



**Ministry of Training and Education
Kien Giang University**

**SOIL AND WATER MANAGEMENT
FOR RICE PRODUCTION
IN THE VIETNAM MEKONG DELTA**

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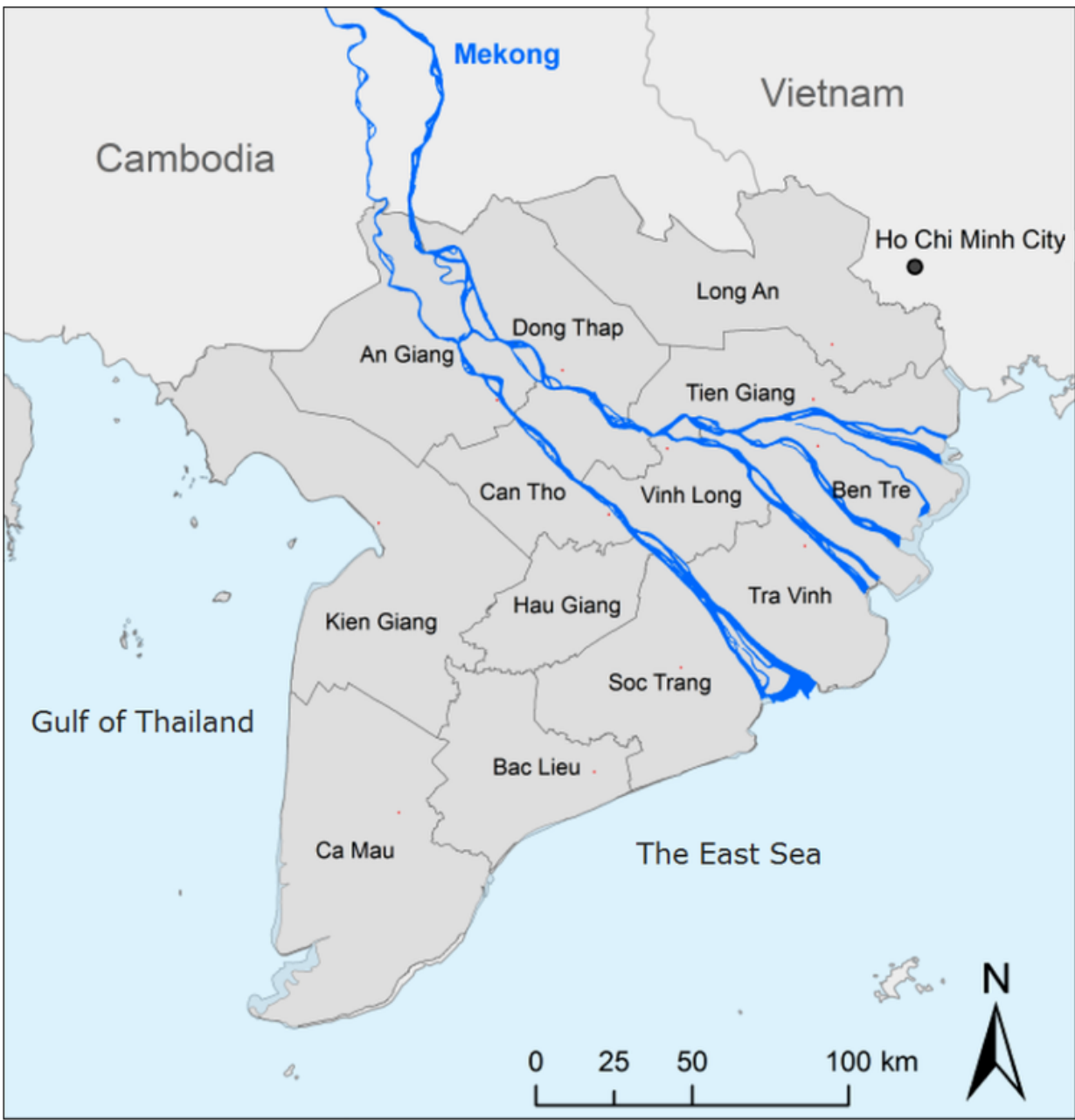
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1. General information of The Vietnam Mekong Delta





Area: 4 mil. ha
Province: 13
Population: ~ 22 mil. >70% farmers
Topography: Plain
Season: dry/rain
Agricultural exploration: >200 years.

