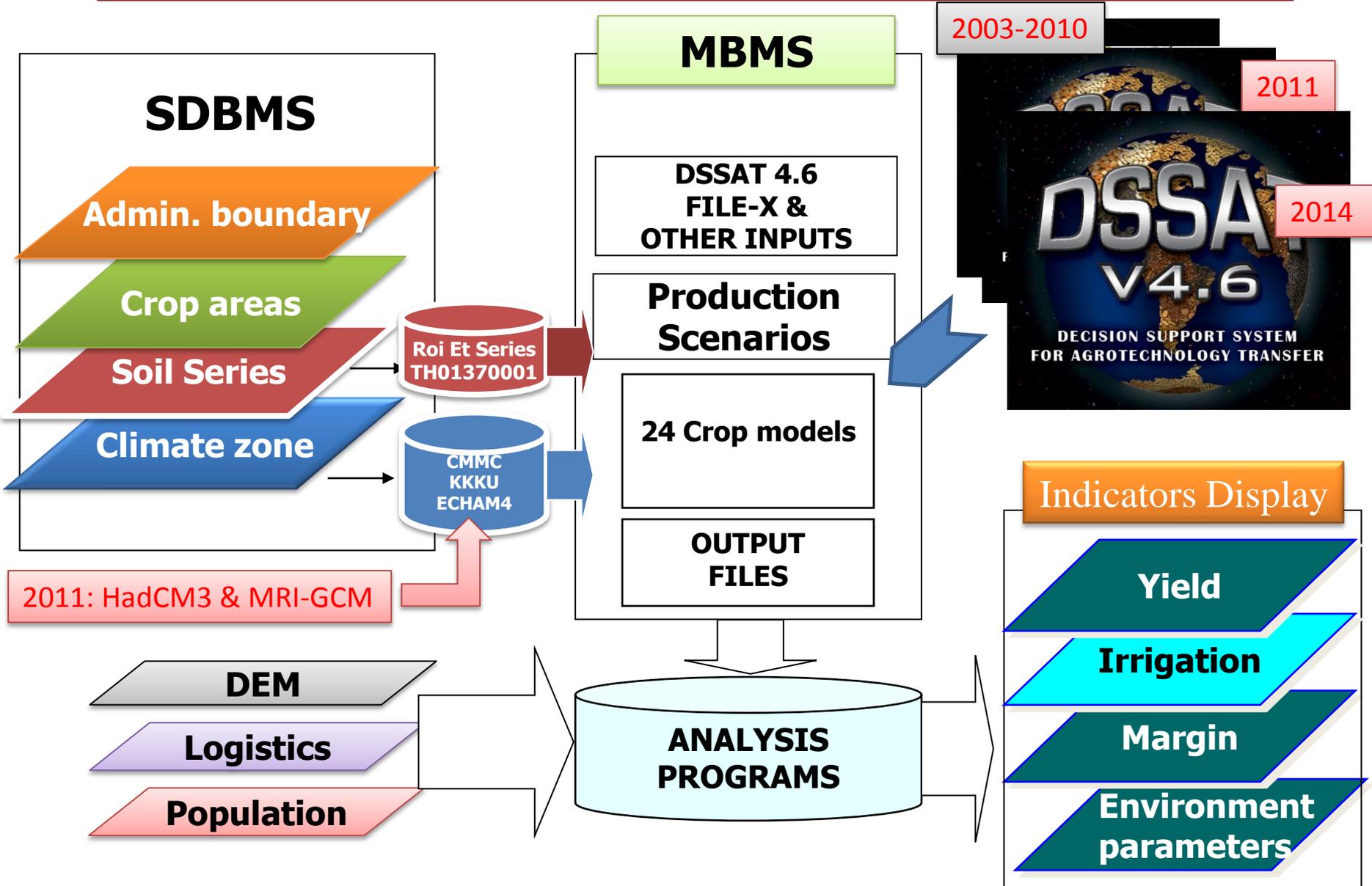


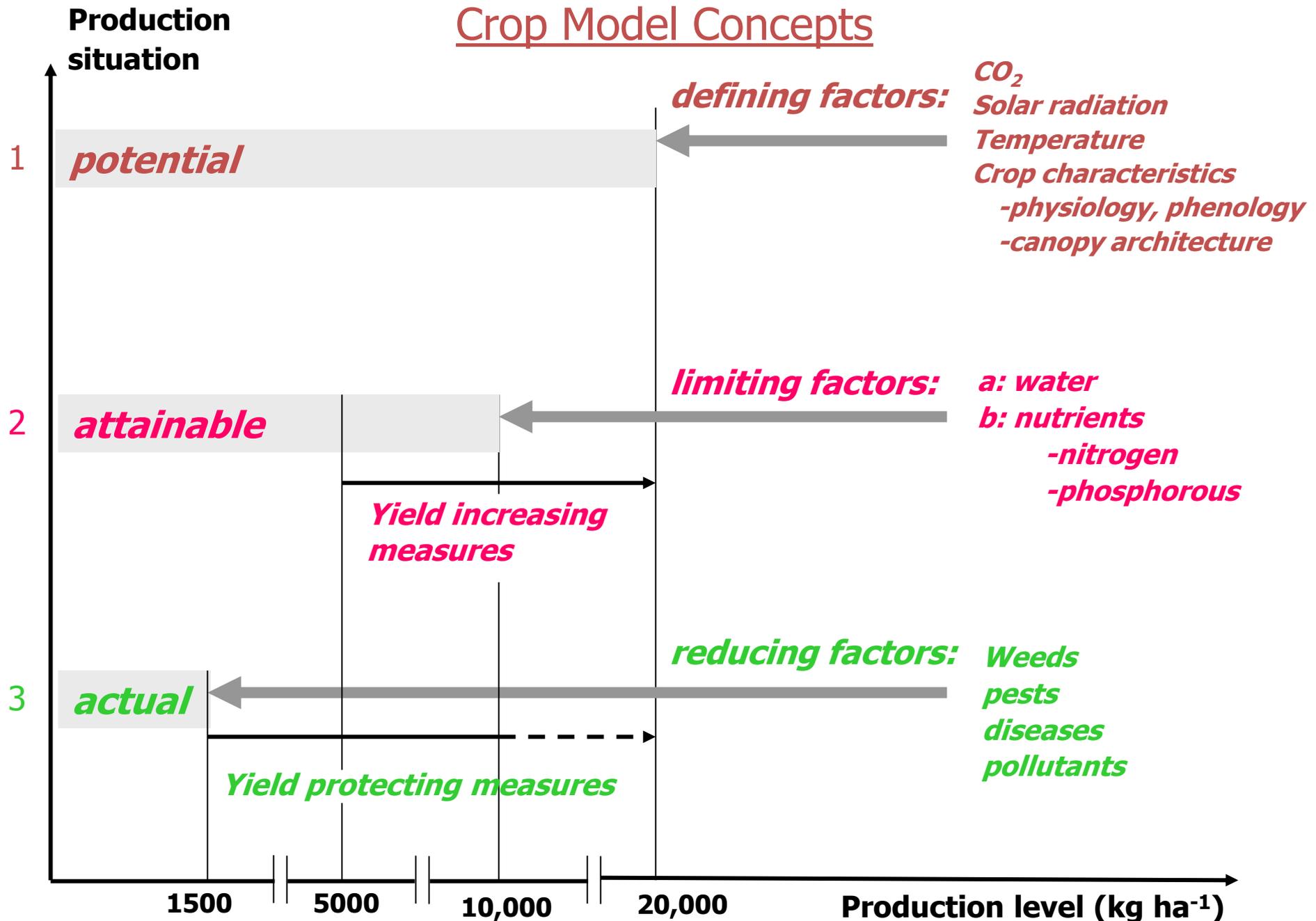
Previous studies on impact of CC on
Rice, Cassava, Sugarcane & Maize
under ECHAM4 A2 & B2

