

Double Cropping in Brackish and Some Saltwater Intrusion Areas

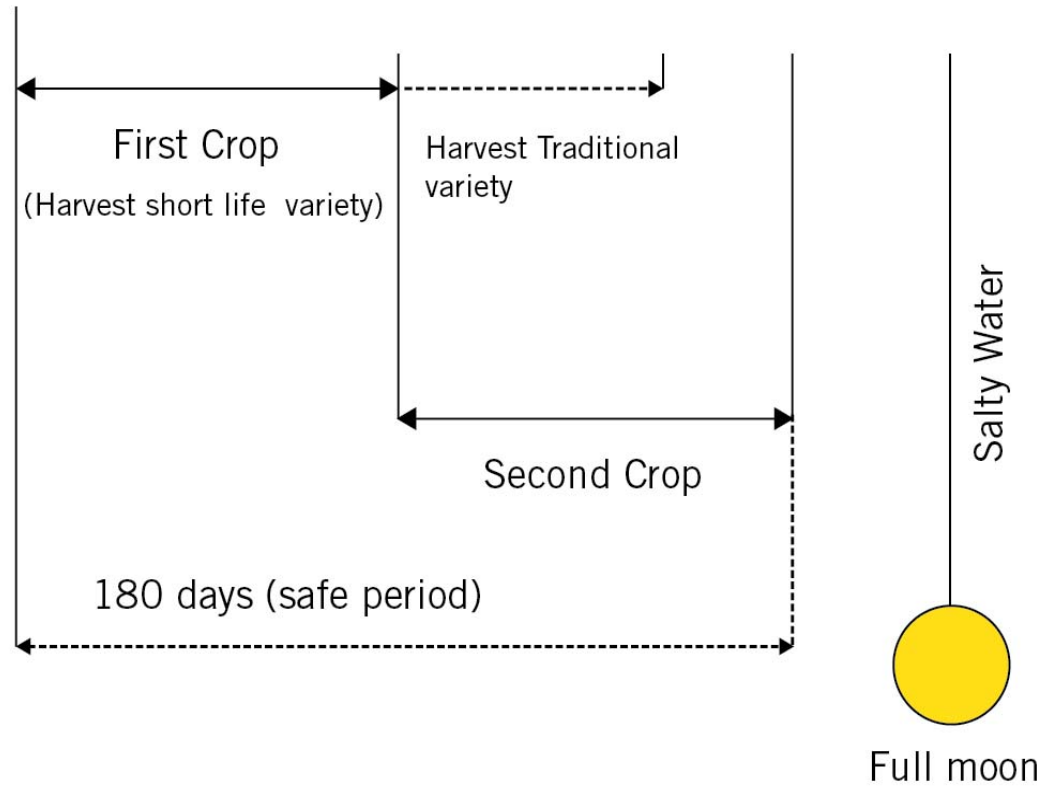
Myo Myint
Proximity Designs
25th November 2014

Introduction

Background:

- There have been unsuccessful attempts encouraging double-cropping in mono-cropping areas for quite a long time.
 - Pioneer idea and salt intrusion mapping carried out by Land Use Division in the 1980's. (Dept. of Agri.)(DOA)
 - The DOA pioneered double cropping during the monsoon season in freshwater areas in the 1990's.
- In the past, farmers who've attempted double cropping in brackish areas have failed because they didn't know that indigenous knowledge could be employed to determine fresh water availability.
- LIFT has recently provided a four month extension on our current project (till April 2015). We will develop measures for better income per unit area.

May, J, J, A, S, O, N, D, J, F, M, April



Strategy for double cropping in salt intrusion area.

Myo Myint (FAS)

Vital facts for double cropping

1. We need to know when fresh water is available in each location (what is the 'Safe Period').
2. We need to conduct trials with short life varieties of rice and water management within the 'Safe Period.'

Simple, affordable techniques to grow a post-monsoon crop for brackish and some saltwater intrusion areas

Three main measures essential for success

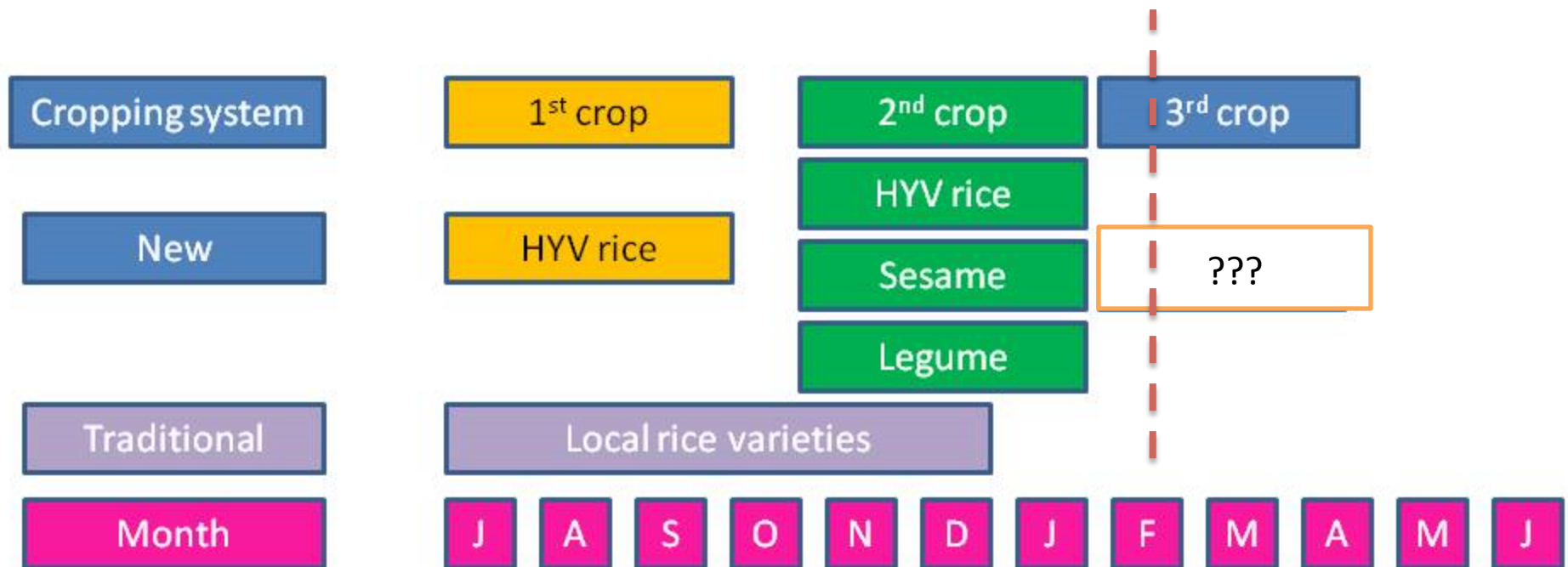
1. Selection of short life rice varieties
2. Irrigation according to the lunar calendar
3. Balancing fertilizer application