LIVELIHOODS IN THE VIETNAM MEKONG DELTA



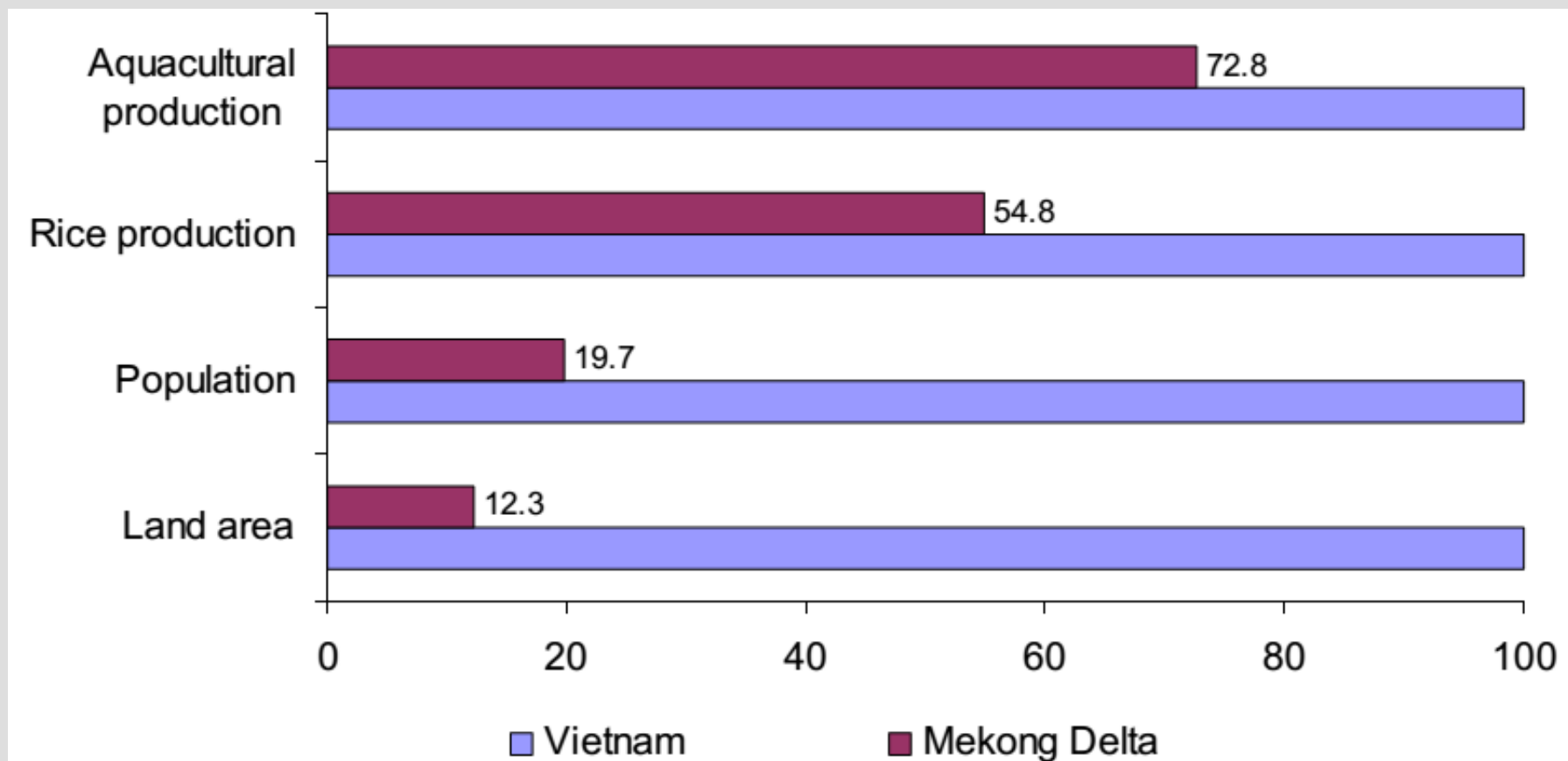


Fig1: Contribution of Mekong Delta to the nation rice/aquaculture production (GSO data, 2012)