Attachai Jintrawet
Chiang Mai University

MWCropDSS Framework

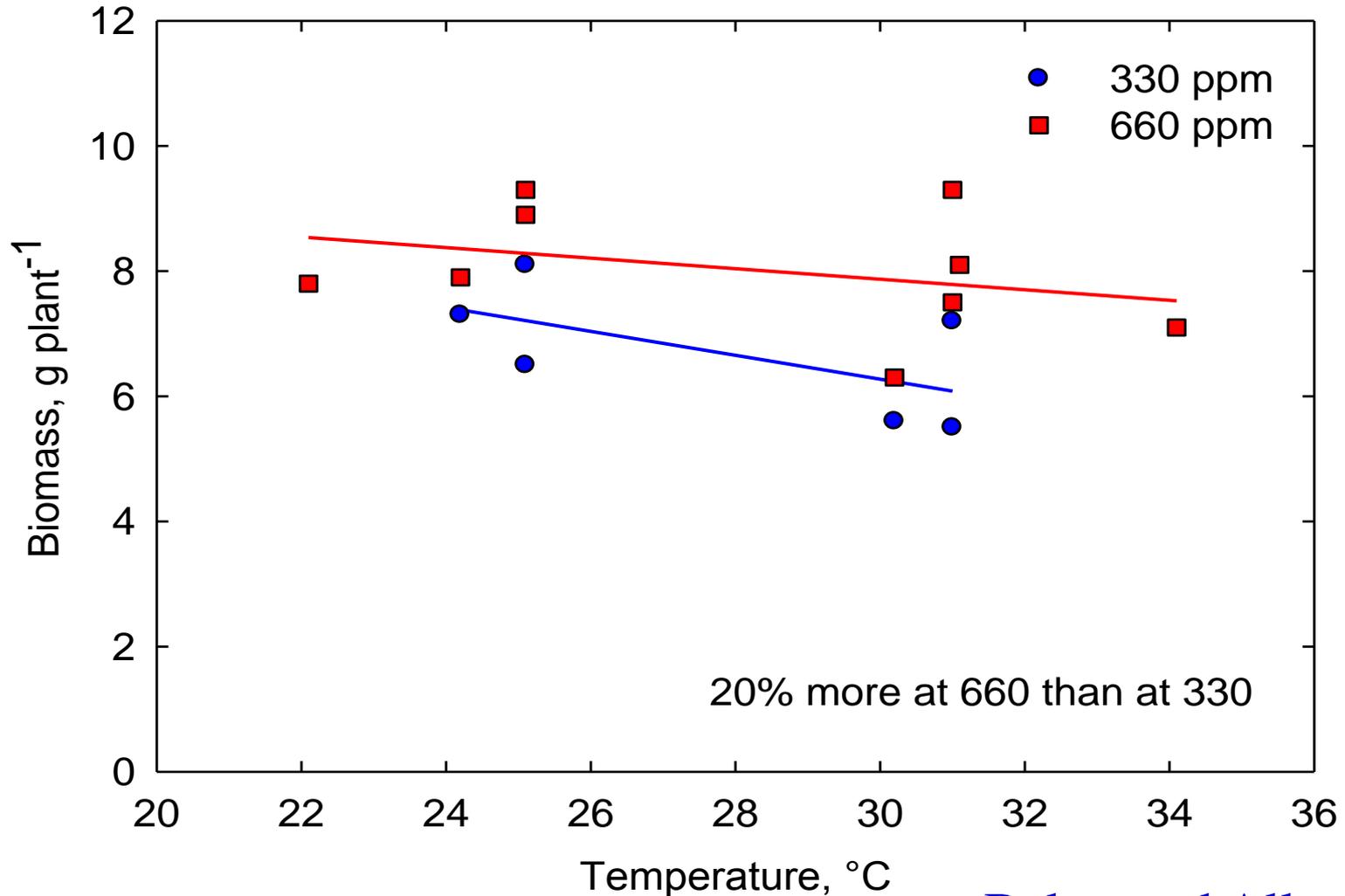


Crop Model Concepts



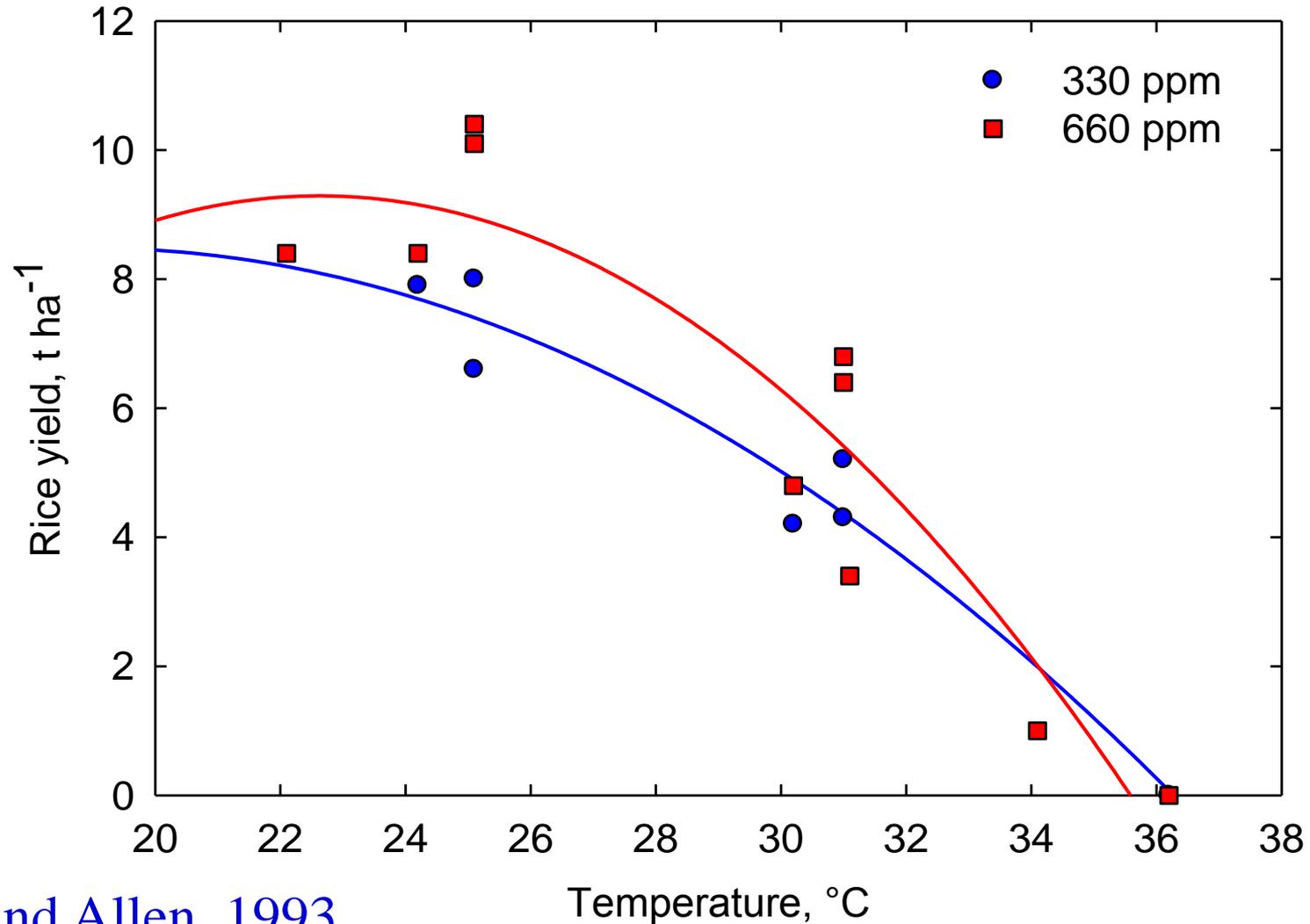
Climate Change and Crop Productivity

Temperature and CO₂ – Rice Growth



Climate Change and Crop Productivity

