VARIETAL MAINTENANCE AND BREEDER SEED PRODUCTION TECHNIQUES FOR SORGHUM

By

D.A. ABA
Department Of Plant Science
Institute Of Agricultural Research
Ahmadu-Bello University, Zaria.

1.0 Introduction

1.1 What is a Variety?

A variety is a sorghum line developed with special or peculiar characterics/qualities, which has been tested for two or more years in different ecologies and found to be adaptable to a particular ecology.

1.2 Why Do We Maintain Varieties?

When a variety is released to the farmers, the farmers continue to cultivate this variety year after year using the seed from previous harvest as seed for the coming year. The variety becomes contaminated either by mixing with seeds of other sorghum varieties that the farmer produces along with it or through some form of out crossing. The variety will subsequently loose those characteristics/qualities that made it outstanding, thus it will not provide the desired product after some year.

To avoid this situation, it is important that the farmer(s) comes back to the source of the seed after five or six years to collect new seed. To maintain the characteristics of a variety, the breeder who knows the variety very well has to maintain the purity of the seed through varietal maintenance.

2.0 Varietal Maintenance Techniques For Sorghum

To be successful in maintaining a variety the breeder/technician in charge must know the following characteristics of the material.

2.1. Maturity Period - Days To 50% Flowering:

Usually there are three maturity periods in every crop -

(a)	Early maturing	-	75 - 95 days
(b)	Medium maturing	-	95 - 110 days
(c)	Late maturing	-	120 – 150

Most early and medium maturing varieties are photosensitive and can therefore mature within the number of days indicated when planted anytime of the year. But for late maturing vanities, they

are usually photosensitive, and will only maturing at some certain periods of the year when they receive some specific number of hours of sunshine and some specific numbers of hours of darkness.

Example:

Early	-	KSV4, ICSV 400 etc.
Medium	-	KSV8
Late	-	SK 5912

2.2. **Crop Morphology** -

(a) Seed colour
(b) Panicle shape
(c) Plant height
(d) Leaf size and shape
(e) Stem thickness.

(a) Seed colour - There are different shades of seed colours -
- (i) white
- (ii) yellow
- (iii) Cream
- (iv) red.

(b) Panicle shapes
- (i) Compact
- (ii) Loose and short
- (iii) Semi-compact
- (iv) Loose and long

(c) Plant height:

(i)	Short	-	1.0 - 5m
(ii)	Medium	-	2m - 2.5m
(iii)	Tall	-	3 - 4m
(iv)	Very Tall	-	> 4m

(d) Leaf size and shape:
- (i) Short and thin
- (ii) Short and broad
- (iii) Long and thin
- (iv) Long and broad

(e) Stem thickness:
- (i) Short and thick stem
- (ii) Short and thin

(iii) Long and thick
(iv) Long and thin

3 0 Sorghum Varietal Maintenance Techniques

Plant 5 - 10 rows of the variety 6m long.

Select similar plants and self. Follow the diagram given below
A -> B -> C -> D -> E ->
Selfed heads in A are threshed and bulked and planted in isolation in B, then to C then to D. Individual heads are selected and selfed D and planted in progyny rows, i.e., head to row and the cycle is repeated.

Harvest all self plants and thresh.
Bulk all seeds and plant in isolation 300m away from any sorghum field.
This will continue for two or three years until off types are observed.
Select single heads from bulk planted field say about 50 plants.

Again plant head to row of all selected heads plants.

Again select and self similar plants.
Harvest all self heads and thresh.
Bulk all seeds and plants again in isolations.

4.0 Breeders Seed Production Techniques -

This is similar to the varietal maintenance procedure except that this is a larger quantity than the varietal maintenance material