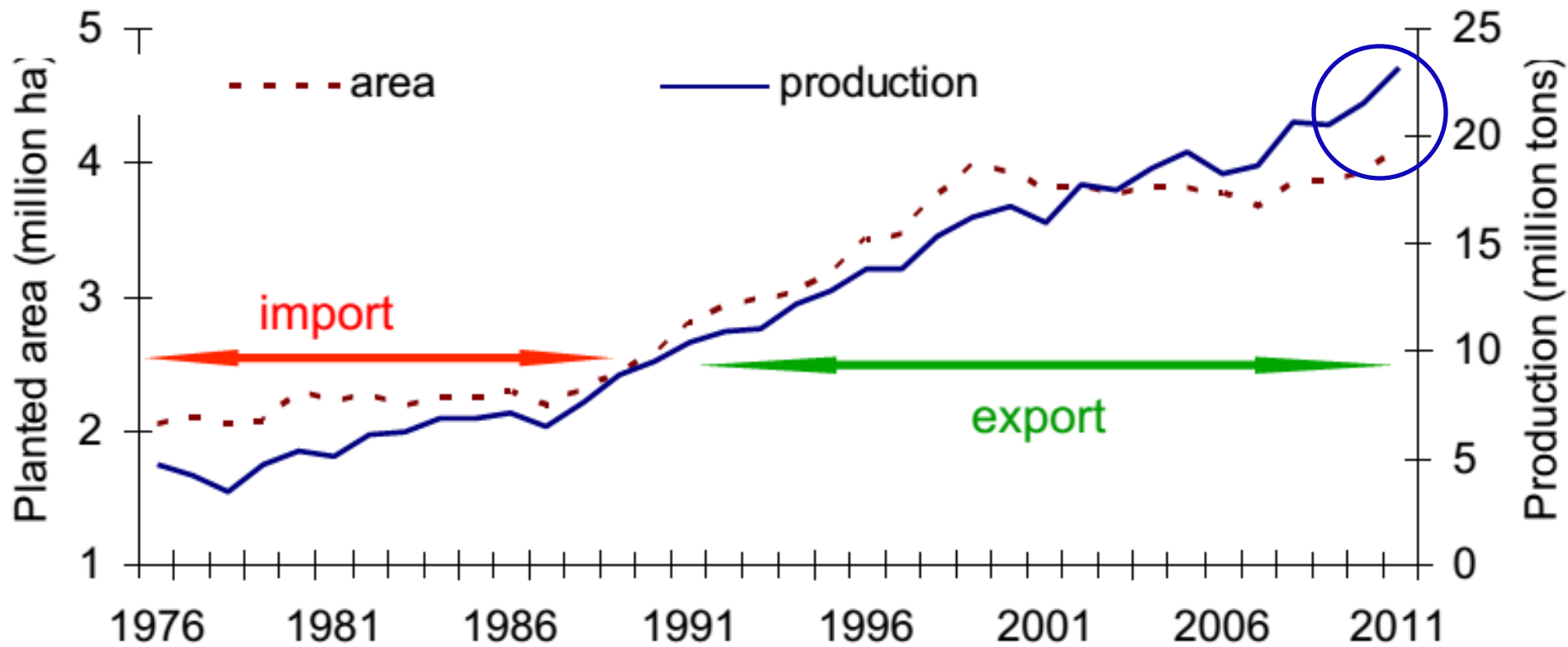


Fig: Rice development in the Mekong Delta

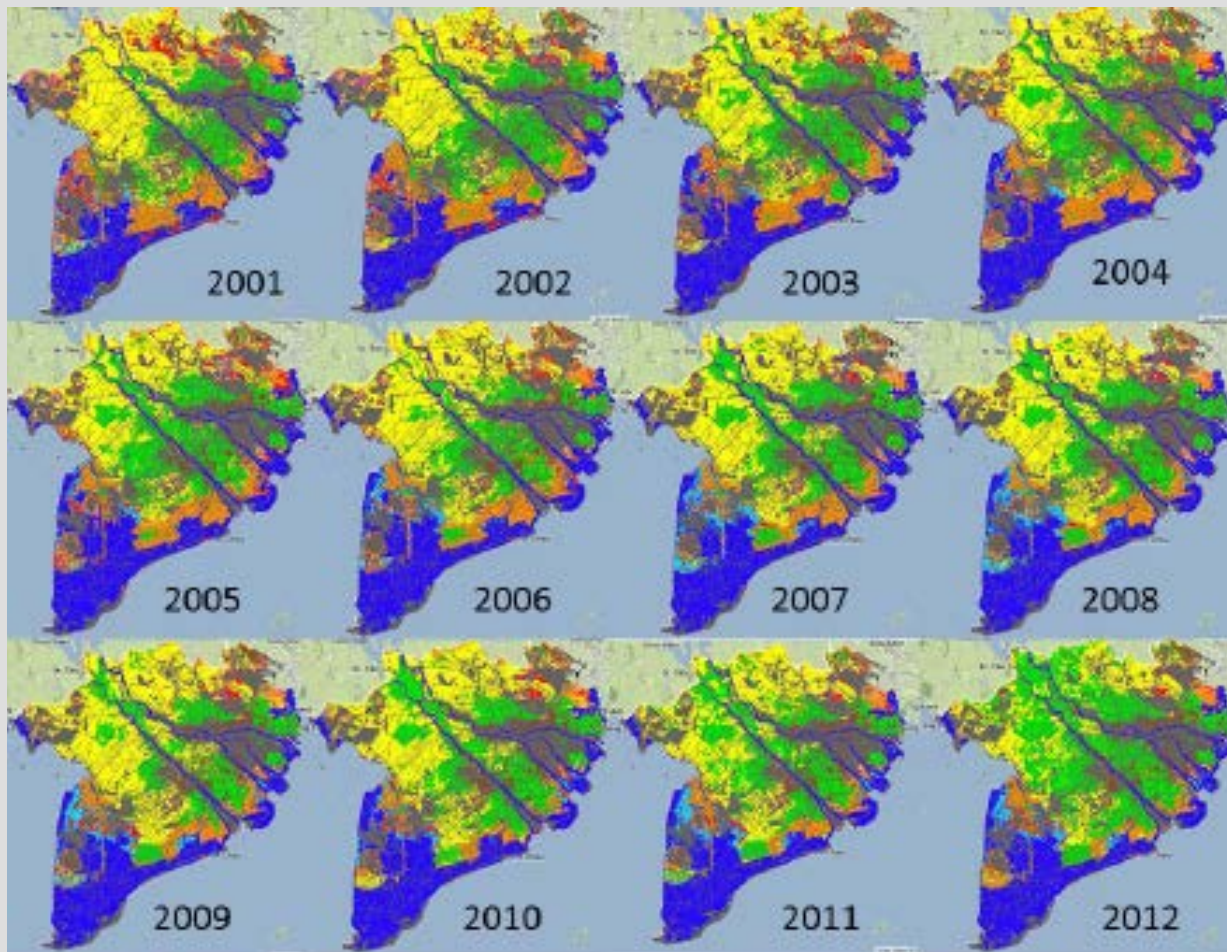
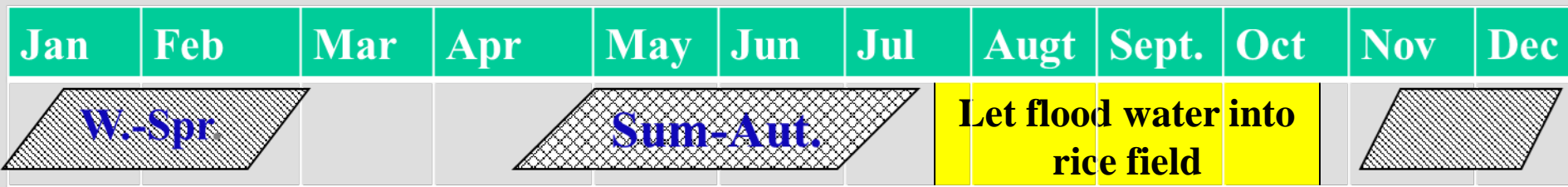
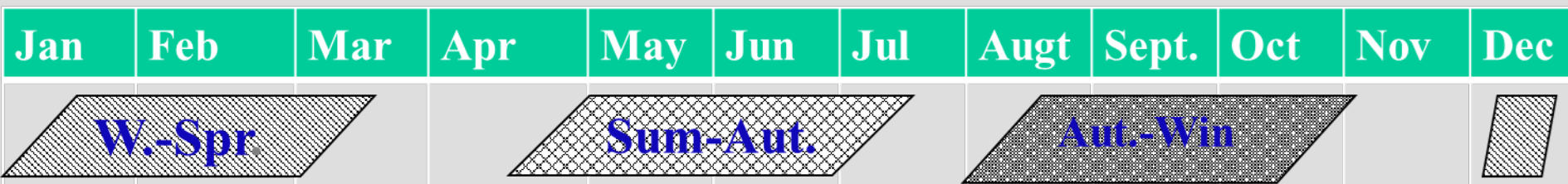