1. Observation & Selection of short life rice varieties

1st crop	Life span	2nd crop	Life span
(IDE rice)	90 DAYS	(IDE rice)	90 DAYS
Sinn Thwe Latt	135 DAYS	Sticky Rice	95-96 DAYS
Paw San Yin	145-150 DAYS	Pa Khan Shwe War	100-105 DAYS
Pa Khan Shwe War	100-105 DAYS	Thee Htet Yin	110-115 DAYS
Thee Htet Yin	110-115 DAYS		

- **The 1st crop should be harvested in October**

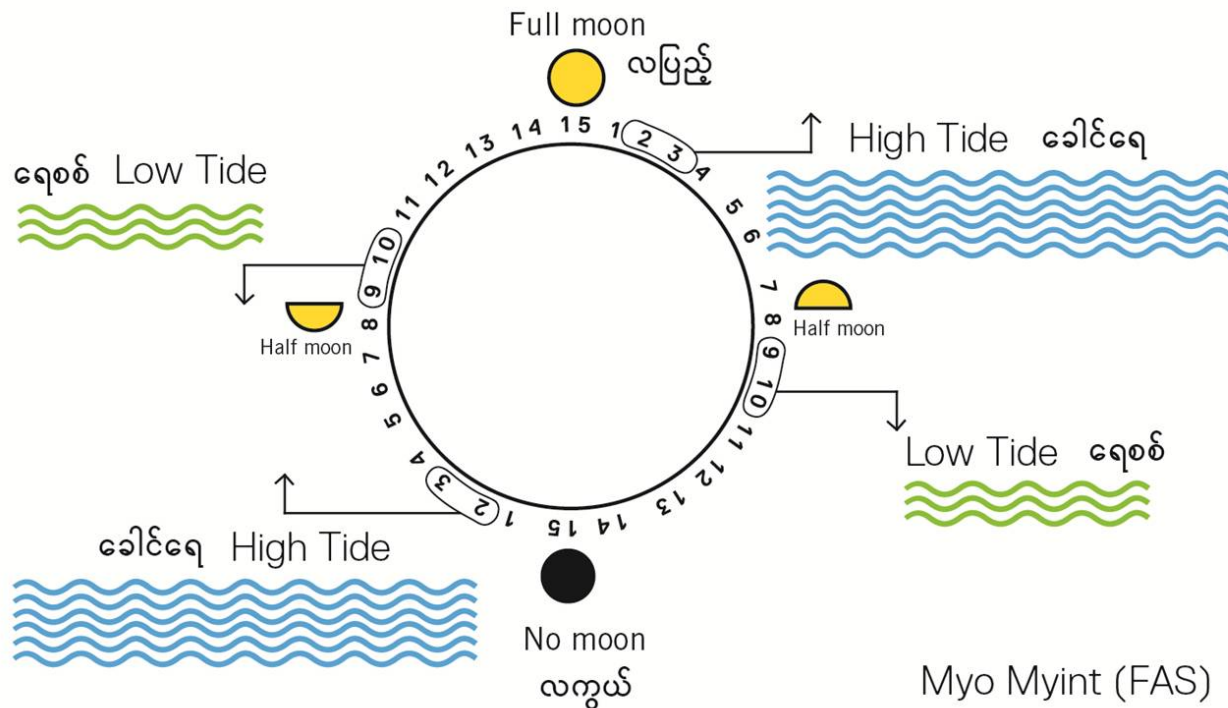
Traditional and FAS proposal



2. Irrigation according to the lunar calendar

Indigenous Knowledge Lunar Calendar and Tidal Schedule

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Salt concentration of water is higher during the high tide than during the low tide.

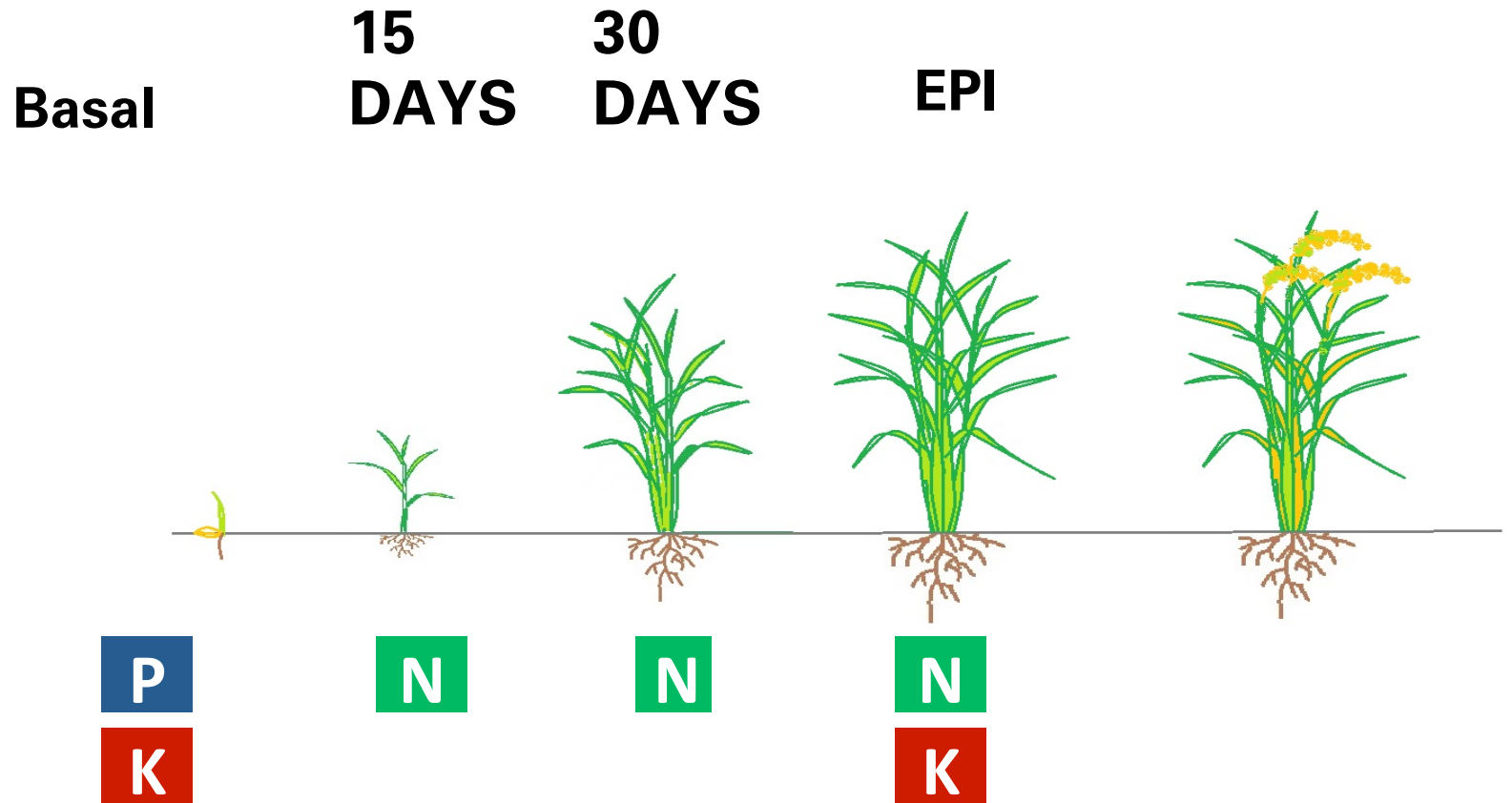
Recommended irrigation method during the low tide