Temperature and CO₂ – Rice Yield



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Variable Group: DRY WEIGHT, YIELD AND YIELD COMPONENTS

Variable Name: Yield at maturity (kg [dm]/ha) _MEAN

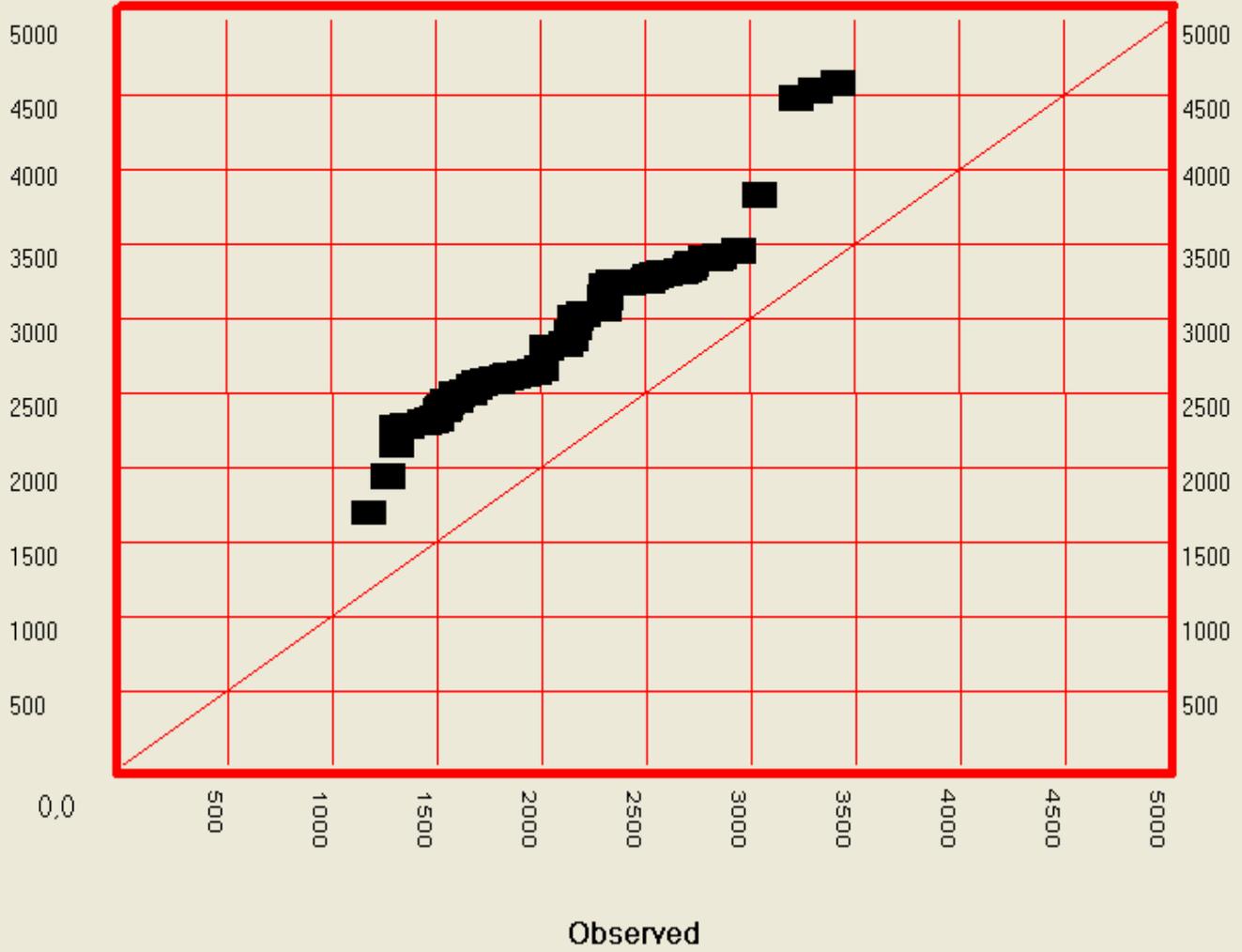
Class Number: 5 oStats Max: oStats Min:

Graph Color

Bar
 Pie

Simulated

Sim



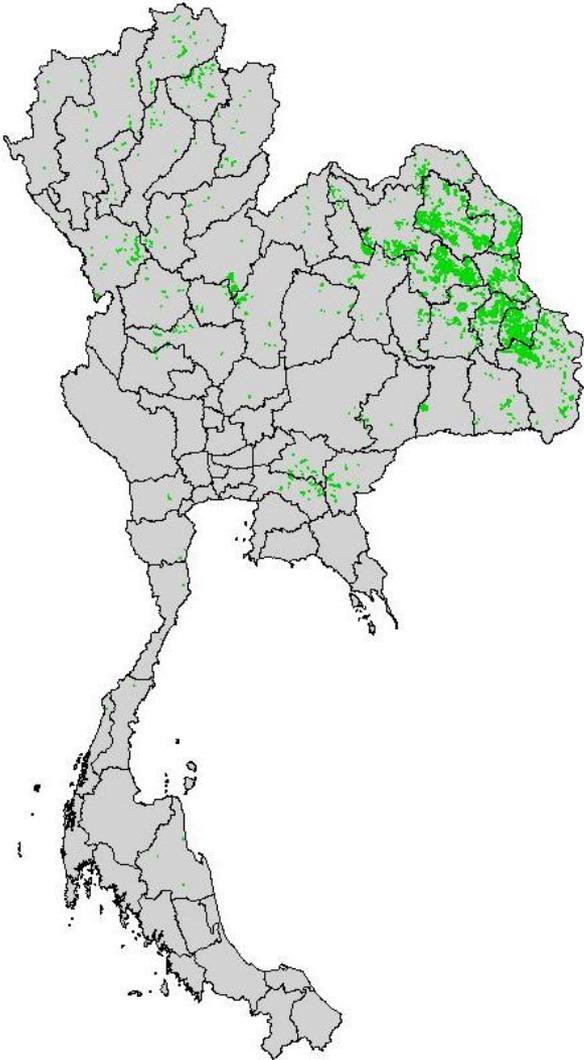
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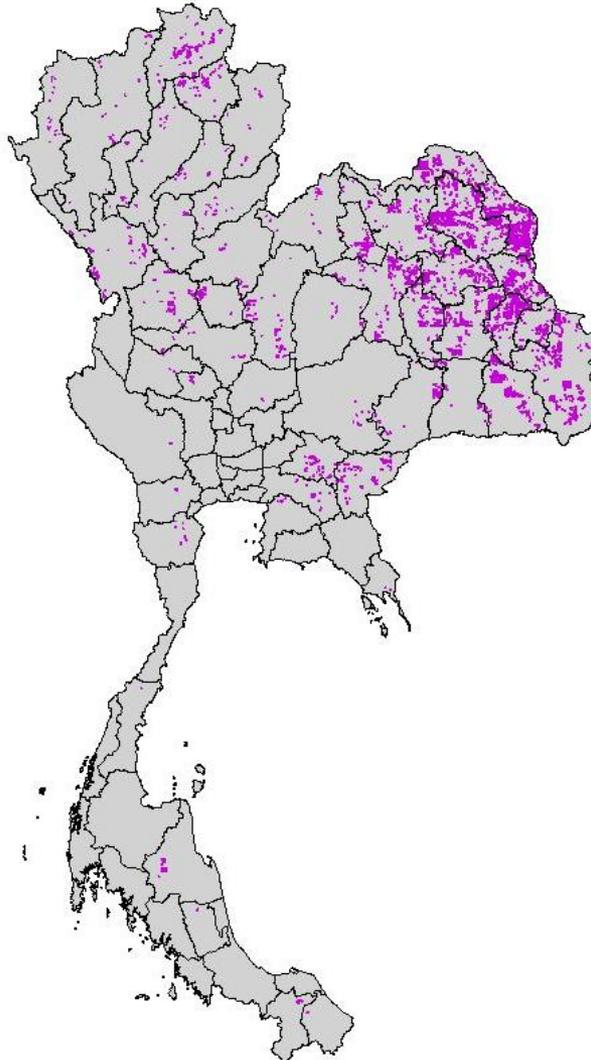
Statistics	OBS	SIM
Max	3423	4576.75
Min	1179	1700.25
Mean	2088.98	2885.48
SD	543.18	553.03
CV (%)	26.00	19.16
MAE	796.50	
RMSE	807.67	
D-Stat	-0.78	