Fig 2: Landuse in the Mekong Delta from 2001 to 2012 (NIAES, 2014)

Cropping calendar of rice in An Giang province



Double rice pattern (at semi dyke/low dyke)



Triple crop pattern (at full dyke/high dyke)

2. IMPACT OF HIGH DYKE ON RICE PRODUCTION

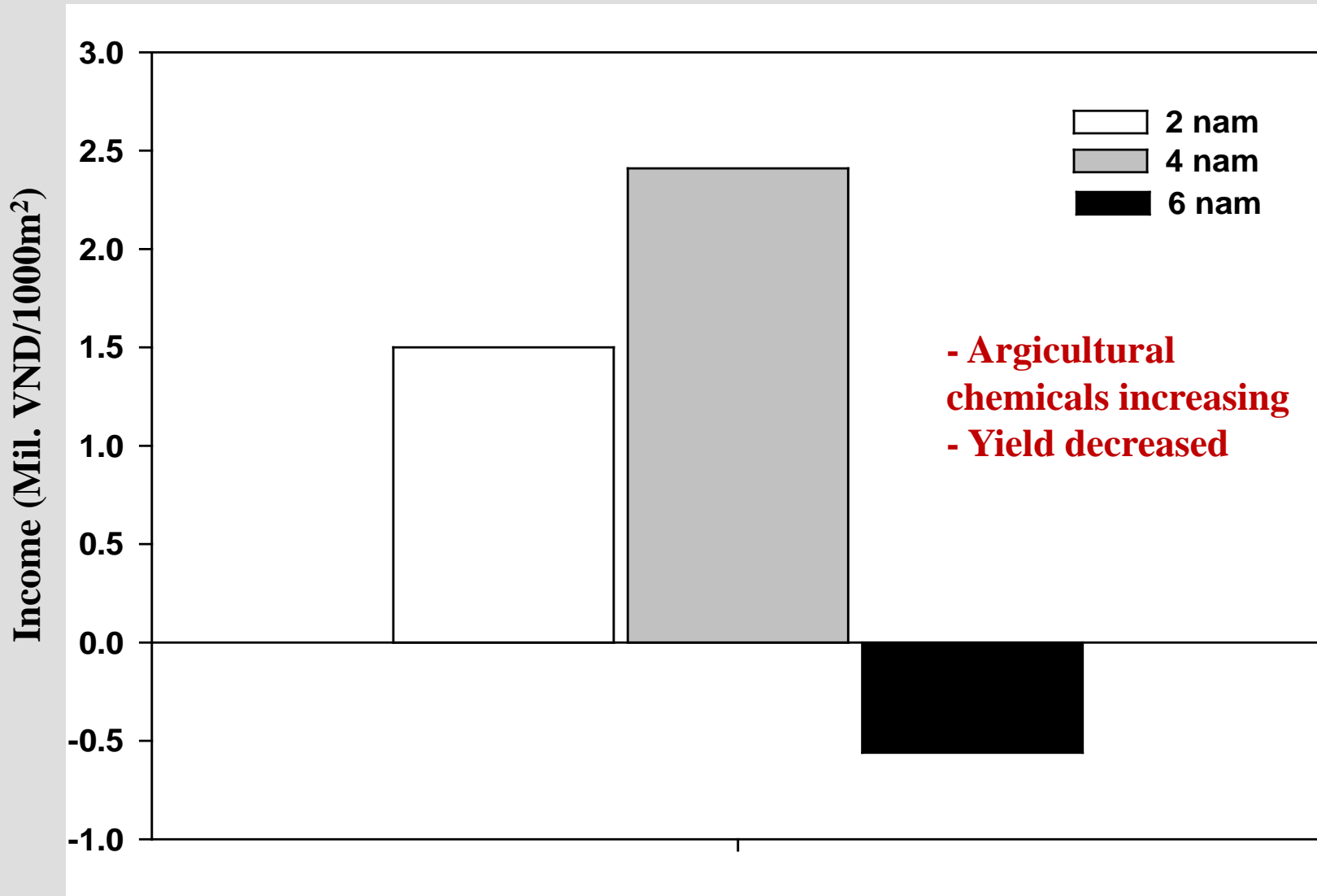


Fig 4: Impact of high dyke duration on rice income from triple rice (compared to double rice)