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Farm Advisory Services

3. Balanced Fertilizer Application

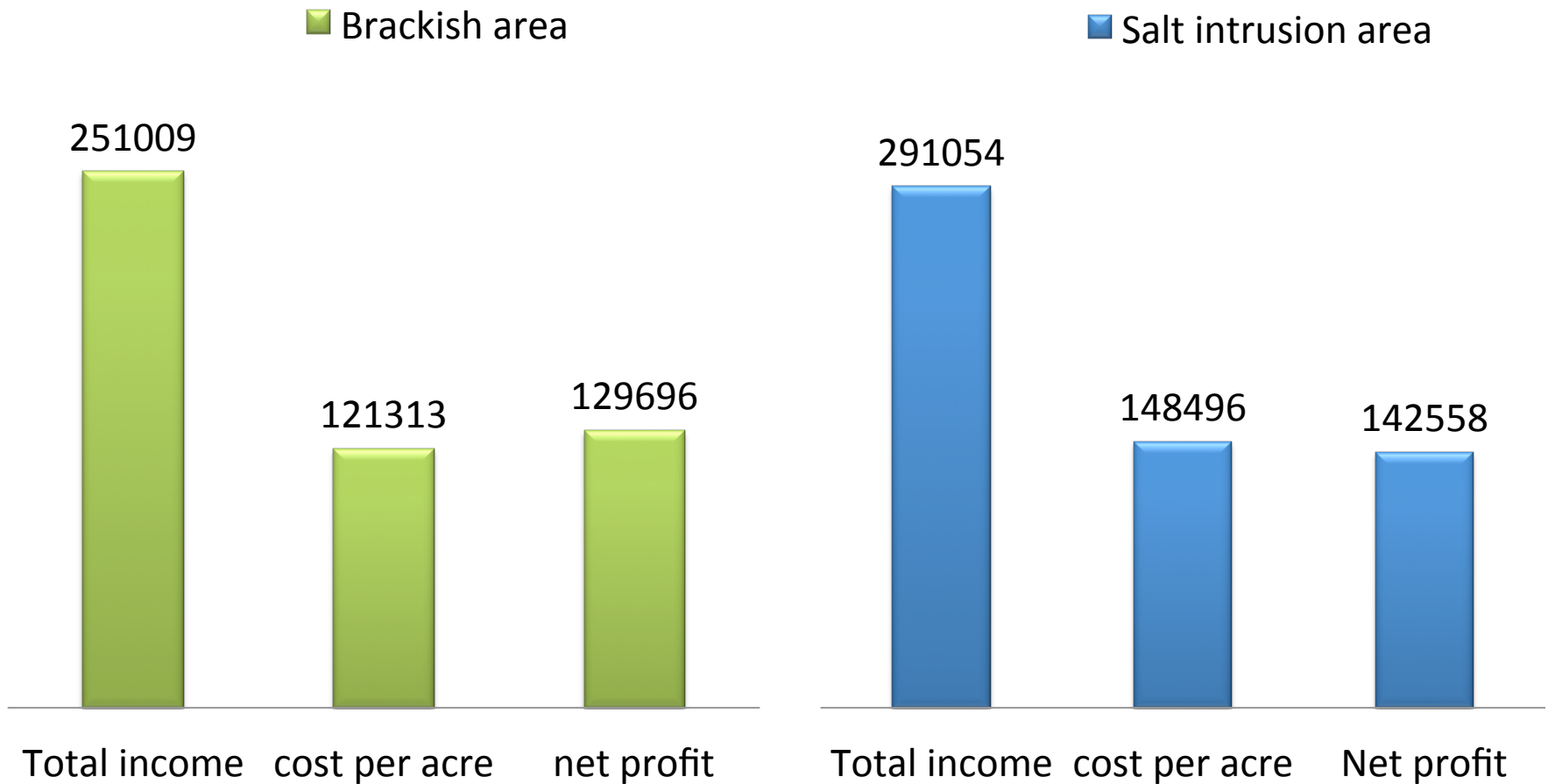


Geographical Coverage

Tsp	Village Tract	Village	FHH	Ac	Remark
Bogalay	1	2	32	85	Salt Intrusion Area Avg. 40bsk(60-30)
Mawgyun	3	19	548	3440	Bra.avg 67bsk(99-52)
	2	3	43	168	Slt. avg. 48 bsk
Total	6	24	623	3693	

- Double cropping in 2013-14 (2nd Year)

IMPACT: cost and profit per acre from post-monsoon rice



Challenges

- Farmers are hesitant to accept the risks associated with double cropping. It can often be difficult to find one or two lead farmers to adopt FAS suggestions.
- Farmers face bird and rodent problems because of the early ripening of short-life rice.
- Farmers don't always have the capital inputs necessary to try double-cropping without a guarantee that they will succeed.
- Small farm implements are required.
(jet pumps, power tillers, threshers)

