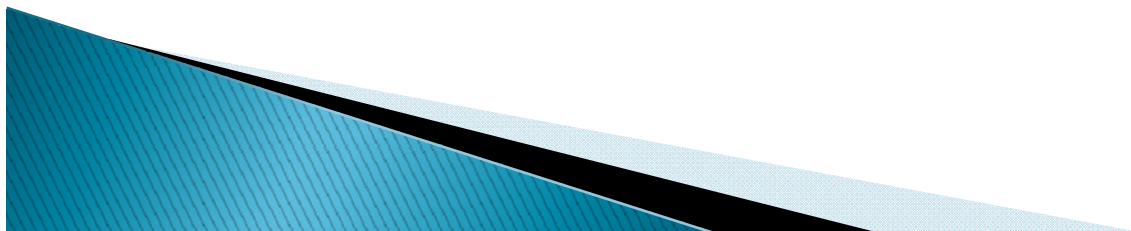
**“Food Security in a World of Natural
Resource Scarcity:
The Role of Agricultural Technologies”**

By Mark Rosegrant

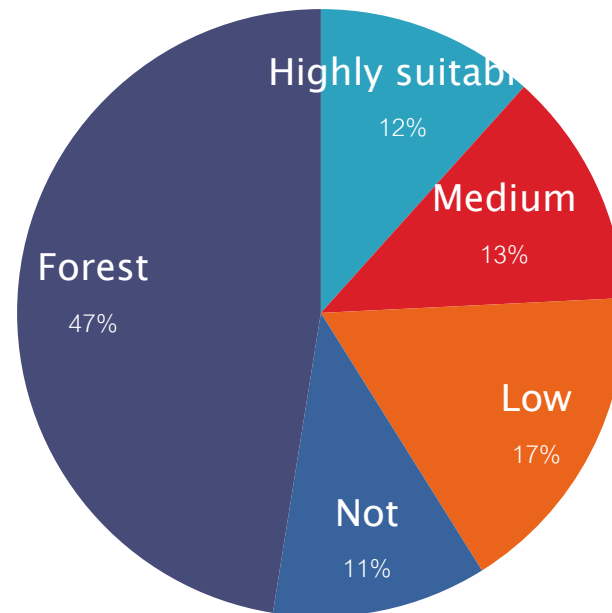
Discussed by
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Maize situation in Thailand

- ▶ In 2013, Maize output was around 5 mil tons.
- ▶ Maize farming area was around 7 mil rais (1.1 mil ha).
- ▶ Average yield is around 650 kg/rai. (4 ton/ha) lower than global average.
- ▶ Output grows at around 5–6% per year
- ▶ Area grows at around 3–4% per year
- ▶ Productivity changes very little, 1–2% per year.
- ▶ Rely on the increase in area.



Area of maize farming in Thailand



- ▶ 50% of the area is the forest area
- ▶ 25% is low and not suitable for maize farming
- ▶ Only 25% is medium and highly suitable

