



# ***Mash Bean***

***Vigna mungo L***

***Pulses research Institute, Faisalabad***



# INTRODUCTION

- Biological Name: *Vigna Mungo*
- Family Name: Fabaceae
- Product Name: Urad dal/ Split black gram
- It originated in India, where it has been in cultivation from ancient times.
- It is the third most important legume in India
- It is a hairy bushy herb growing upto 1-3ft.



Growth Conditions	Values
Temperature	25-35 degree Celcius
Rainfall	80-100cm
Soil	Black Cotton Soil

# \* *Vigna mungo*

Kingdom:	Plantae
Division	Magnoliophyta
Class	Magnoliopsida
Sub-class	Rosids
Order:	Fabales
Family:	Fabaceae
Subfamily:	Faboideae
Genus:	<i>Vigna</i>
Species:	<i>V. mungo</i>
Chromosome no.	2n=22



# DESCRIPTION

- Annual legume crop
- Protein rich cereal
- Originated from India
- Cultivated in intermediate zones of Punjab

# MORPHOLOGY

- It grows 30 to 90 cm tall

- **Roots**

Deep rooted plant

Lateral branches of roots contain nodules

It contain nitrogen-fixing bacteria

# \*Leaves

- \*Leaves are pinnately trifoliate, hairy with large ovate to lanceolate and entire leaflets
- \*The leaves are large and trifoliate





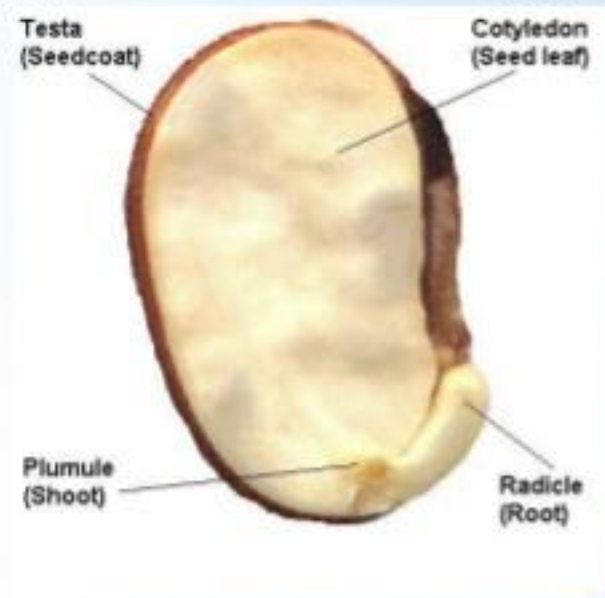
# \*Flowers

- \*Flowers are pale yellow, small with a yellow spirally coiled keel.
- \*They are borne in clusters of 5-6 on a short hairy peduncle in axillary racemes
- \*They are self-fertile and self pollinated.
- \*Flowering is indeterminate.



# \*Seeds

- \*Seeds are small, oblong slightly truncated at ends
- \*Seeds have varying colour from black, dark brown to green.
- \*The testa is smooth and hilum white and concave.







# ***NUTRITIONAL VALUE***

<b>Nutritive Value</b>	<b>Plant Source</b> (%)	<b>Animal Source</b> (%)
	<b>Mash Bean</b>	<b>Meat</b>
<b>Protein</b>	<b>25.2</b>	<b>19-21</b>
<b>Minerals</b>	<b>3.6</b>	<b>1.3</b>
<b>Fats</b>	<b>1.64</b>	<b>13.3</b>
<b>Carbohydrates</b>	<b>58.99</b>	<b>Nil</b>
<b>Calcium</b>	<b>0.14</b>	<b>0.15</b>
<b>Phosphorus</b>	<b>0.54</b>	<b>0.15</b>
<b>Iron</b>	<b>0.58</b>	<b>2.5</b>
<b>Calories</b>	<b>339</b>	<b>194</b>