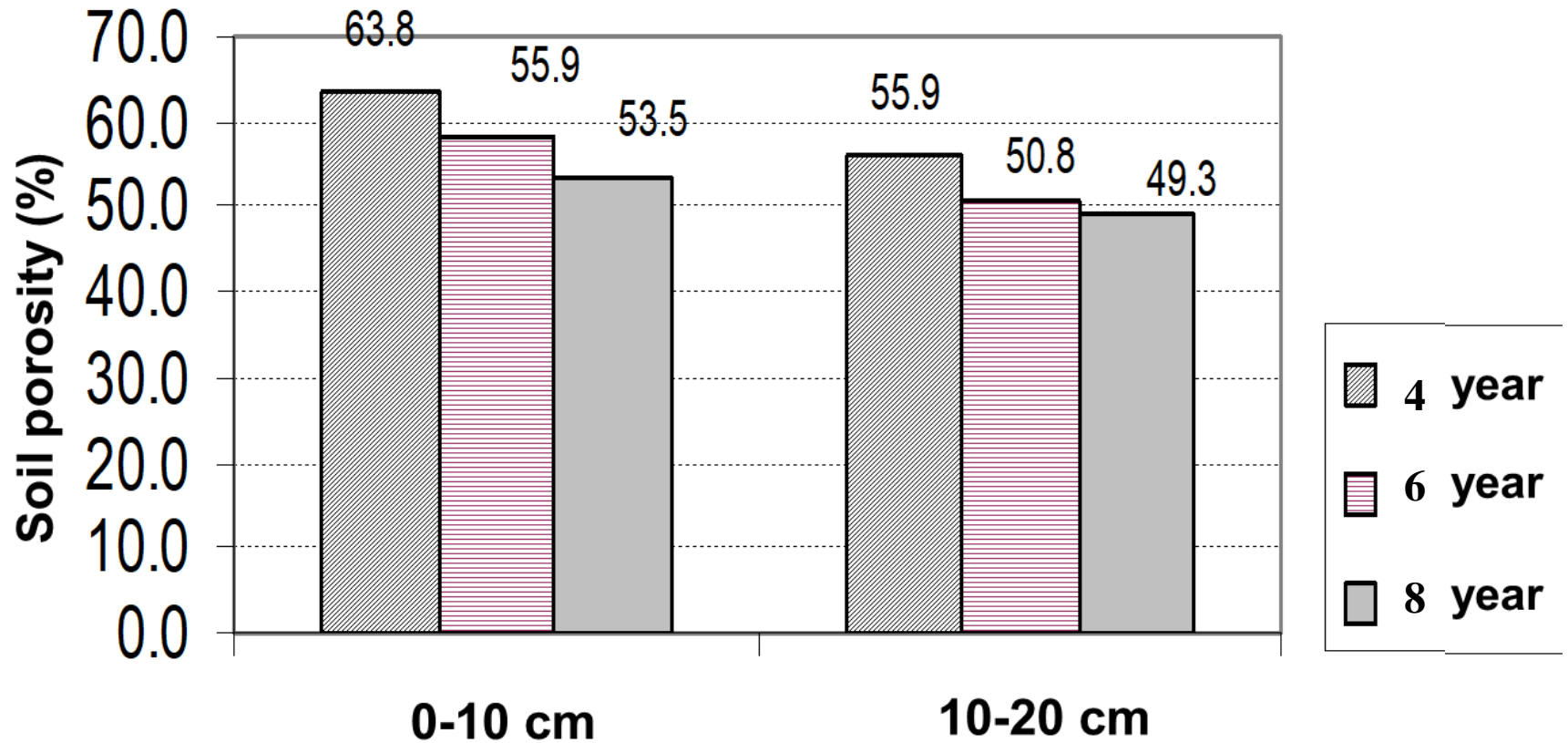


Fig 5: Impact of triple rice duration at high dyke areas on soil top porosity (Pham Duy Tien, 2009)

**Table 1: Root length and weight under triple rice condition
(Pham Duy Tien, 2009)**

Parameters		Triple rice duration (year)		
		4	6	8
Root length (cm)	Average	20	19	16
	Ob.	30	28	32
Root weight (g)	Average	0.8	0.6	0.4
	Ob.	30	28	30

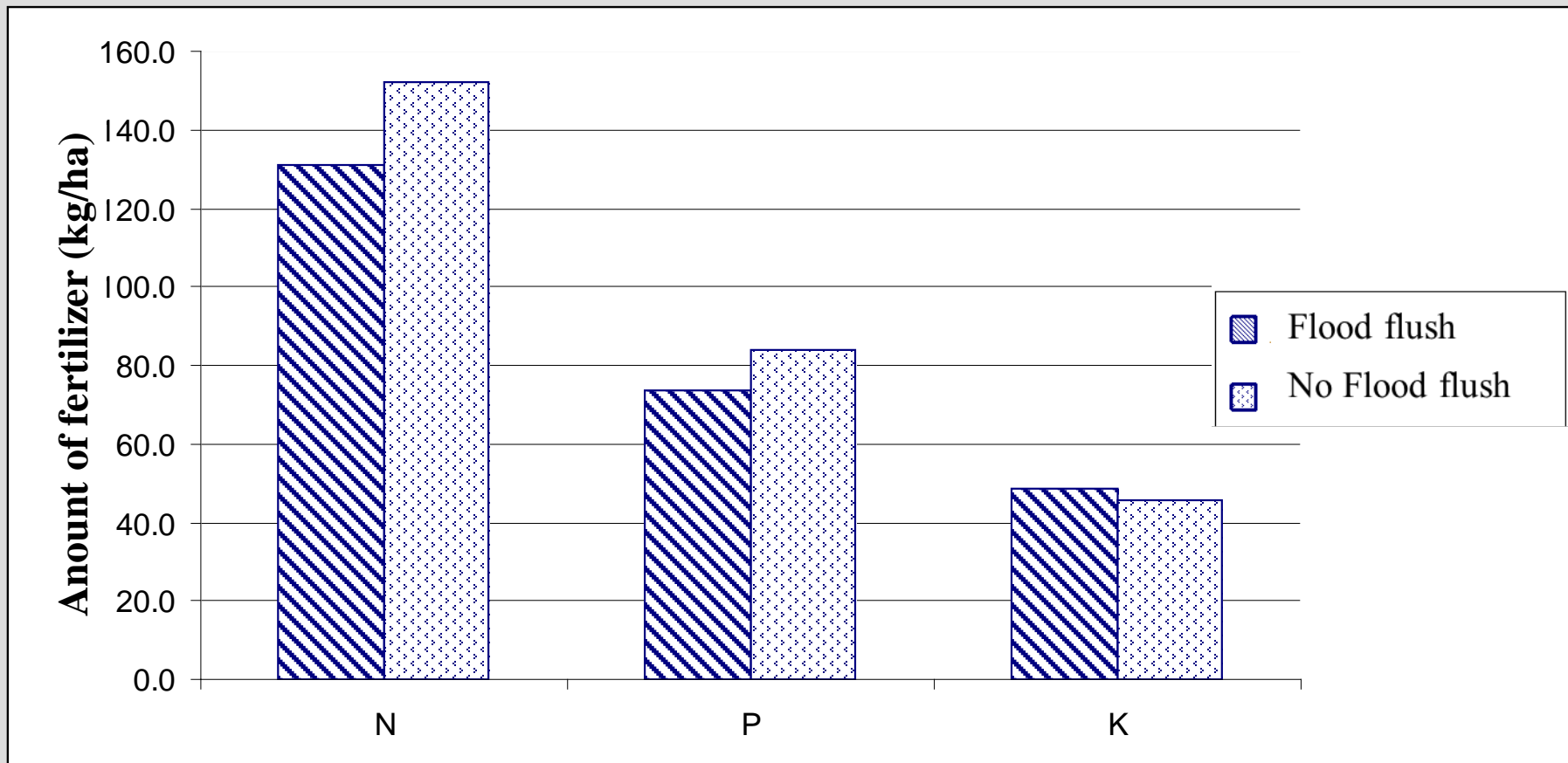
Table 2: Quality of sediment from flood in 2002