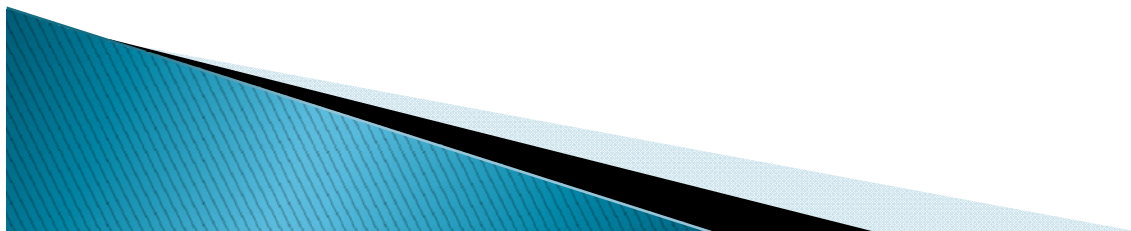
Projection for the next 20 years

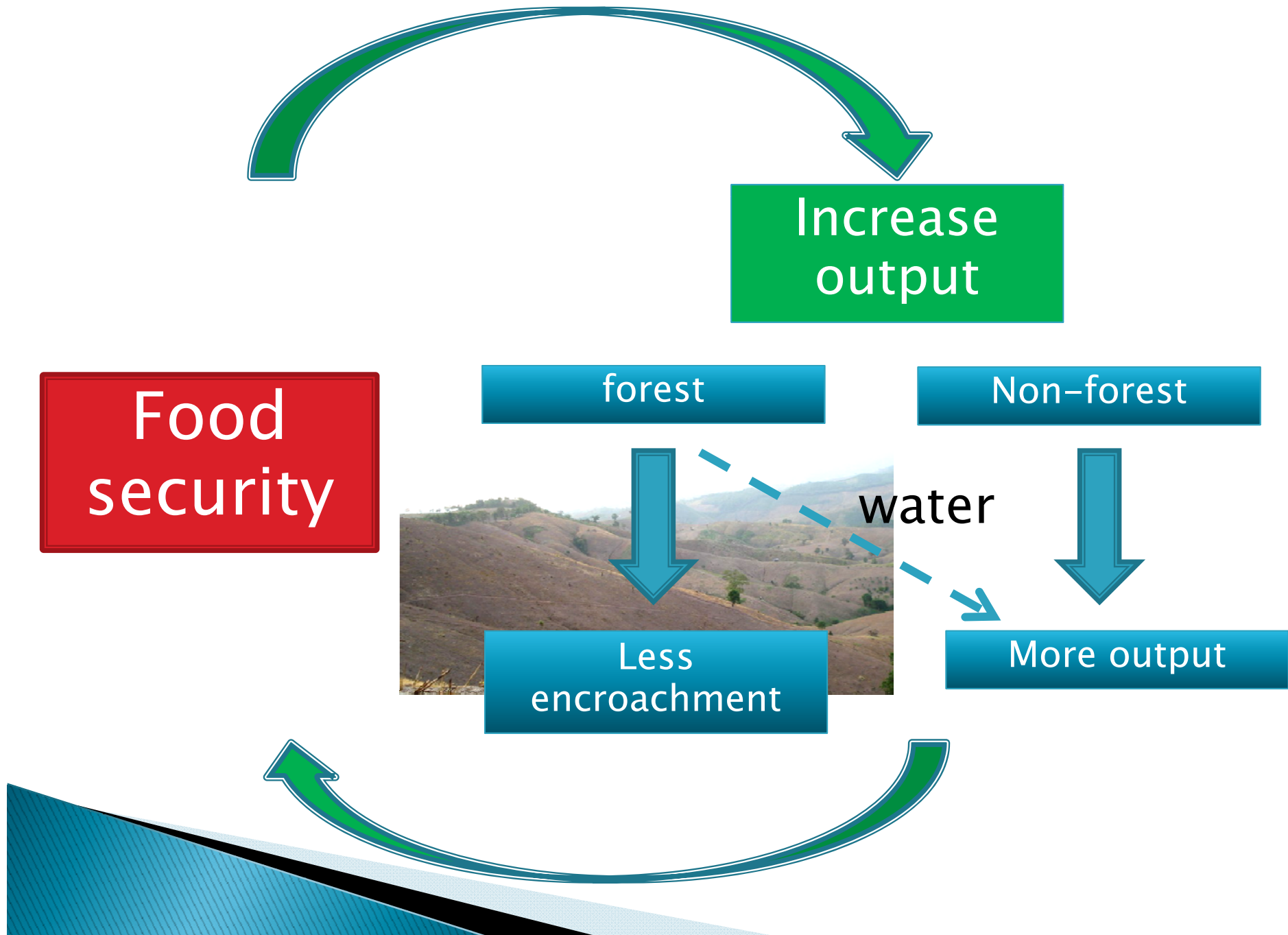
- ▶ In 2032, maize demand rises to 7.8 million tons
- ▶ Without productivity progress, maize farming area must reach 11.7 mil rais (1.8 mil ha) (almost 70% increase)



2 problems

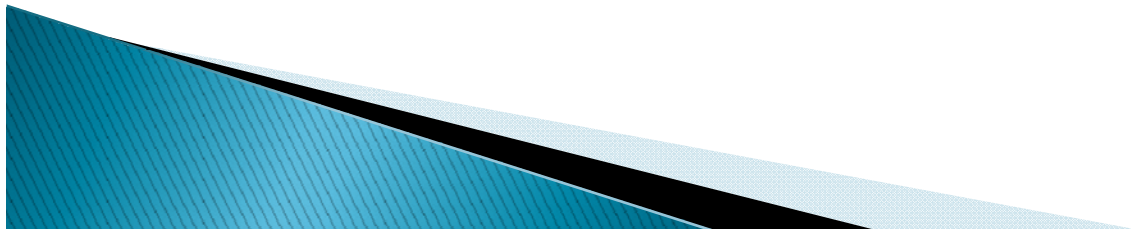
- ▶ We need to see this as 2 separated problems.
- ▶ First, how to reduce forest encroachment caused by maize farming expansion?
- ▶ Second, how to increase productivity of maize farming in the “non-forest land”?





40 years from now (without productivity change)

- ▶ Maize demand of 10 mil tons (double)
- ▶ Without technological progress, we need double of area to grow maize (15 mil rai)
- ▶ If we don't pay attention to forest encroachment problem, most of the expansion will be in the forest area.
- ▶ The massive loss of forest area will worsen the problem of food security. (The productivity will be lower because of degraded land too)



Scenarios for Thailand

	2013	2050			
		without tech	no till (46%)	heat tolerance (23%)	weed protection (19%)
Total output (mil ton)	5	10	10	10	10
Productivity (kg/rai)	650	650	949	800	767
Total area (mil rai)	7.8	15.4	10.5	12.5	13.0
Non-forest (mil rai)	4.1	11.7	6.8	8.8	9.3
Forest (mil rai)	3.7	3.7	3.7	3.7	3.7

** In 2013, there are 14.7 mil rai of off-season rice farm area.