Suggestions for growing post-monsoon rice in the Delta

Need to Improve

- Small embankments
- Slice gates or small water gates
- Salt tolerant varieties

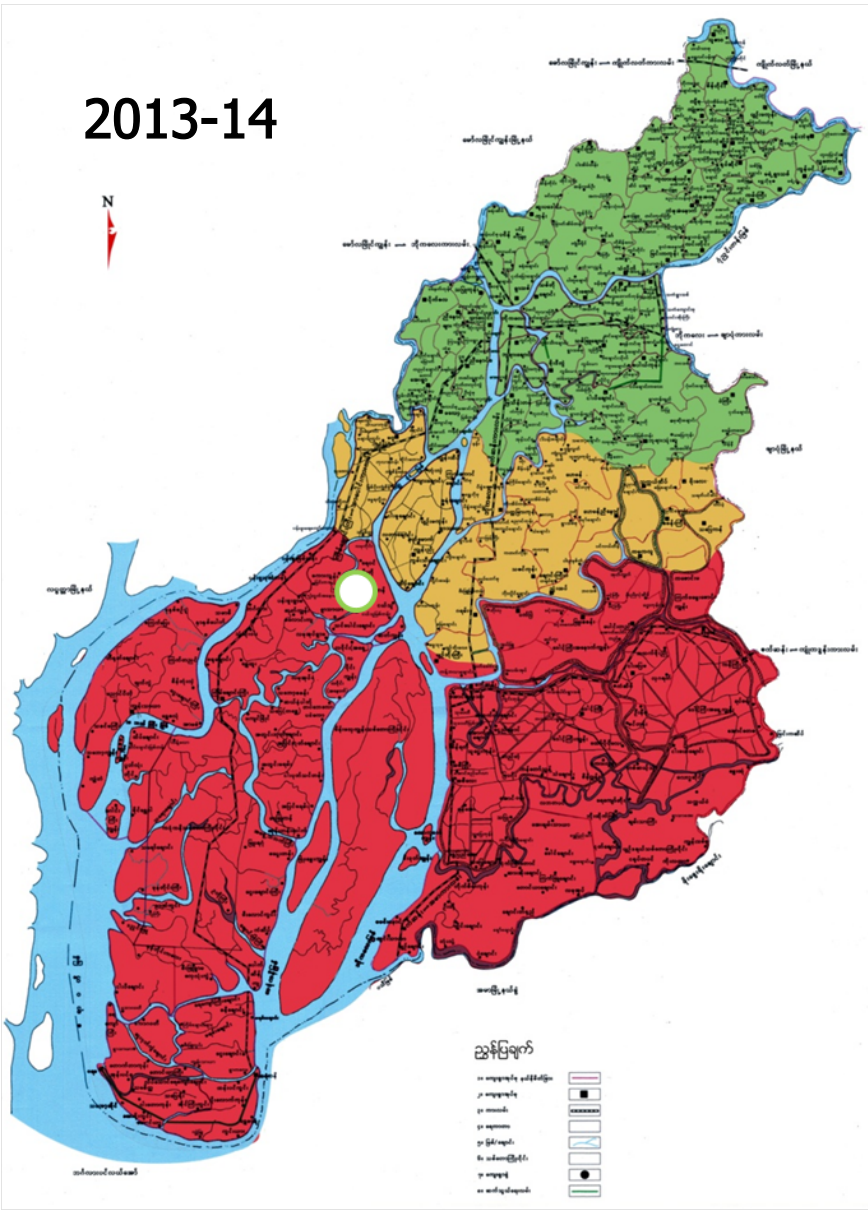
For First Time Adopters

Need to provide some inputs (fresh seeds, fertilizer, jet pumps)

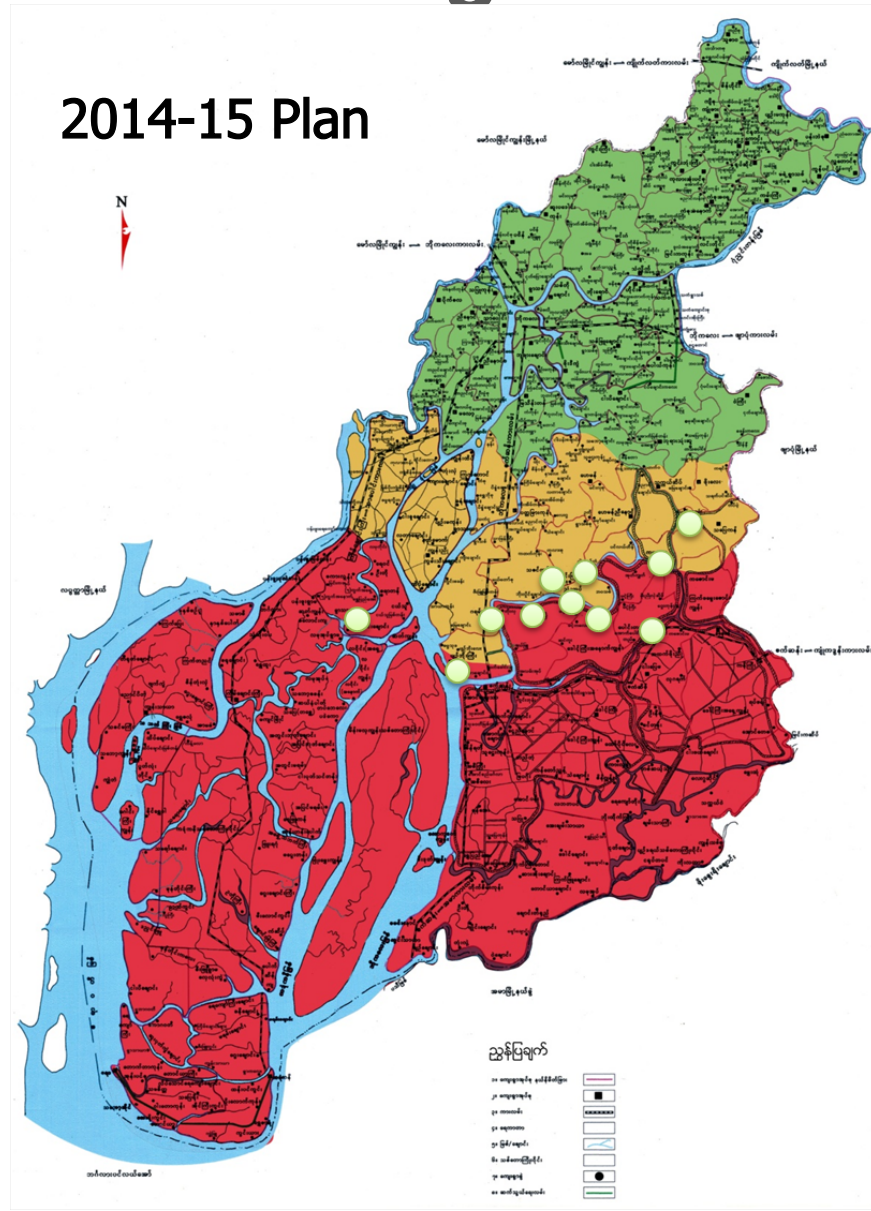
- Farmers cannot use seeds from crops grown on saline soil for the next summer season because rice plants grown in saline soils suffer stress during growth.
- Farmers need fresh seeds for the monsoon crop and then those seed can be used for the post-monsoon crop