Elements	Amount of nutrients(kg /ha)
Ca ²⁺	278,46
Kali (K ₂ O)	5,52
Mg ²⁺	24,45
Phosphorus (P ₂ O ₅ avai.)	9,66
Nitrogen (mgN/kg avai.)	0,01
Total nitrogen (%)	198,73
Total phosphorus (%)	146,02
B(ppm)	0,013
Se(ppm)	0,017

Note: amout of deposition sediment: 7,97 kg/m², 2002

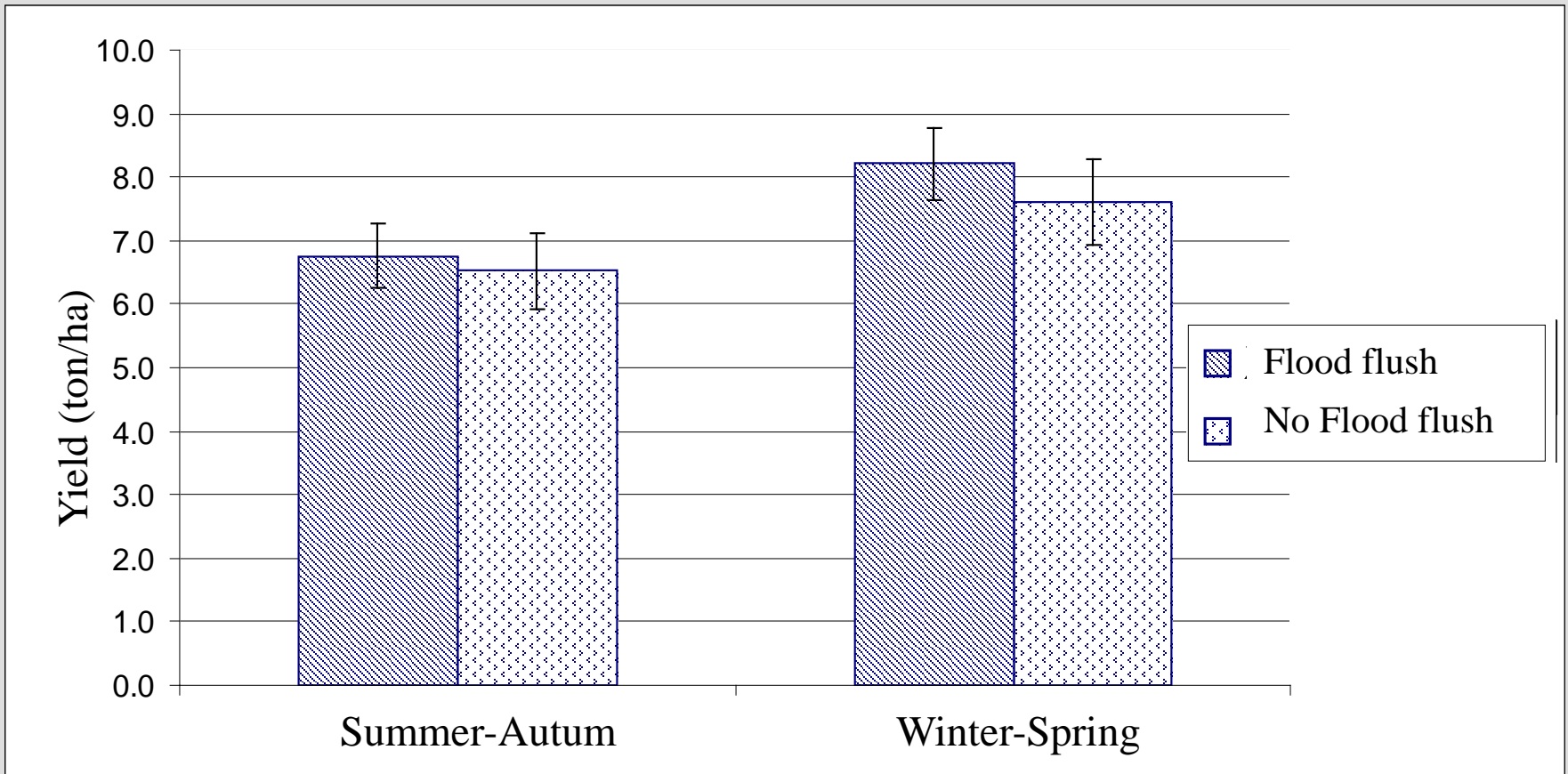
3. HOW WE RE-ACTED TO NEGATIVE IMPACTS OF RICE PRODUCTION AT HIGH DYKE AREA?

Flusing flood water into rice field =
stopping cultivating rice on Autumn-Winter
crop.