Rainfed rice hotspots

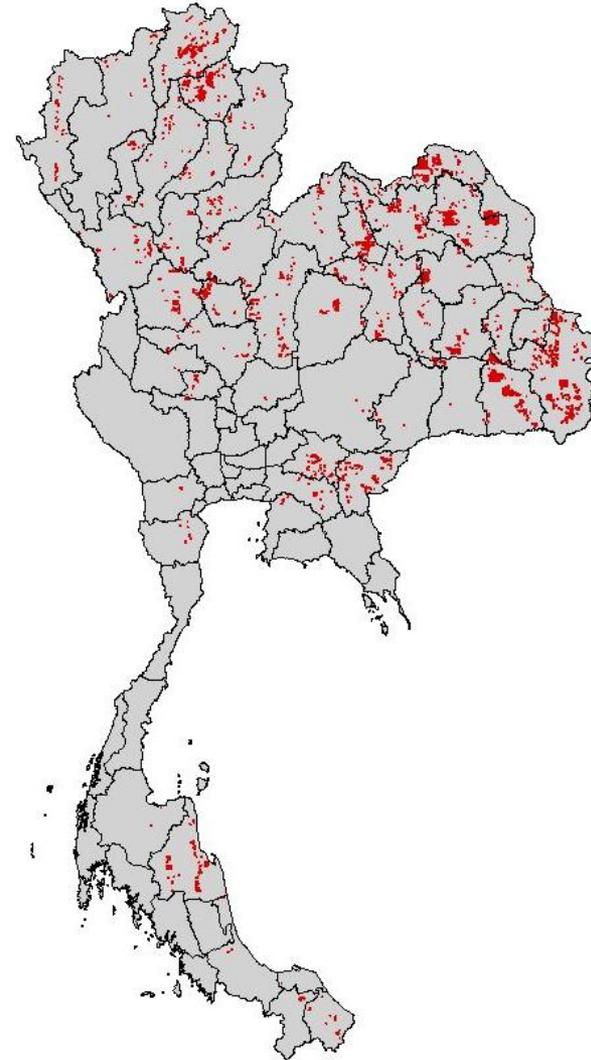
1980-89



2030-39

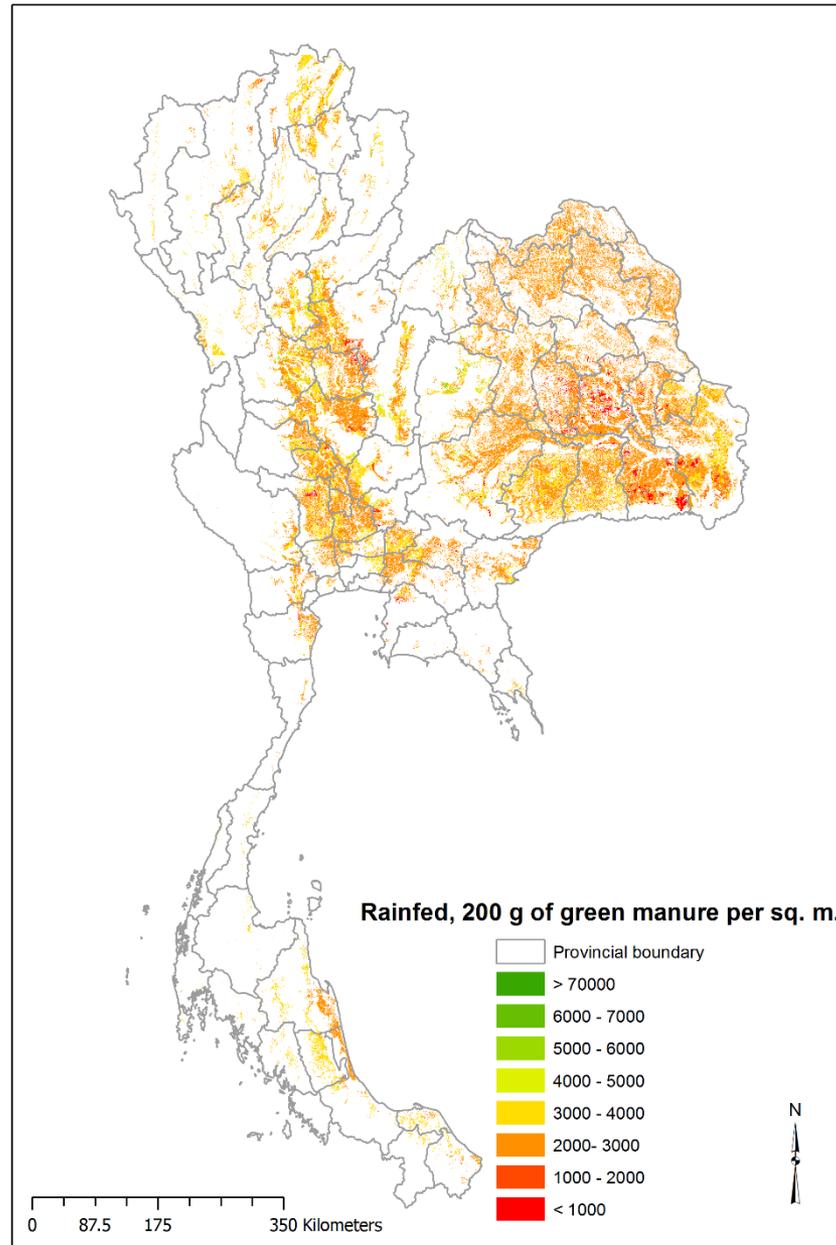


2090-99



Rainfed, 200 g of Green Manure per sq.m.

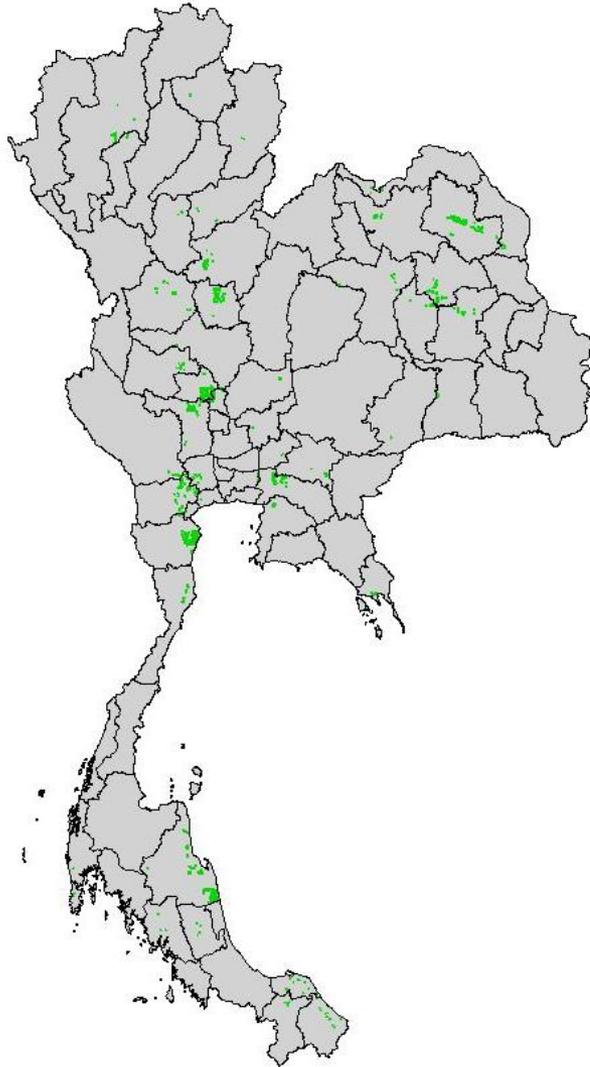
Adaptation
options
for
rainfed
rice
production
systems