Freshwater, brackish, and salt intrusion areas in Bogale

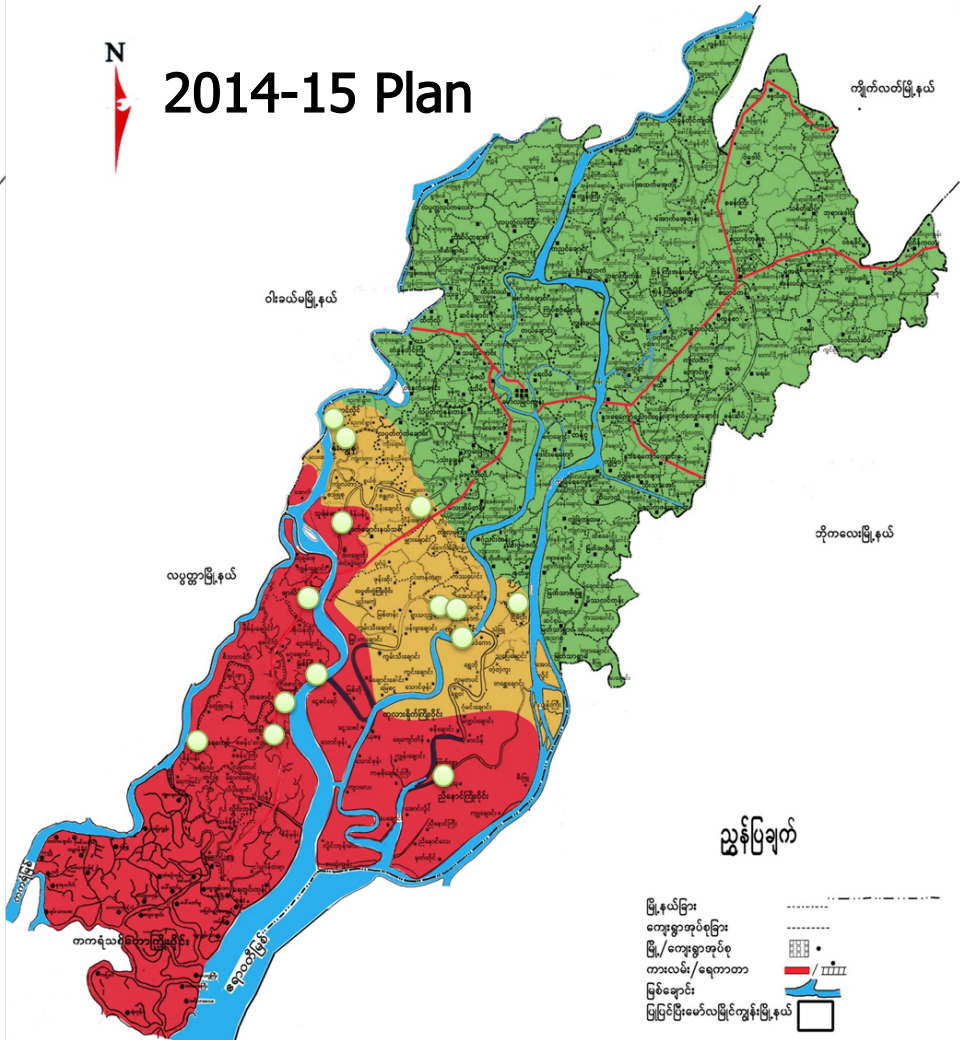
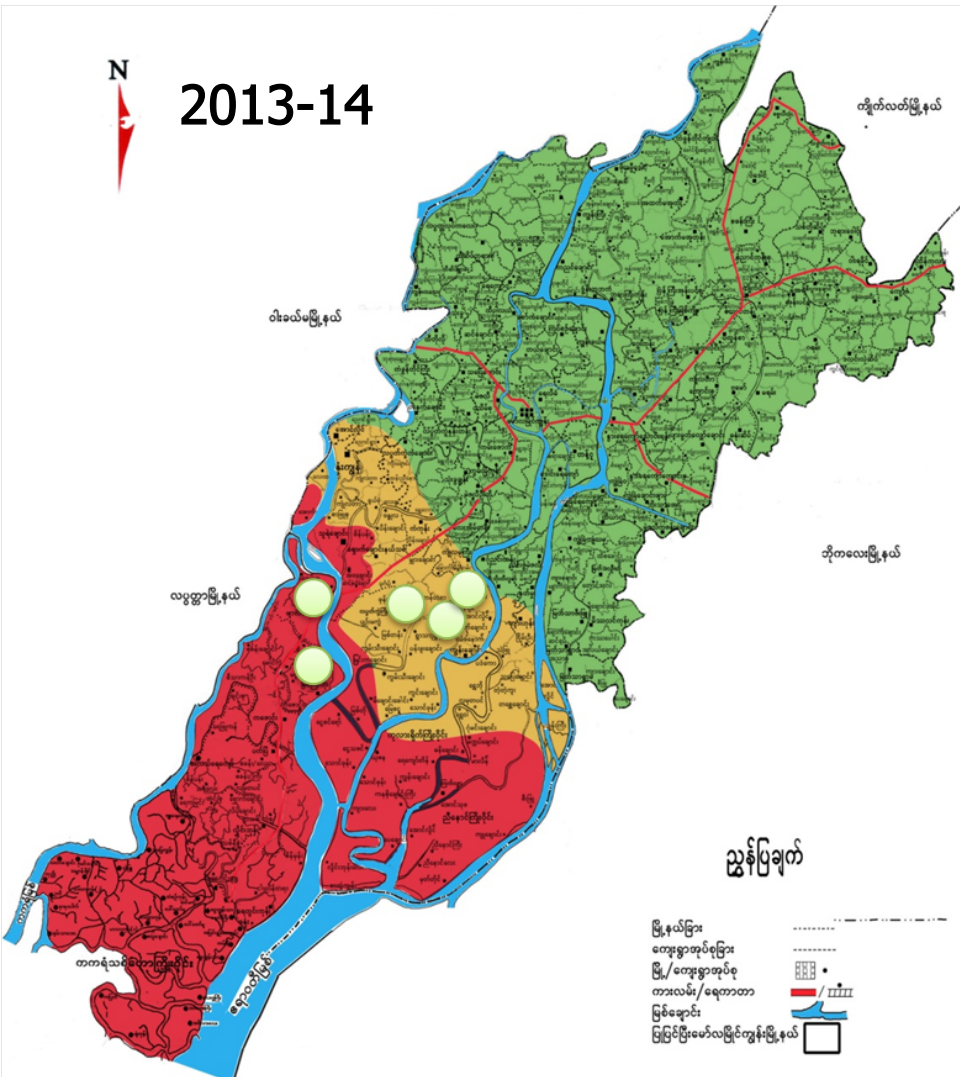
2013-14



2014-15 Plan



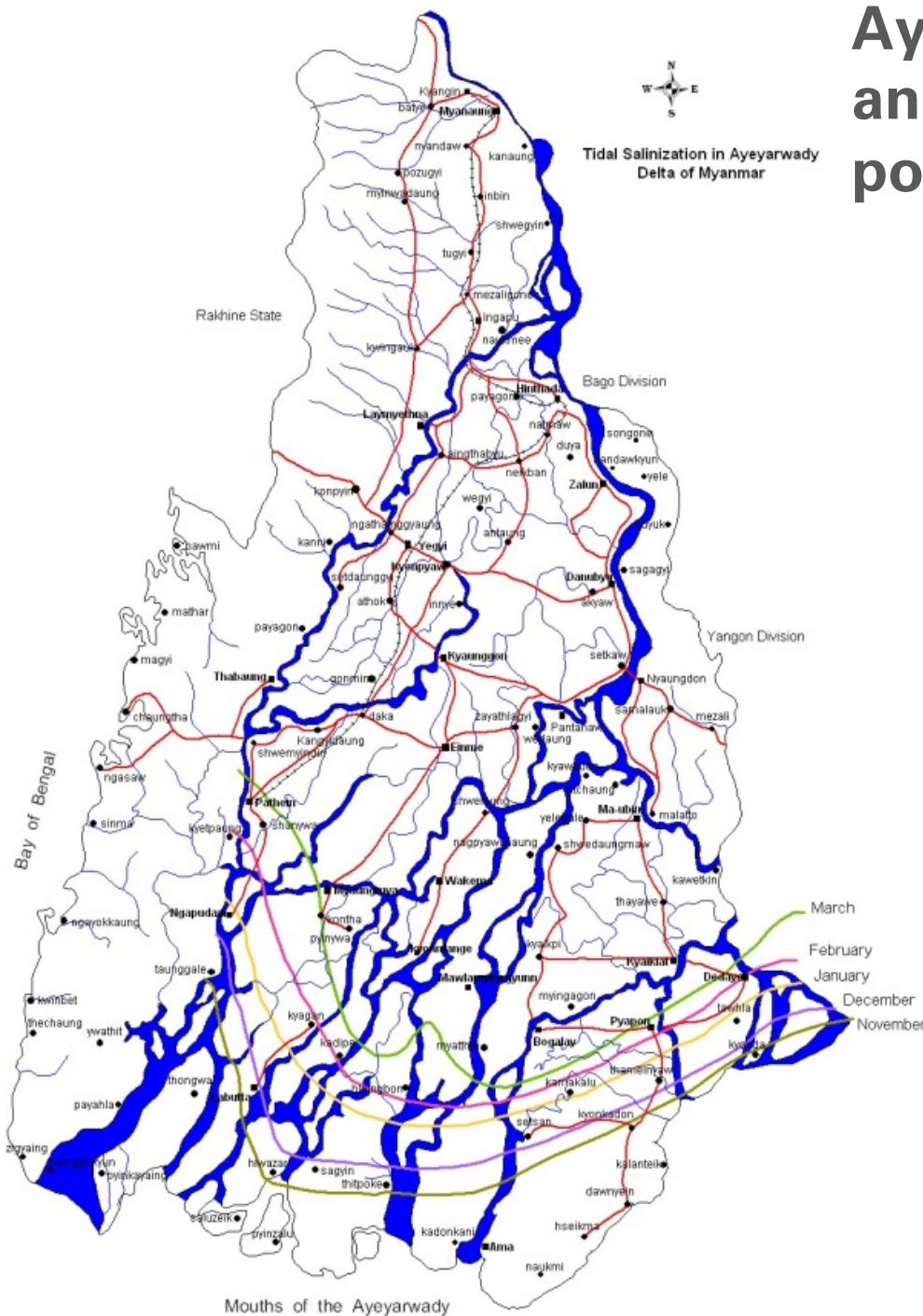
Freshwater, brackish, and salt intrusion areas in Mawgyun