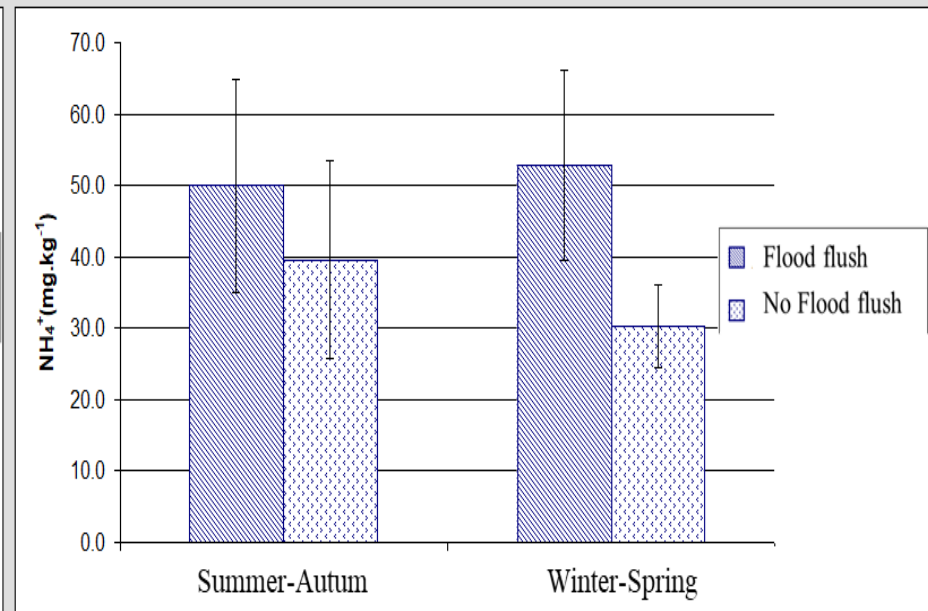
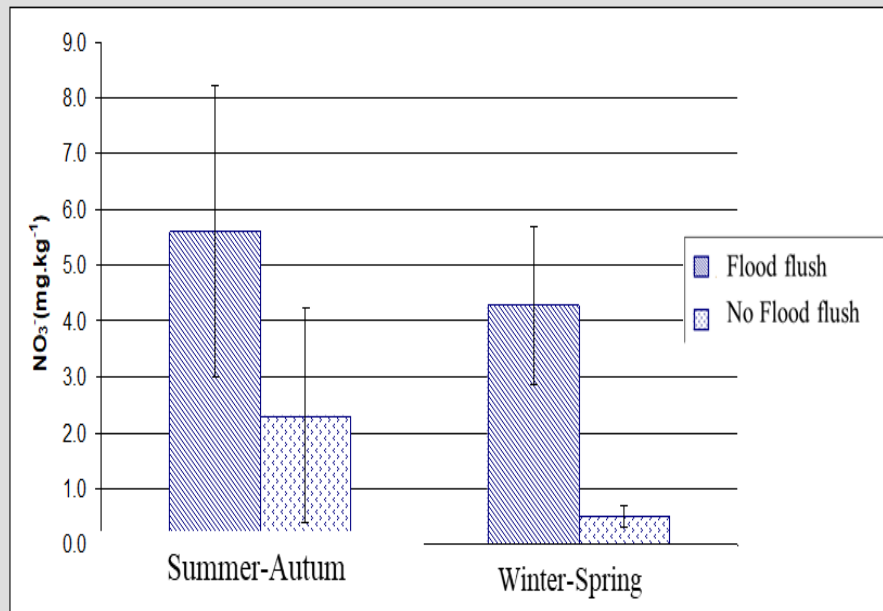
Ly Ngoc Thanh Xuan, 2011

Fig 6: Amount of fertilizer applied on rice under flood flush and no flood flush at high dyke area in An Giang province



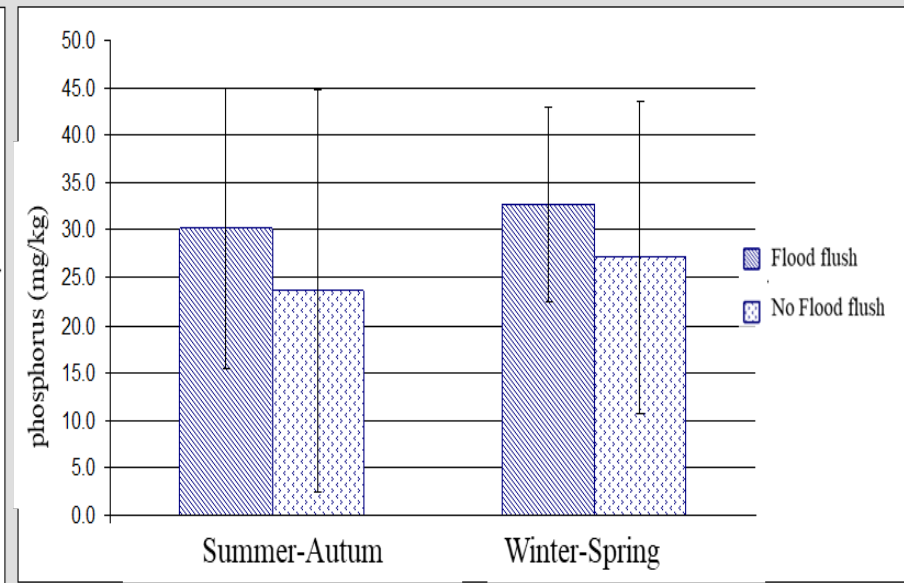
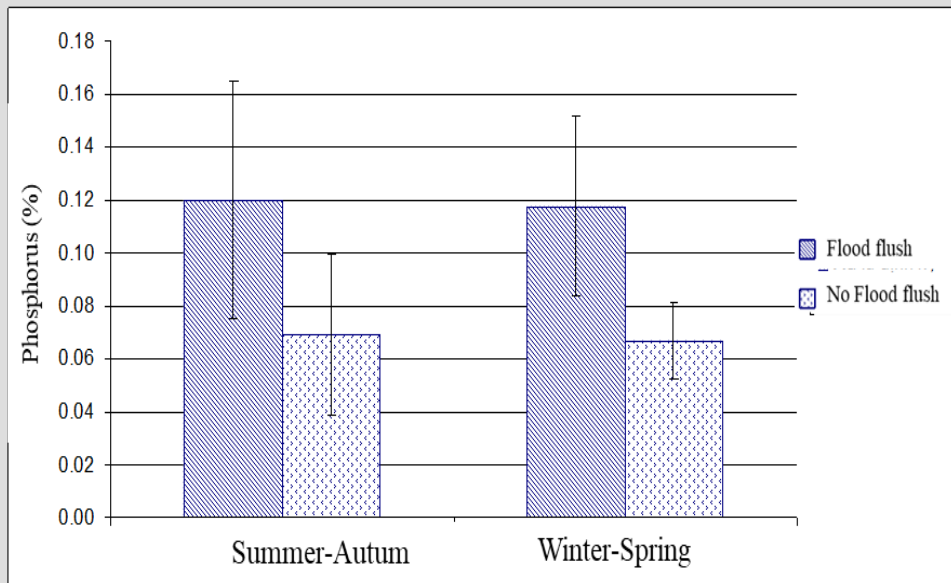
Ly Ngoc Thanh Xuan, 2011

