

Double Cropping in Brackish and Salt Intrusion Areas

Proximity Designs

1.10.2014

Introduction

Background:

- There have been unsuccessful attempts encouraging double-cropping in mono-cropping areas for quite a long time.
- In the past, farmers have tried to grow double crop at the boundaries of the brackish areas. They have not succeeded.
- Because farmers don't know how to calculate the availability of fresh water in their area.
- They can't accomplish a successful harvest

ရေဝတီတိုင်းဒေသကြီး လပွတ္တာခရိုင်၊ မော်လမြိုင်ကျွန်းမြို့နယ် ကျေးရွာအုပ်စုအညွှန်းပြမြေပုံ

Fresh water, brackish and salt intrusion areas in Mawgyun



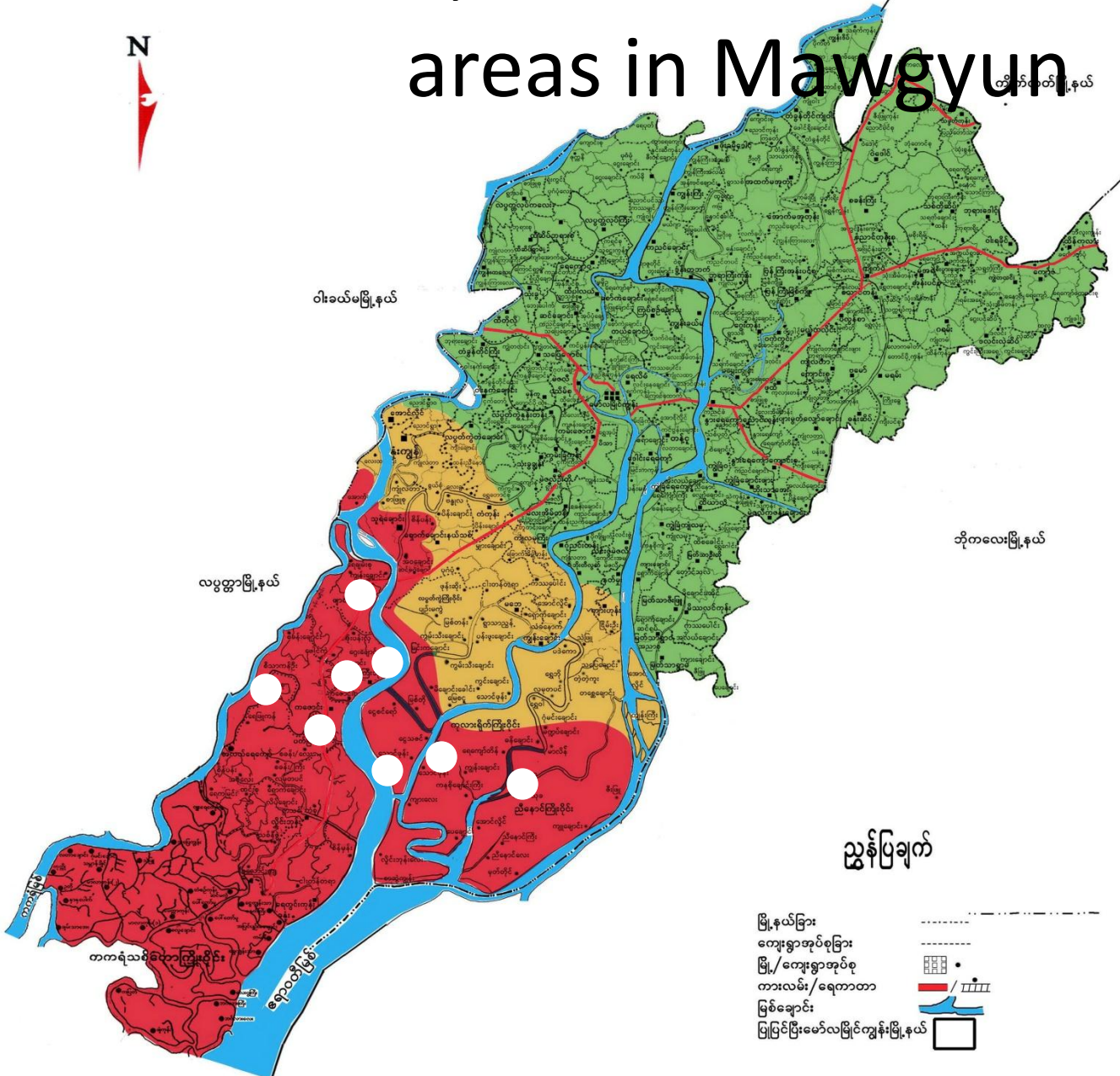
ဝါးခယ်မမြို့နယ်

တိုက်တော်မြို့နယ်

လပွတ္တာမြို့နယ်

တိုက်လေးမြို့နယ်

တပျက်နယ်



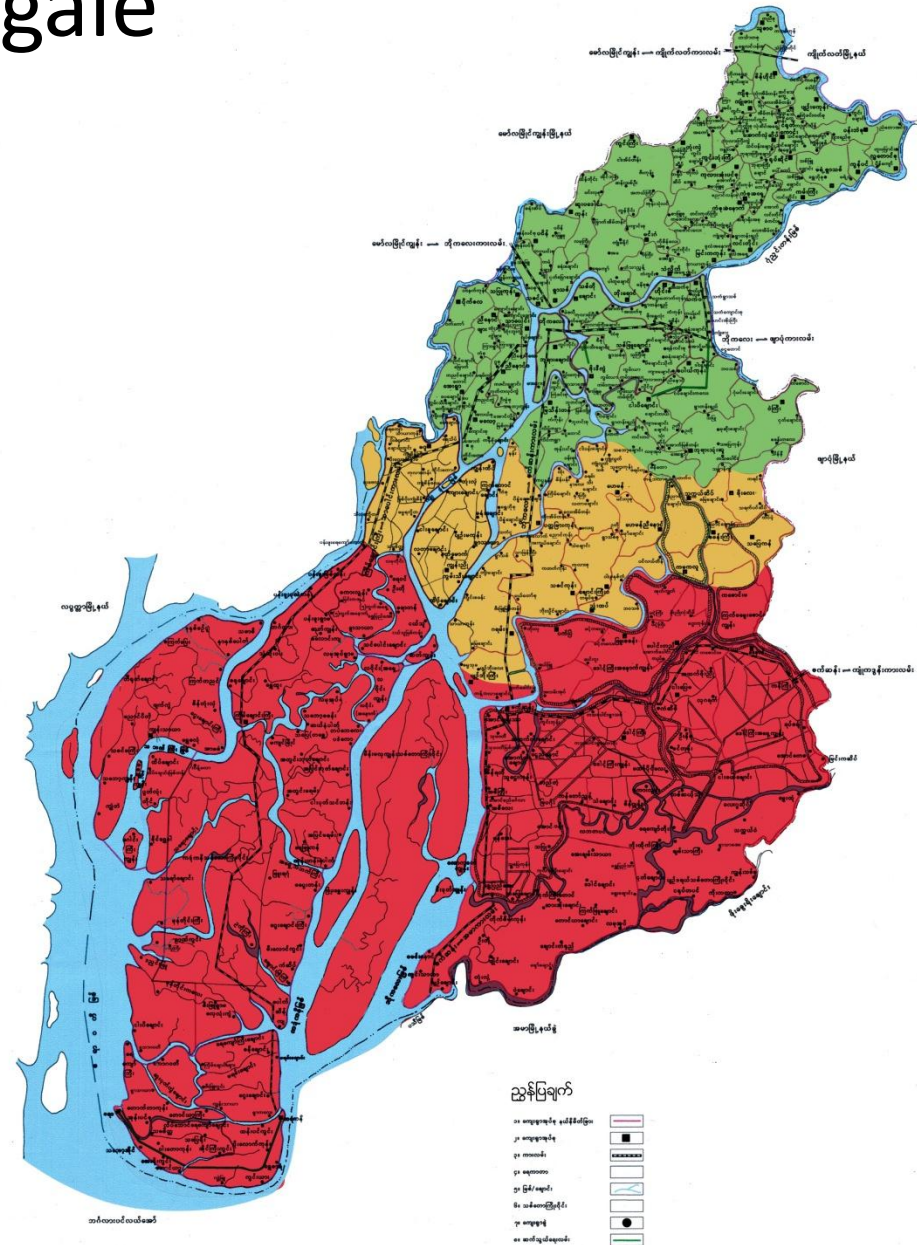
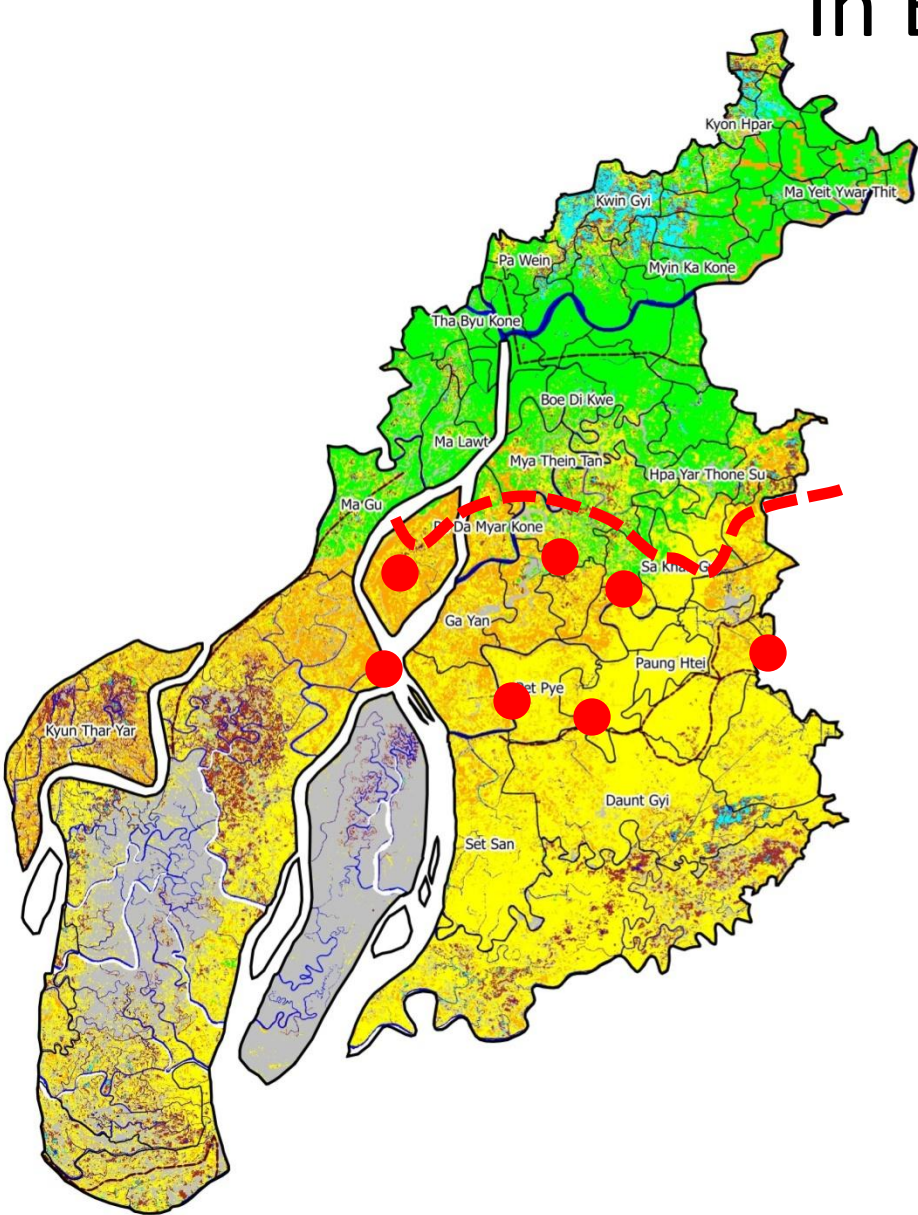
ကကရံသမိတောကြီးစိုင်း