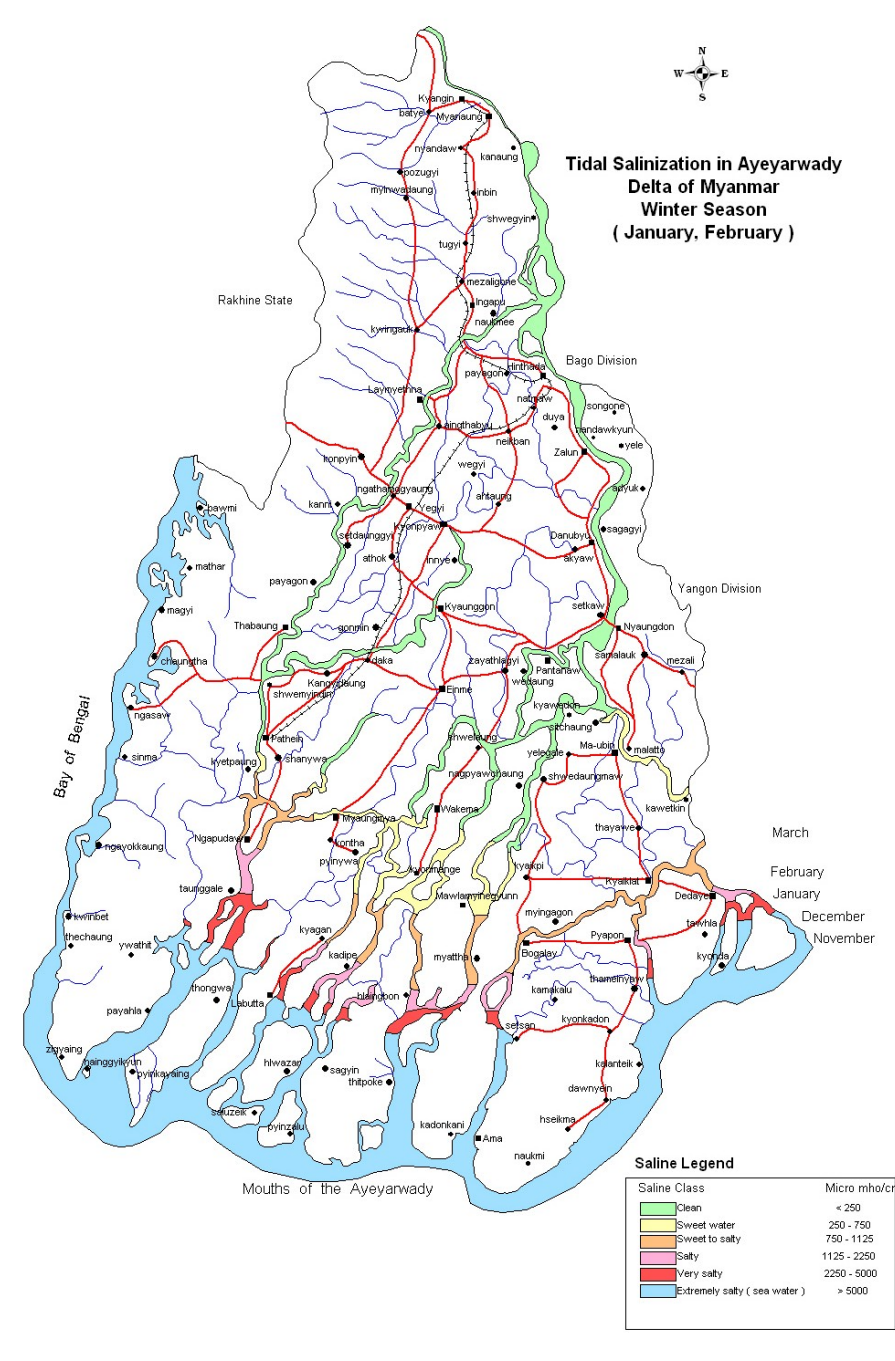
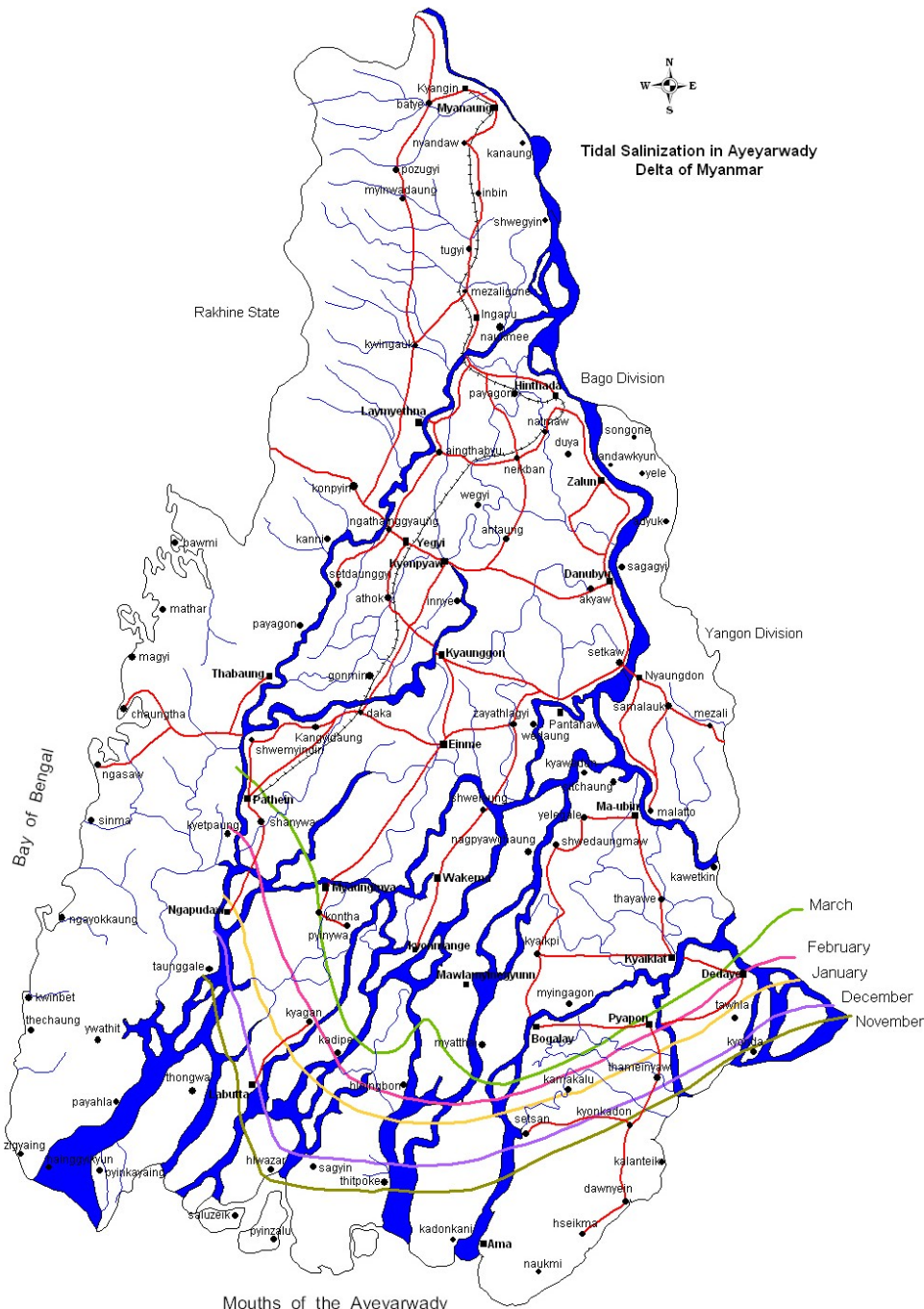
Thank you

