



# Situation of corn in Myanmar

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#### Introduction

> Maize - second mandate cereal in Myanmar after rice

> Mainly utilized in poultry and livestock feed industries

Also used as human food and the surplus is exported for foreign exchange earning

Hybrid maize research activities are conducted with the primary aim of boosting maize productivity and production in Myanmar to meet and overcome the export demand, and thereby full fill the domestic needs of the country

- To increase productivity and total production of maize in Myanmar -
  - There is a strong need to develop high yielding hybrid maize
  - A long term hybrid maize research and development program was therefore initiated at Department of Agricultural Research (DAR), Yezin in 1974
  - With the objectives of development of early and medium-maturing hybrids in terms of broad adaptability and with resistance to pests and diseases and tolerances to climate change

#### **Current Status of Hybrid Corn Research Activities**

### **Hybrid Corn**





Femal Hybri Male Femal Hybri Male e d

- Inbred lines were directly introduced from CIMMYT (International Maize and Wheat Improvement Centre, MEXICO)
- Cannot be directly used as parental lines because these inbred lines are found not to be adaptable to Myanmar's agro-climatic conditions is observed during 1974 to 1986 performances studies
- □ Thus, inbred line development program was more emphasized in 1986. In 1990, high yielding hybrid maize variety was successfully released for the first time in Myanmar as commercial hybrid.

## Major Pipe-line for the Development of Hybrid Maize

**1. Introduction Breeding** 

2. Development of Homozygous Inbred Lines

**3. Inbred Line Evaluation** 

4. Testing of Combining Abiility of Inbred Lines

5. Producing of Hybrid Seeds

#### **1. Introduction Breeding**

- Genetically diversed high yielding OPVs and hybrids from local and exotic germplasms are used as source materials in the extraction of inbred lines
- □ Plants with good agronomic characters are selected and selfpollinated to obtain segregation generation - 1 ( $S_1$ )
- This step is carried out in Maize and other cereal crops Section, Yezin, Tatkone, Aung Ban and Naungmon Research Farm
- □ CIMMYT has been a main partner and source of germplasm since 1972.

#### 2. Development of Homozygous Inbred L

Development of S1 to S6,
S7 generation by Standard
Method (Ear to Row)

Development of inbred
lines by Composite Line
Selection Methods





## **Hybridization and Selfing of Maize**









#### **Collection of pollen and Bagging of tassel to collect pollen**









#### Pollination and Bagging of pollinated ear

## **3. Inbred Line Evaluation**

- Evaluation for yield and adaptability
- □ Screening for Northern Corn Leaf Blight (NCLB)
- □ Screening for Banded Leaf and Sheath Blight of Corn (BISB)
- □ Screening for drought tolerant Lines



#### 4. Testing of Combining Abiility of Inbred Lines

- Producing and testing of Top-cross or Test-cross Hybrids
- Producing and testing of Diallelcross Hybrids
- Producing and testing of Elite Experimental Hybrids
- Producing and testing of Promising hybrids (Demonstration-cum Trial) on Farmers' Field
- High-yielding hybrids resistance to climate





## 5. Producing of Hybrid Seeds

- Parental Line Seed Increase
- Planting of Crossing Field (6 female rows : 2 male rows) or (4 female rows : 1 male rows)



#### **Successes in Hybrid Maize Research**

#### **Open-pollinated Varieties - 6 Varieties**

✓ Shwe War (1), Shwe War (7), Shwe War (8), Shwe War (11), Shwe War (15), Yezin Shwe War

#### □ Hybrid Maize Varieties - 7 Varieties

Yezin Hybrid (2), Yezin Hybrid (3), Yezin Hybrid (4), Yezin Hybrid (5), Yezin Hybrid (6), Yezin Hybrid (10), Yezin Hybrid (11)

# Yezin Hybrid – 10

#### **Variety Characteristics**



Type of Hybrid Days to maturity Ear per plant Ear length Kernel color 1000 kernel weight Shelling % Yield Location Salient characters

Single Cross Hybrid  $(YZI-C_2 \times YZI-C_7)$ 100 - 110 days 1.5 18 cm **Reddish Orange** 317 g 84 % 7.4 - 7.7 ton ha<sup>-1</sup> Lowland region Drought resistant, big ear, good husk cover, tip fill, good shelling %, moderately resistant to banded leaf and sheath blight of maize.

# Yezin Hybrid – 11

#### **Variety Characteristics**



Type of Hybrid	Single Cross Hybrid		
	$(YZI-D_{15} \times YZI-C_7)$		
Days to maturity	105 - 115 days		
Ear per plant	1.5		
Ear length	18 cm		
Kernel color	Orange		
1000 kernel	285 g		
weight			
Shelling %	85 %		
Yield	7.1 - 7.8 ton $ha^{-1}$		
Location	Highland region		
Salient	Semi-flint type with seed colour of orange.		
characters	Grain filling to ear tip.		
	Drought resistant variety with good shelling		
	percentage.		

#### **Corn Production in Myanmar**

Year	Sown area ('000 ha)	Yield (mt/ha)	Production ('000 MT)
2009-2010	363	3.43	1,245
2010-2011	389	3.54	1,376
2011-2012	412	3.61	1,485
2012-2013	422	3.64	1,526
2013-2014	441	3.7	1,626
2014-2015	459	3.75	1,721

Source: 2015 Myanmar Agriculture in brief

## **Future Plan**

# Server Breeding activities for good quality & high yield corn varieties with good quality protein

>Hybrid corn Breeding

# Thank You

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