Fig 7: Rice yield at flood flush and no flood flush areas in An Giang province



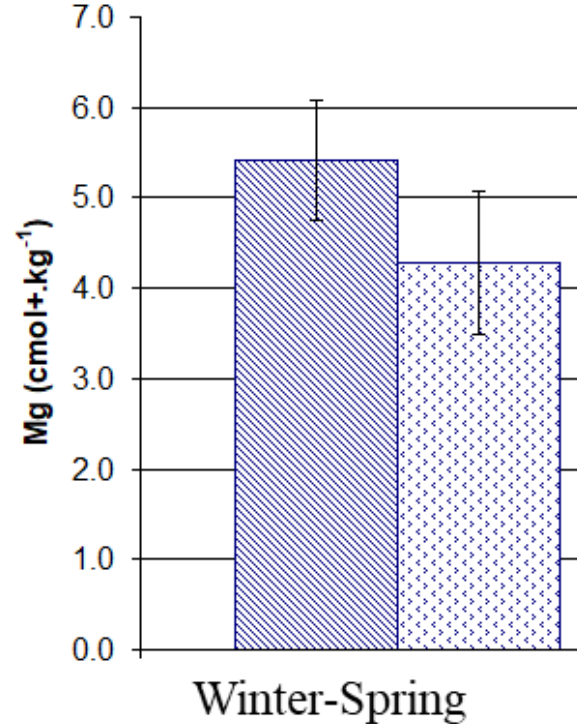
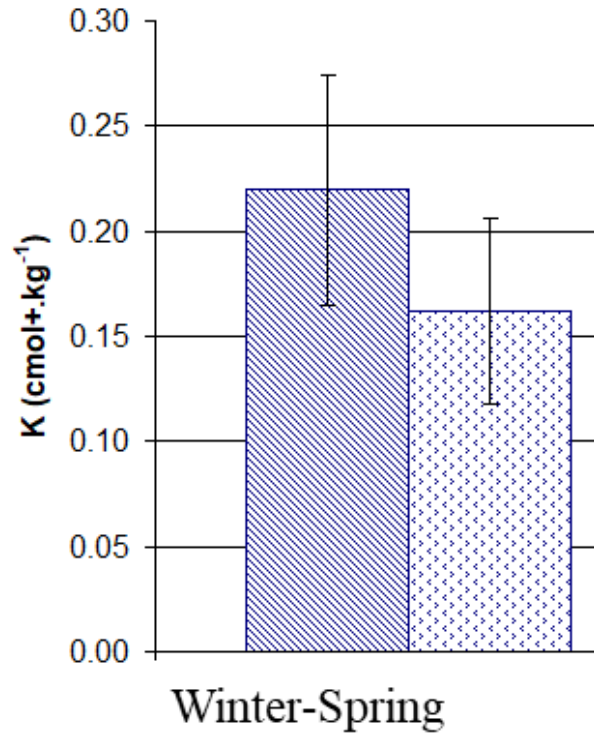
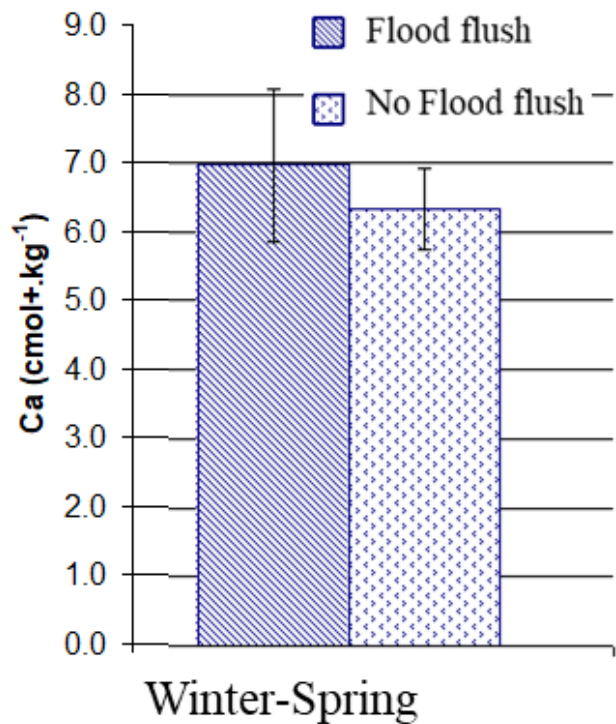
Ly Ngoc Thanh Xuan, 2011

Fig 8: Soil quality under flood flush and no flood flush condition in An Giang province
(Note: amount showing difference between before and after cropping)



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(Note: amount showing difference between before and after cropping)

Conclusion

- Flood water plays important role for rice production
- Soil quality, root growth, rice yield and rice income reduced at triple rice area (high dyke).
- Let flood water into paddy field could improve quality of soil resulting in higher yield and less fertilizers as well.

Lesson: we should understand the nature to use it wisely!

Thanks for your attention!