# TOP MASH BEAN GROWING DISTRICTS IN PUNJAB

Sr.No	DISTRICTS
1	Narowal
2	Sialkot
3	Rawalpindi
4	Jhelum
5	Gujrat
6	Chakwal



# MASH BEAN VARIETIES

Variety	Salient Features	Year of release	Yield Potential (kg/ha)
Mash-97	Medium seeded ,Spreading plant type,resistant to mungbean yellow mosaic virus,suitable to Sialkot Narowal districts,matures in 100 days	1997	1277
Arooj-2011	Bold Seeded , erect plant type resistant to MYMV and Urdbean leaf crinckle virus, suitable for sowing in central and southern Punjab,sown in both spring and kharif seasons,resistant to lodging due to small height,mechanize harvesting	2011	1852
NARC Mash-3	Erect type plant resistant to MYMV & crinkle,suitable for Islamabad Rawalpindi areas	1993	1000-1500
Chakwal Mash	Bold Seeded with more branches and pods, medium size plant,resistant to MYMV andULCV,suitable for sowing in Barani areas	2002	1600

# SOIL & CLIMATIC REQUIREMENT

- **Rainfall**

600mm-1000mm

- **Soil**

Well drained sandy to loam soil

- **pH range**

pH 6-7

- **Temperature**

25 °C - 35 °C

# FIELD ESTABLISHMENT

## Land preparation

- Plough and harrow the land
- Make ridges in Kharif and flat sowing in Spring season.



## Time of planting

- Kharif season – 1<sup>st</sup> to 31<sup>st</sup> July
- Spring season - 15<sup>th</sup> to 31<sup>st</sup> March



# Sowing

- Seed rate is 8-10 kg per acre
- Plant Population should be 160000 to 180000 plants per acre

# Spacing

- Between rows → 30cm
- Between plants → 10cm

depending upon seed size and season

- Depth of the seedling → 1- 1.5cm



# CROP MANAGEMENT

## Fertilizer Application

- **Basal dressing :**

NPK requirement is 9 : 23 : 12 per acre.

(DAP 1 bag + SOP ½ Bag )

*or*

(Ammonium sulphate 1 bag + 2 ½ bag SSP 18 % + ½ bag SOP )

- **Top dressing :**

Apply ½ bag Urea at the time of flowering.

# Weed Control

- Main weeds are itsit , madhana , khabbal, swanki, chulai, hazardani etc
- Two hoeing are required
- One litre /acre pendimethyline should be sprayed at the time of sowing.
- For broad leaf weeds spray Conquest (Lactofen) at the rate of 300 ml / acre.
- For narrow leaf weeds spray Percept (Haloxy fop- P-ethyl) at the rate of 330 ml/ acre.



# Irrigation

- Mash requires three irrigations.
  - 1<sup>st</sup> irrigation three weeks after emergence
  - 2<sup>nd</sup> irrigation at the time of flowering.
  - 3<sup>rd</sup> irrigation at the time of pod formation.
- Sufficient moisture is essential during
  - Germination
  - Flowering
  - Seed Filling Stages



# HARVESTING

- Harvesting is done when 80-90 % of the pods have reached physiological maturity stage.
- Dried under the sun in small hives .
- Dried plants can be threshed manually or by mung thresher .
- Mash Arooj-11 can be harvested by combine harvester due to its erect growth habit.

# STORAGE AND POST-HARVEST

- Moisture content of seeds should not be above 13% at storage
- Fumigate the store with Ammonium phosphide @40 to 50 tabs per 1000 m<sup>2</sup>
- Stored in gunny bags and kept in clean, ventilated place

# Health Benefits Of Black Gram (Urad Dal)

It improves digestion

It boosts bone mineral density

Its good for diabetics

Its good for your skin

It reduces pain

It's good for your heart

It is a diuretic

It boosts your energy



# USES AND VALUE ADDED PRODUCTS

- As a vegetable
- In confectionary production
- Noodles production
  - cellophane noodles
- Enzyme production