ရွာဝေါ့မြစ်

ညွှန်းပြချက်

- မြို့နယ်ခြား
- ကျေးရွာအုပ်စုခြား
- မြို့/ကျေးရွာအုပ်စု
- ကာလမ်း/ရေကာတာ
- မြစ်ချောင်း
- မြင်ပြီးမော်လမြိုင်ကျွန်းမြို့နယ်

Fresh water, brackish and salt intrusion areas in Bogale

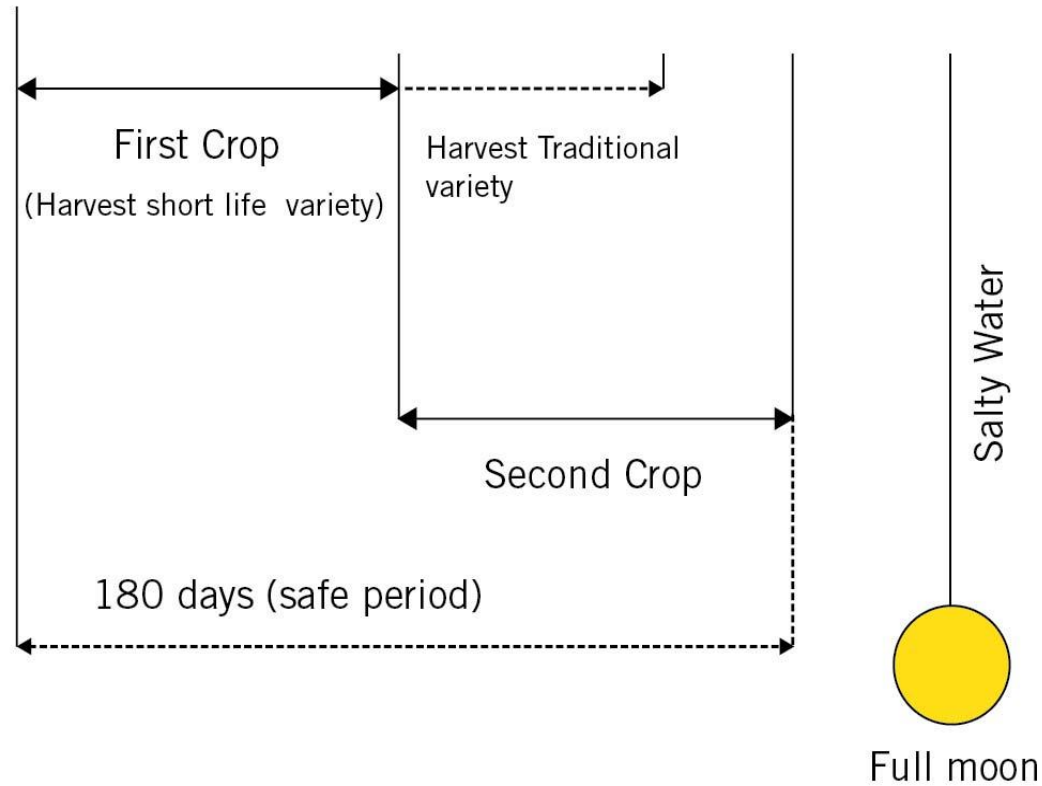


Vital facts for double cropping

Simple, affordable techniques for brackish and salt water intrusion areas

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

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



Strategy for double cropping in salt intrusion area.

Myo Myint (FAS)

Double Cropping in Brackish and Salt Water Intrusion Areas

Three main points essential for success

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

1. Selection of short life rice varieties

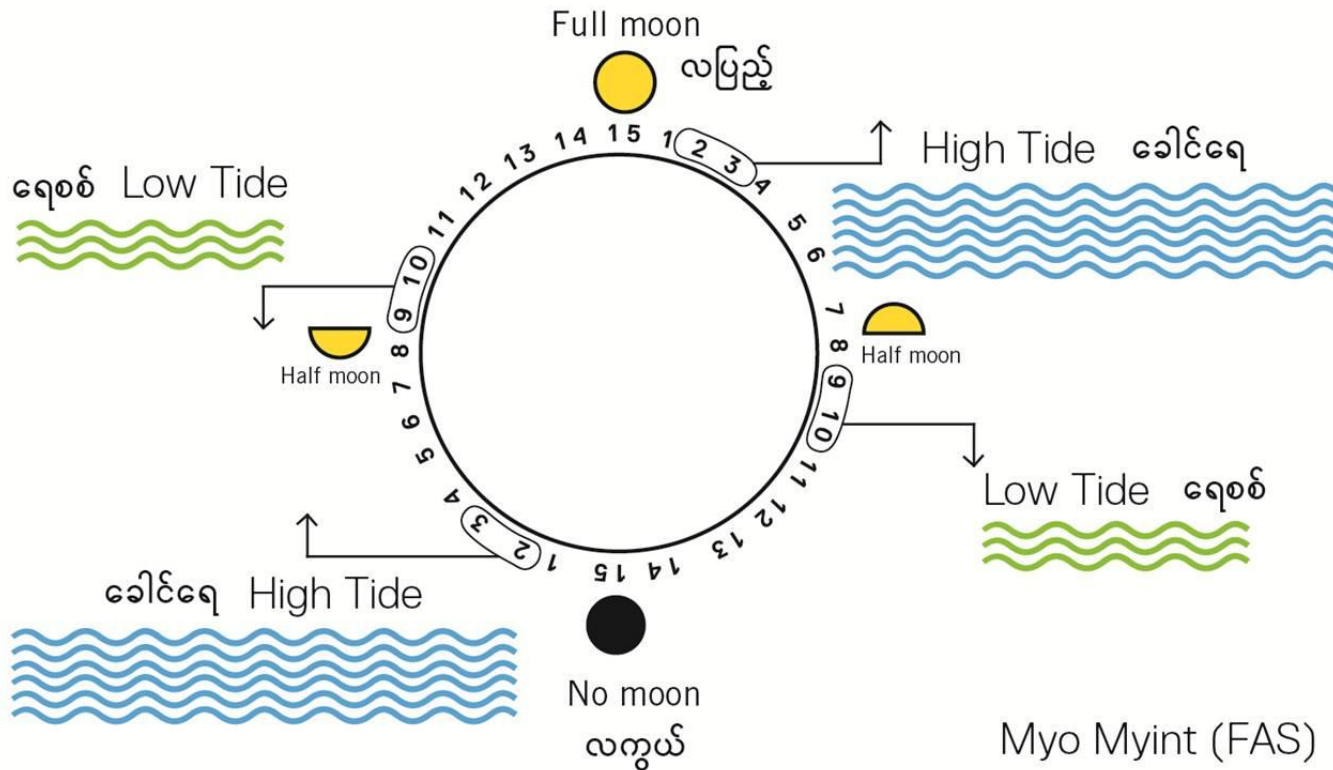
1st crop	Life span	2nd crop	Life span
Yetagon rice	90 DAS	Yetagon Rice	90 DAS
Sinn Thwe Latt	135 DAS	Sticky Rice	95-96 DAS
Paw San Yin	145-150 DAS	Pa Khan Shwe War	100-105 DAS
Pa Khan Shwe War	100-105 DAS	Thee Htet Yin	110-115 DAS
Thee Htet Yin	110-115 DAS		