Ayeyarwaddy Delta, Brackish and Salt Intrusion areas potential



1. Dedaye
2. Pyapon
3. Bogale
4. Mawlamyinegyun
5. Labutta
6. Ngapudaw
7. Pathein
8. Kangyidaunt
9. Myaungmya
10. Wakhema

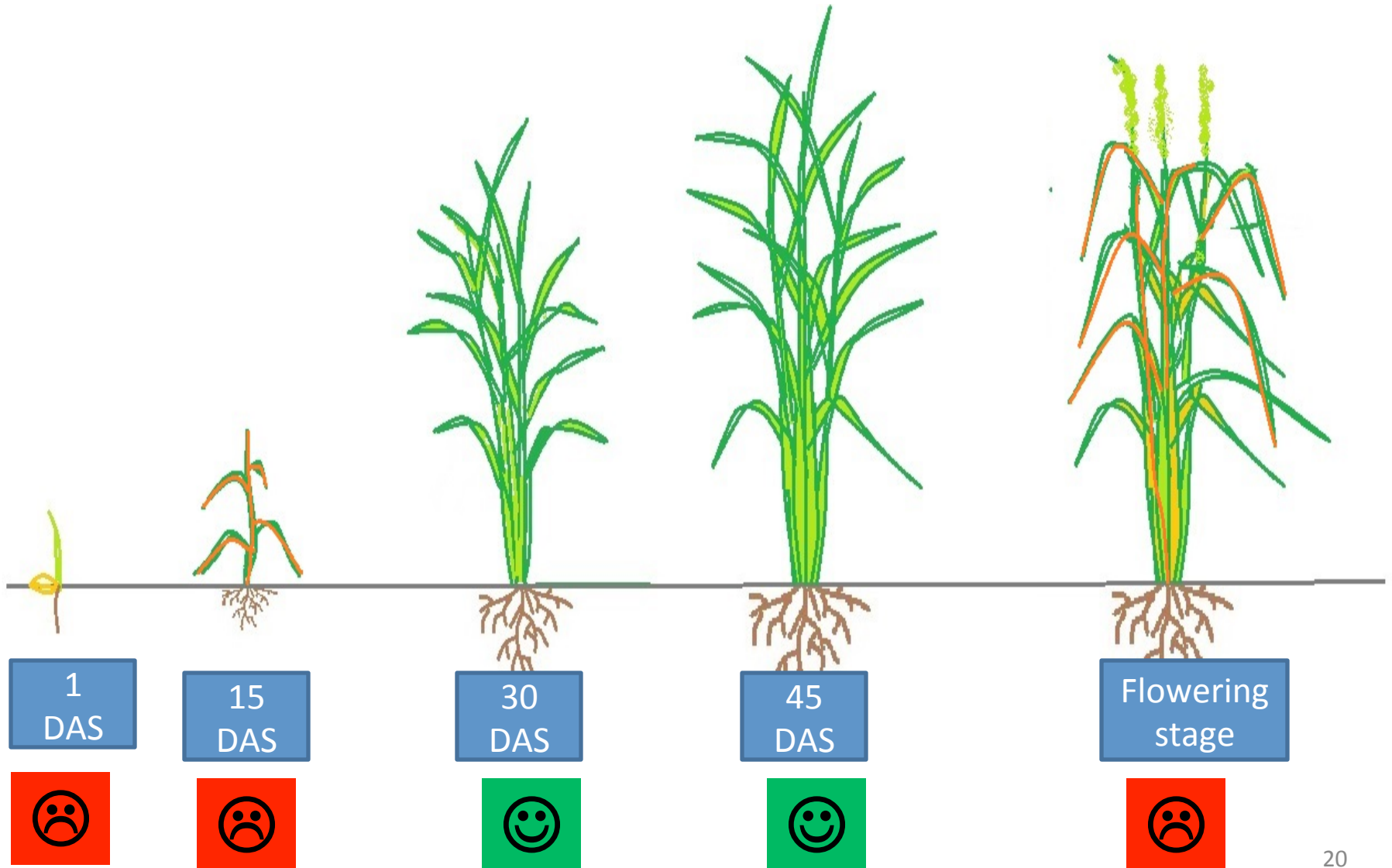
(Source : DOA)



Saline Legend

Saline Class	Micro mho/cm
Clean	< 250
Sweet water	250 - 750
Sweet to salty	750 - 1125
Salty	1125 - 2250
Very salty	2250 - 5000
Extremely salty (sea water)	> 5000

Salinity Tolerance of paddy during growth



Geographical coverage

Tsp	Village Tract	Village	FHH	Ac	Remark
Bogalay	-	-	-	-	
Mawgyun	2	10	251	997	Brackish area
Total	2	10	251	997	Avg. yield 65 bsk. Max 73 Min 43 bsk.