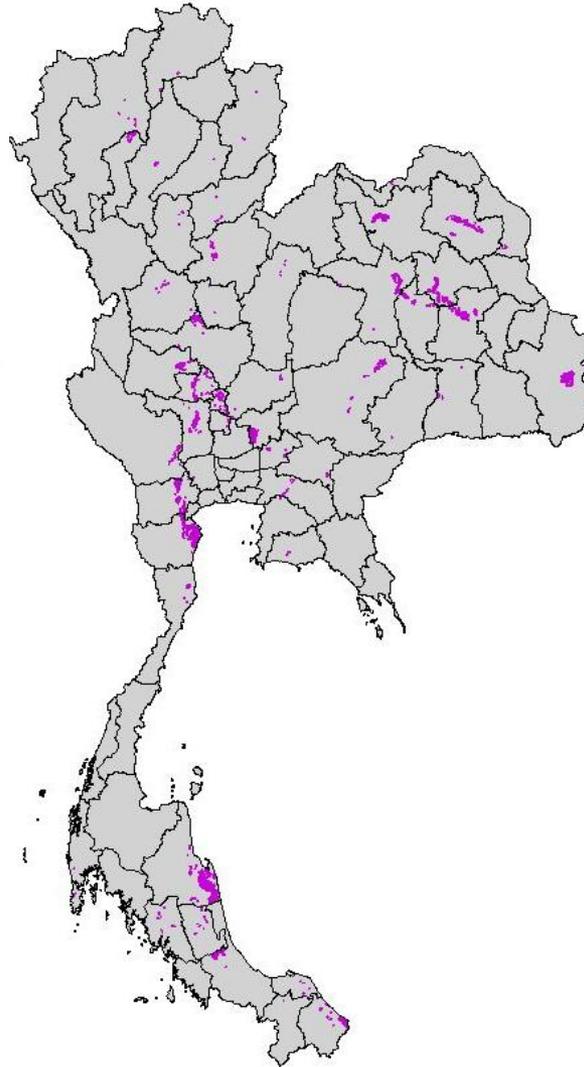
Jintrawet & Chinvano, 2011.

Irrigated rice hotspots

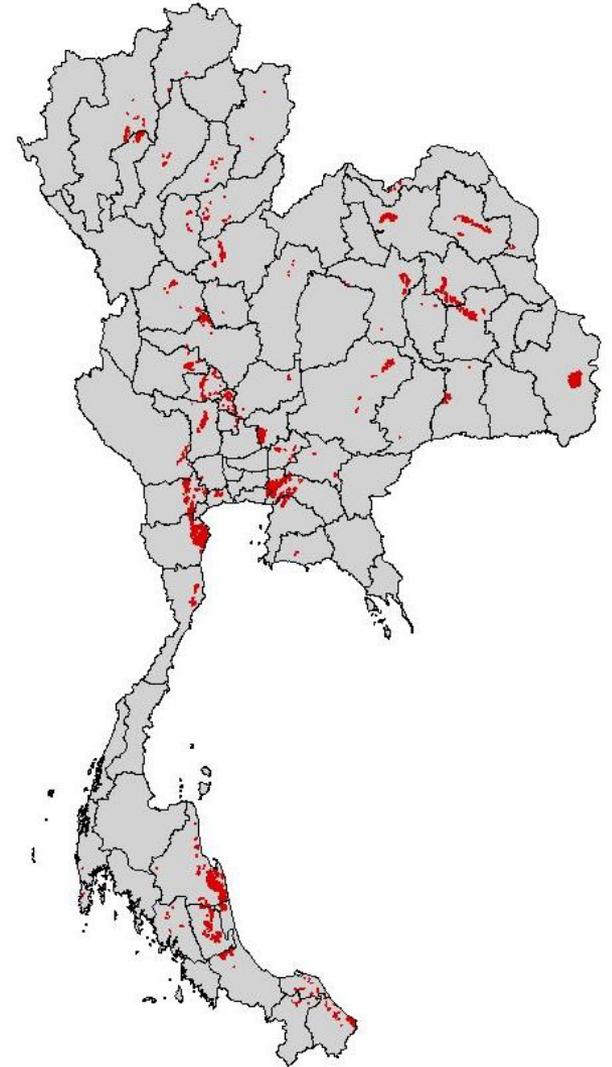
1980-89



2030-39



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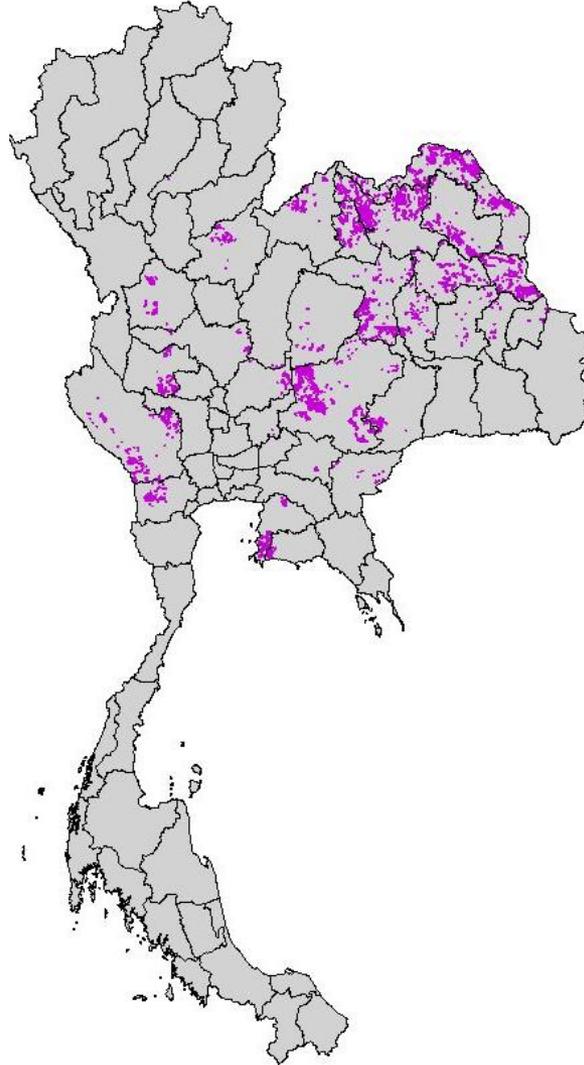