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

2. Irrigation by lunar calendar

Indigenous Knowledge
Lunar Calendar and Tidal Schedule

ဒီရေအတက်အကျ အခြေအနေပြဇယား



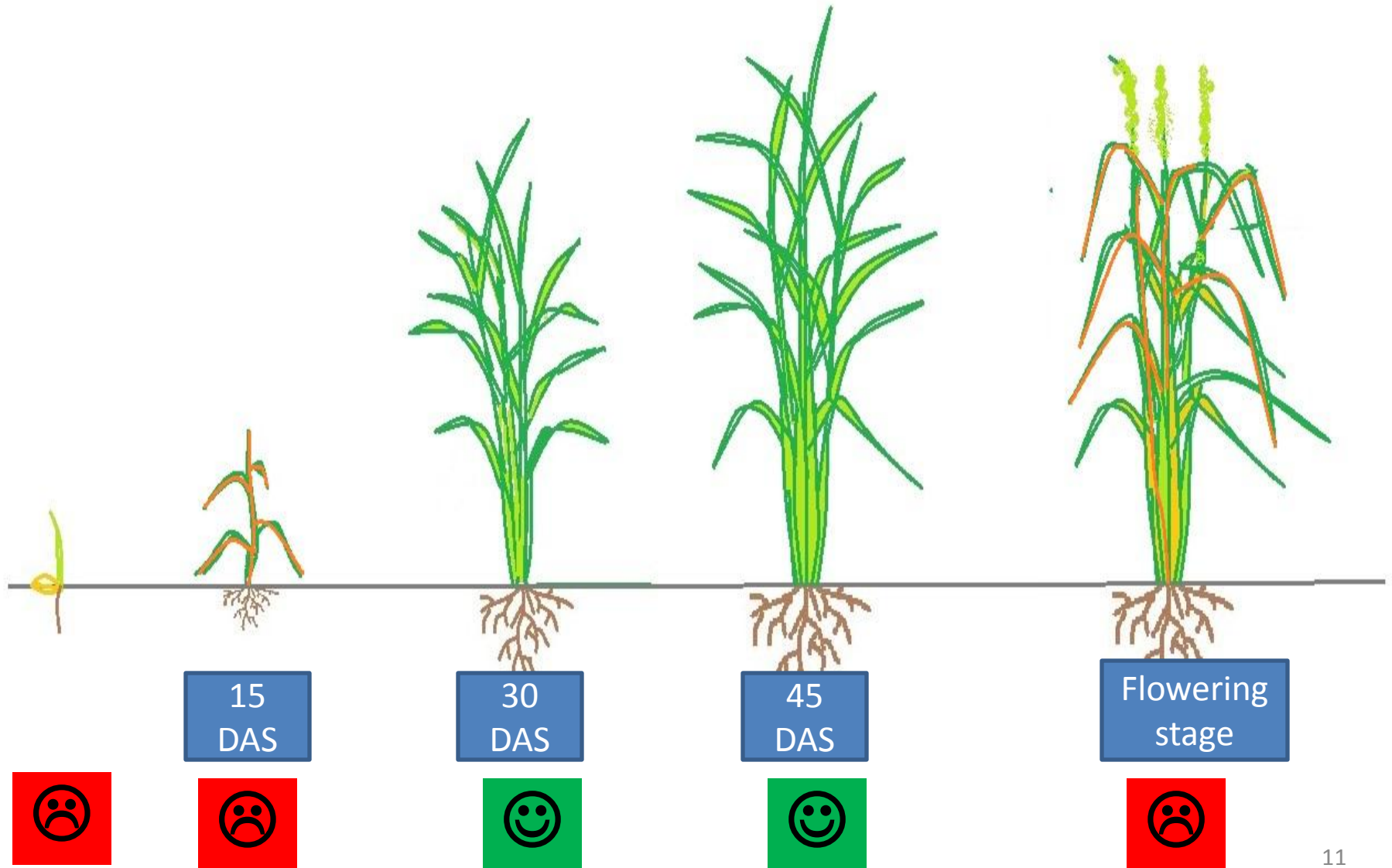
Salt concentration of water is higher during high tides than during low tides.