- **Double cropping in 2012-13 (1st YEAR)**

Geographical coverage

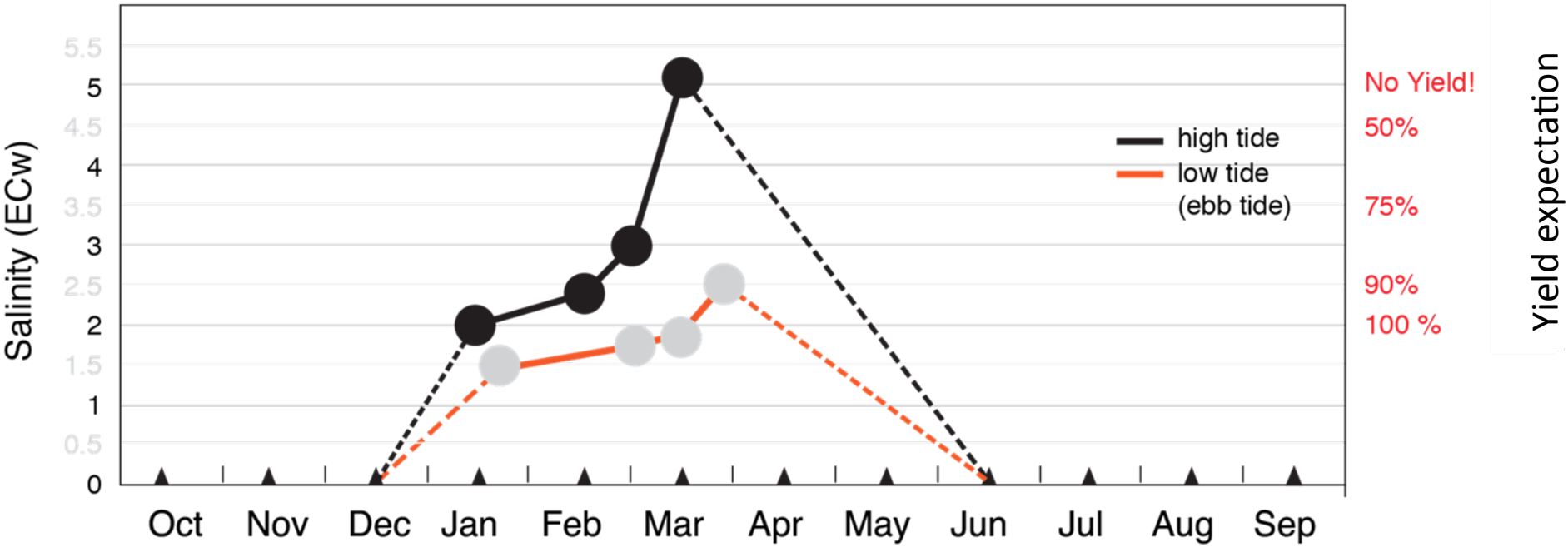
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- **Double cropping in 2013-14 (2nd Year)**

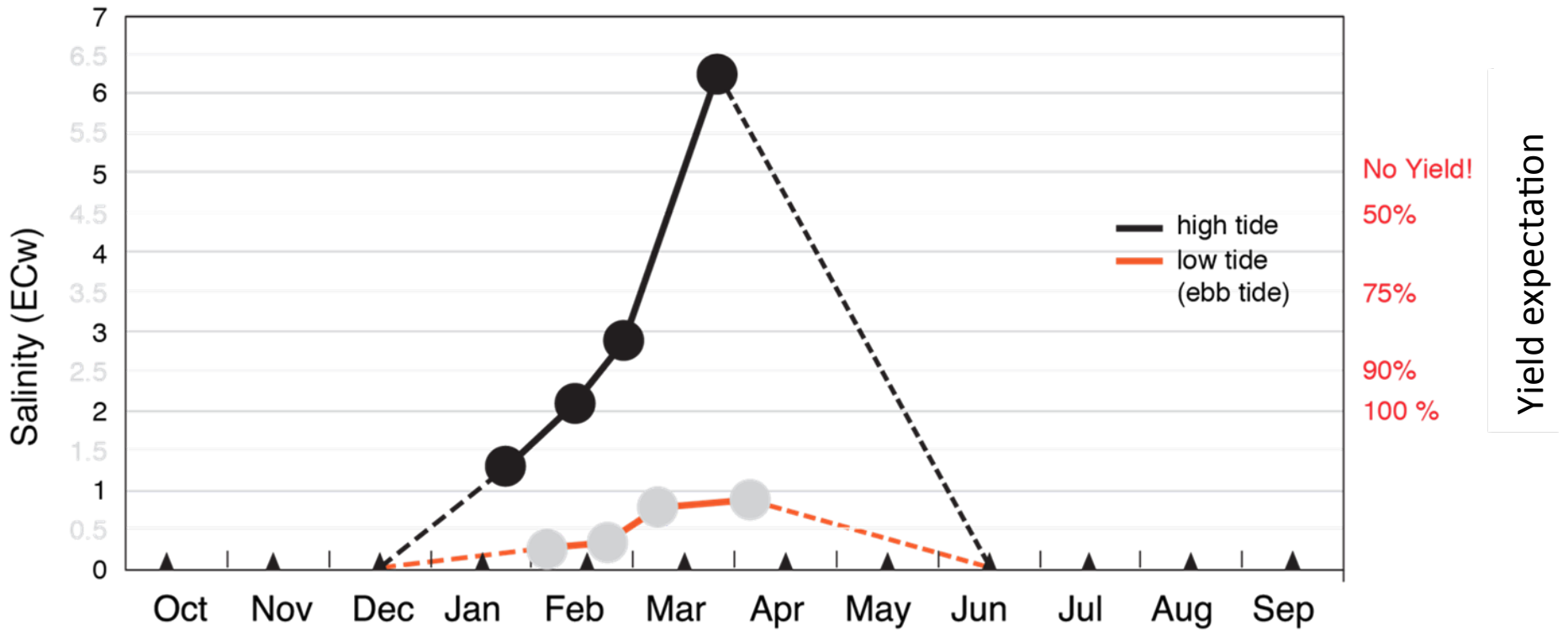
Geographical coverage

Tsp	Village Tract	Village	FHH	Ac	Remark
Bogalay	11	50	160	160	Salt intrusion area
Mawgyun	14	77	151	151	Brackish & salt intrusion area
Total	25	127	311	311	

- **Double cropping planned 2014-15 (selected lead farmers)**



Salinity in Bogale, Magu 6 (2013-2014)



Salinity in Mawgyun, Teit Teit Ku (2013-2014)

Impact:

- Families now have two major sources of income per year
- The average yield per acre is 67bsk/ac in brackish areas and 50 bsk/ac in salt intrusion areas.
- The cost per acre is 121,313 kyats in brackish areas and 148,496 kyats in salt intrusion areas
- Net profit per acre is 129,696 kyats in brackish areas and 142,558 kyats in salt intrusion area
- Creation of jobs and more income for landless in those areas thanks to double cropping.