Cassava hotspots

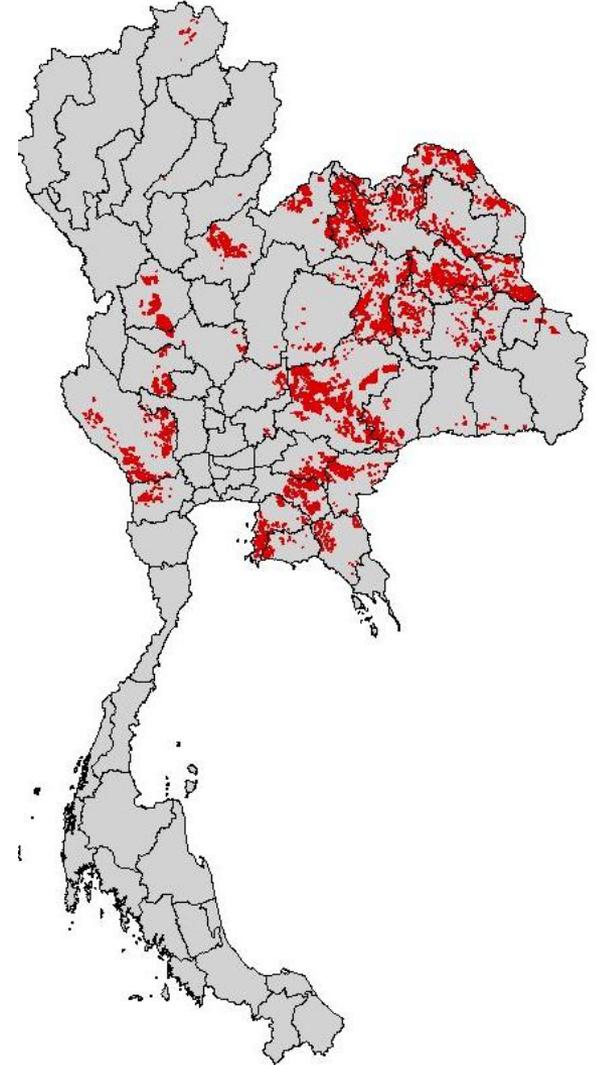
1980-89



2030-39



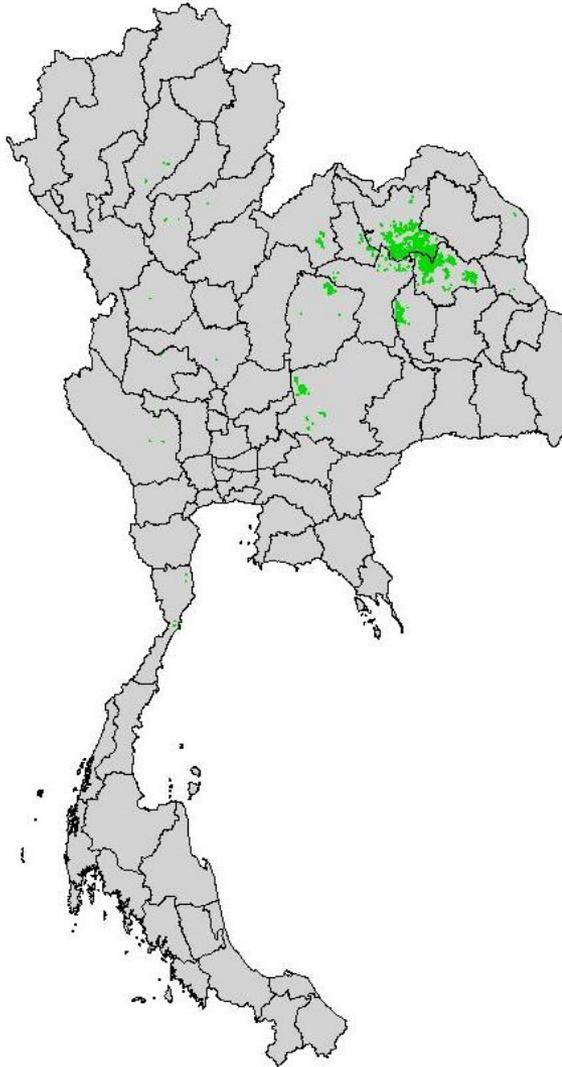
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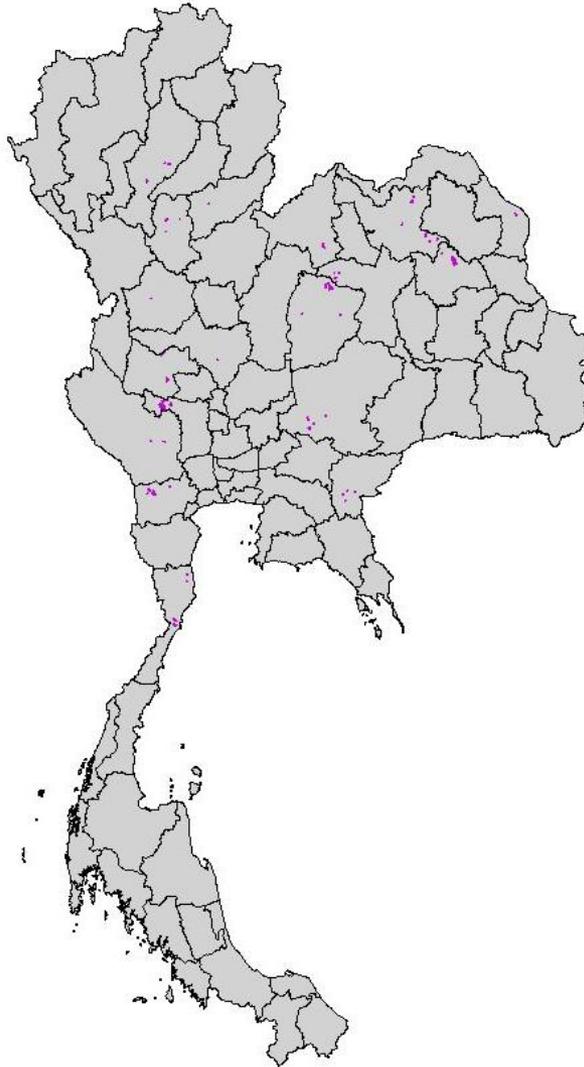
Pannangpetch et al, 2009.