Lunar Calendar and safe period for irrigation



Irrigation should be done during low tides (9th and 10th day of the lunar calendar) using pumps and should not be done during the high tide.

Salinity resistance of paddy during growth





Electric conductivity (EC Meter)

Ecw vs Yield in rice

Ecw	Yield
2	100%
2.6	90%
3.4	75%
4.8	50%
> 4.8	No Yield!

-by Land use department,
-FAO

Recommended Irrigation Method during the Low Tide



ရေတံခွန်
စတင်သုံးသည့်နေ့

Farm Advisory Services

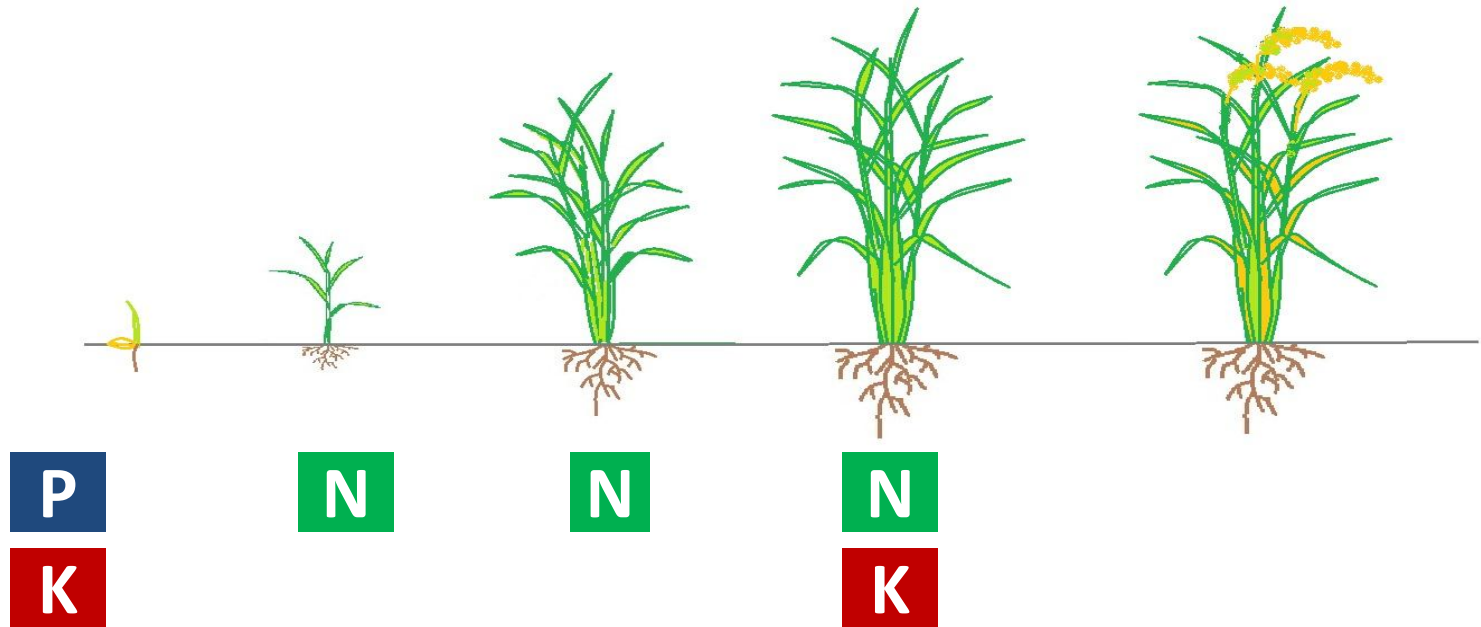
3. Balanced fertilizer Application

Basal

15 DAS

30 DAS

EPI



Our Approach

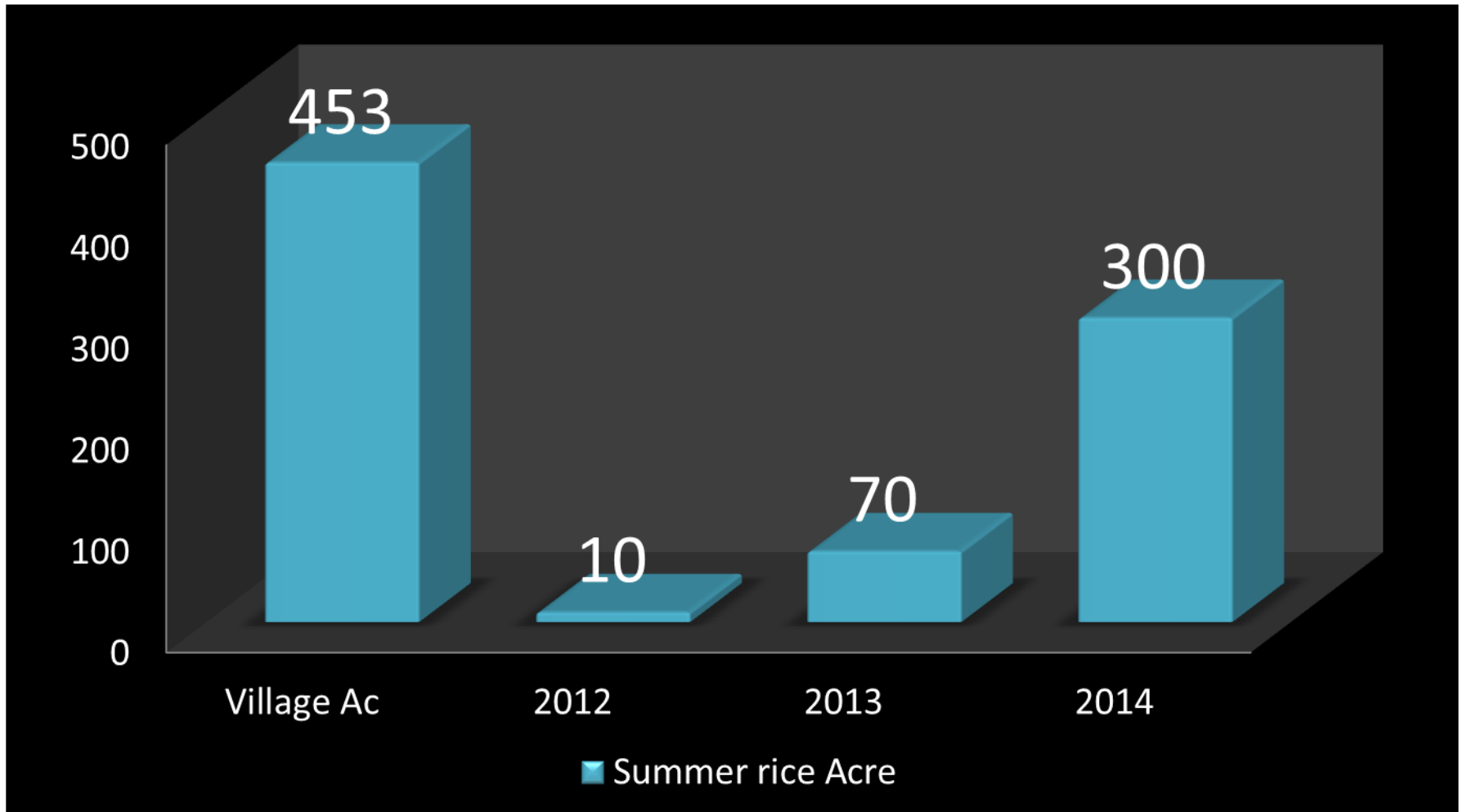
- **Technical dissemination before the monsoon season begins.**
- **Selection of at least 2 interesting farmers in each village to make demonstration plots.**
- **Visit fields and villages frequently until the harvest time.**
- **Supervise and work together with farmers to select suitable seeds, and establish how and when to irrigate fields, as well as how to apply fertilizers.**

Criteria for demo farmers

Farmers. . .

- Who have sufficient small farm implements
- Who can follow and share the techniques taught by FAS
- Who are active, motivated and, innovative
- Who have farm where everyone can easily visit and see

Success story in Panphu village, Mawgyun Township growing summer rice as a double crop in a brackish area



66% fields of “Panphu” village are full of Summer rice.



Another double cropping story

- **2 villages very close to Panphu village: Myit Tan and Kun Thee Chaung lay villages**
- **Farmers from Myit Tan village grow summer rice as the double crop because they saw successful double cropping in Panphu village.**
- **Farmers from Kun Thee Chaung Lay village did not succeed in double cropping because they did not follow our advice properly.**