Sugarcane hotspots

1980-89



2030-39

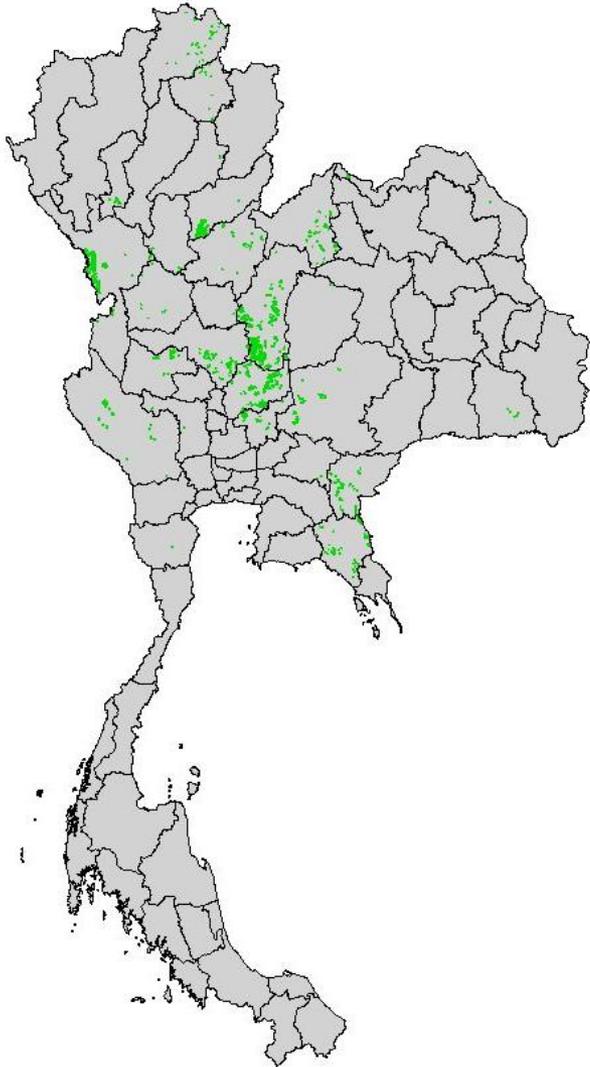


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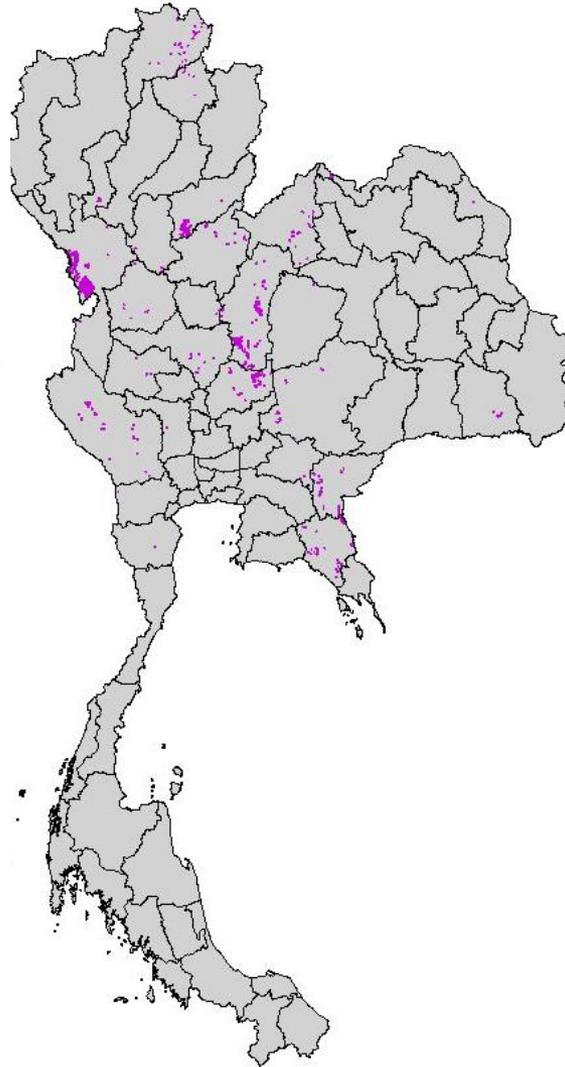


Maize hotspots

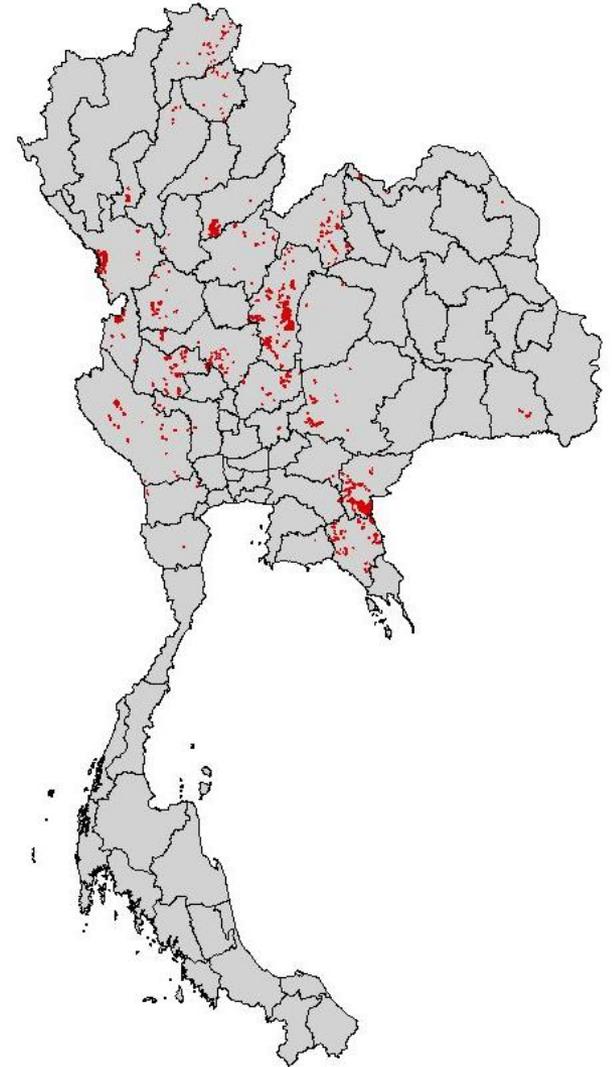
1980-89



2030-39



2090-99



Previous studies on Vulnerability & Coping mechanisms on Rice, Cassava, Sugarcane & Maize

Exposures, Sensitivity & Coping mechanism

Climate Change – an opportunity to invent new modes of production and consumption which no longer rely solely on fossil fuels.

Crop	Exposures	Sensitivity	Coping Mechanism
Main rice	On set of rains, total rainfall, # of rainy days Storms, Extreme temp, Salinity	Growing season Anthesis, Flowering, lower yield, Pests, drought	Farm level water & crop nutrient management, breeding programs
Off-season rice	Storms, Extreme temp	Growing season Anthesis, Flowering, lower yield, Pests, flood	- do -
Cassava	On set of rains, total rainfall, # of rainy days Extreme temp	Lower yield, waterlogged, pests	- do -
Sugarcane	On set of rains, total rainfall, # of rainy days Extreme temp	Lower yield, drought, pests	- do -
Maize	On set of rains, total rainfall, # of rainy days Extreme temp	Lower yield, drought, pests	Conversion to tree crops in sloping areas