Geographical coverage

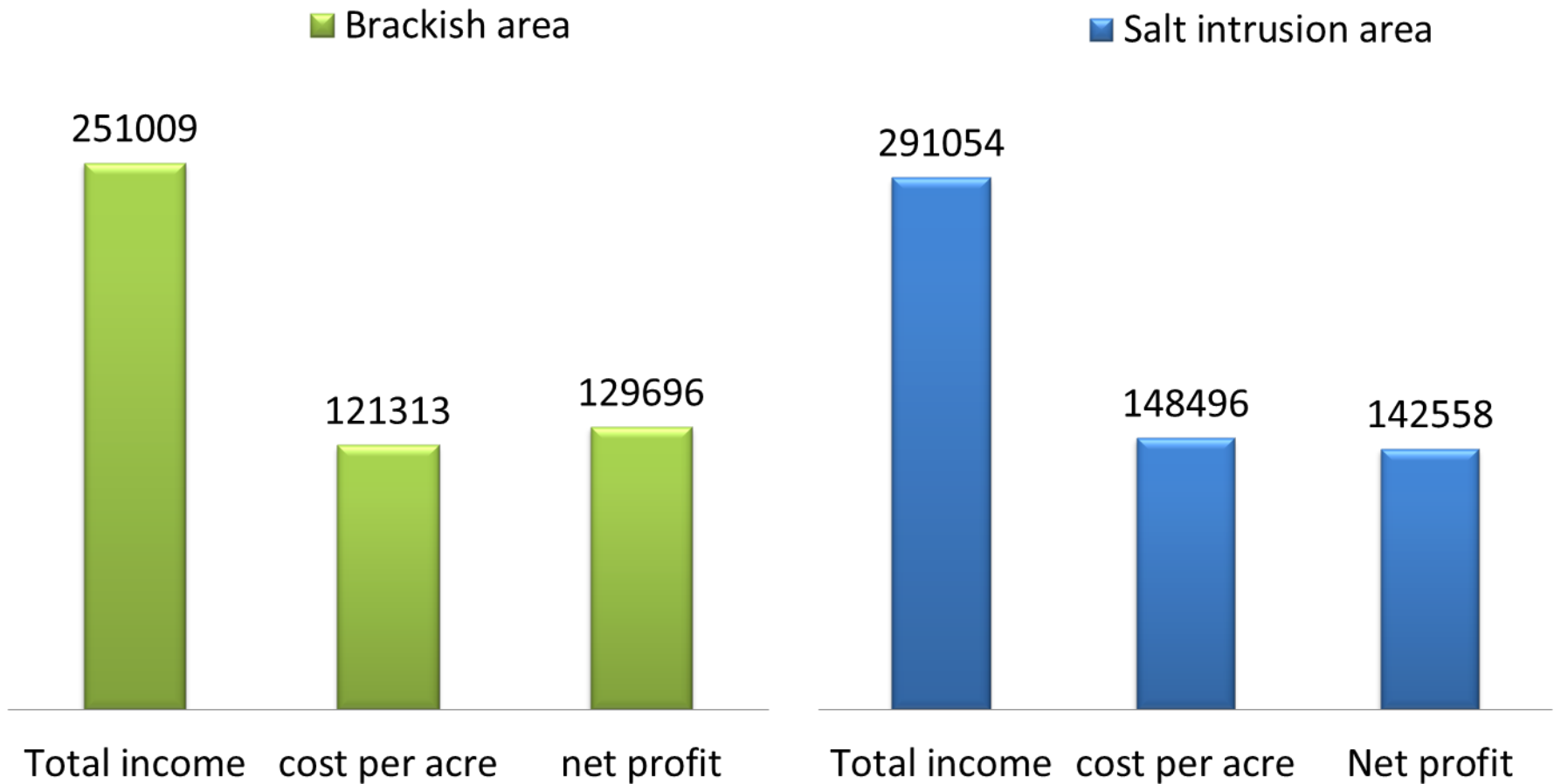
Tsp	Village Tract	Village	FHH	Ac	Remark
Bogalay	1	2	32	85	Salt Intrusion Area
Mawgyun	5	22	591	3608	Brackish and Salt Intrusion Area
Total	6	24	623	3693	

- **Double cropping in 2013-14**

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
- Creating of jobs and more income for landless from those areas by the double cropping.

Cost and Profit per acre of summer rice as double crop



Challenges

- **Farmers are hesitant to accept the risks associated with double cropping. It can often be difficult to find one or 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 the guarantee that they will succeed.**
- **Small farm implements are required.**
(jet pumps, power tillers, threshers)

Suggestions for growing double crops in Delta Area

Need to Improve

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

For the 1st season

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

- Farmers cannot use seeds from crops grown on saline soil for the next summer season because rice plants grown in saline soils suffers stress during growth.
- Farmers need to replant it as monsoon crop and then the seed can use for summer crop in brackish and salt intrusion area.

Ayeyarwaddy Delta, Brackish and Salt Intrusion areas potential



1. Dedaye,
2. Pya Pon,
3. Bogalay,
4. Mawgyun,
5. Laputta,
6. Nga Pu Taw,
7. Pathein,
8. Kan Gyi Daunk,
9. Myaung Mya,
10. Wakema

(Source : DOA)

Farmer from Salt Intrusion area

**U Zaw Myo
Tun
Tae Tae Ku
Village,
Salt Intrusion
Area
Mawgyun**



Thank you