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PRELIMINARY EVALUATION OF BLACK GRAM (*VIGNA MUNGO* (L.) HEPPER) GERMPLASM OF NORTH-WEST HIMALAYA

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ABSTRACT

Local and primitive cultivars of uradbean were collected from the hill districts of Uttar Pradesh Himalaya, situated in the centre of North-West Himalaya since 1985 by the NBPGR, Regional Station -Bhowali. The present paper highlights the efforts on characterization of local and primitive cultivars in uradbean and an attempt has been made to provide useful information on evaluation and promising traits of germplasm.

INTRODUCTION

Black gram (*Vigna mungo* (L.) Hepper), locally known as *mas* and more commonly referred to as *urad* is grown throughout India as major pulse crop (Chandel *et.al.*, 1982). A total of 56 accessions consisting of local and primitive cultivars were collected from Uttar Pradesh hills and its adjacent areas by NBPGR, Regional Station Bhowali during 1985 to 1993. Data were recorded on 25 agro-botanical and economic characters and donors/ usful accessions were identified for different economic traits to be utilized either as parental material in hybridization or as direct selections for crop improvement programme.

METERTALS AND METHODS

A systematic characterization and evaluation of uradbean germplasm was carried out at Bhowali during *Kharif* season of 1987 - 1994 alongwith local checks. The accessions were grown in an augmented block design (Federer, 1956).The plot size was 2.5 meters length and row to row distance was kept at 25 cm while plant in a row was spaced 10 cm apart. Data were recorded on twenty nine agro botanical characters. The standard statistical methods were used to estimate various paramerers.

RESULTS AND DISCUSSIONS

Analysis of variance of means for different characters showed significant. difference among genotypes. The range of means and coefficient of variability (CV %) for different agronomic traits are presented in Table 1. The highest variability was recorded for plant height (82.08%), followed by total number of pods/plant (68.09%), and days to maturity (64.42%).

Considerable variability was observed in days to flowering (61 – 102), days to maturity (97–140), plant height (23.0 –119.0 cm), number of pods per plant (9 -58),100 -seed weight (3.5 – 6.2g) and yield per plant (1.7 –12.9g). The analysis of data showed that majority of the accessions were semi-spreading type (62.0 - 74.0 cm) maturing in 112 -116 days, pod length (4.7 – 4.9 cm),number of pods per plant (33 – 38),100 – seed weight (4.7–5.2 g) and yield per plant (4.7 – 5.6 g).

Some of the accessions were identified as early maturing, high yielding, highly tolerant to different diseases and insect pests of sub-temperate climate. valley and mountainous parts of Himalaya (Table 2).

Some of the important diseases observed in majority of the accessions were Cercospora leaf spot, powdery mildew, yellow mosaic virus and rust. Accessions mentioned in Table 2 were found tolerant to the above mentioned diseases. Majority of the accessions were susceptible to these diseases with few exception showing specific tolerance to one causal organism as shown in Table 3.

Table 3. Response of uradbean germplasm against deseases

Name of disease	TS	MS	S	HS
Cercospora leaf spot	02	11	32	08
Yellow mosaic virus	NIL	22	25	03
Powdery mildew	11	04	07	03
Rust	o7	04	05	Nil

(TS - Trace, MS - Medium Susceptible, S-Suceptible, HS-Highly susceptible)

Table 1. Range, mean and coefficient of variability (%) for some of the important agronomic traits of uradbean germplasm

Character	Unit	Range of Variation Variation		Mean	CV(%)
		Minimum	Maximum		
Terminal leaf length	cm	7.7	13.3	10.4	--
Terminal leaf width	cm	4.4	9.6	7.3	--
Lateral leaf length	cm	7.1	11.2	9.1	--
Lateral leaf width	cm	3.7	8.9	6.5	--
Petiole lelngth	cm	7.8	22.6	14.5	--
Petiole width	cm	0.3	0.5	0.4	--
Height of plant	cm	23.0	119.0	67.0	82.08
Main branches producing pods	No.	2	5	4	--
Nodes	no.	5	29	15	--
50% Flowering	days	61	102	72	--
Maturity	days	97	140	116	64.42
Pods per peduncles	no.	2	4	3	--
Total peduncles per plant	no.	6	45	14	--
Pod length	cm	4.1	5.5	5.0	12.74
Pod width	cm	0.4	0.6	0.5	--
Seeds per pod	no.	6	8	7	--
Pods per plant	no.	9	58	32	68.09
100 - seed weight	g	3.5	6.8	5.2	34.22
Yield per plant	g	1.7	12.9	4.9	15.04
Seed length	cm	0.5	0.7	0.6	--
Seed width	cm	0.3	0.6	0.4	--

Table 2. Promising accessions of uradbean for specific traits

Traits	Donor accessions/place of collection
Early maturing	TC - 100185 (Uttarkashi)
	TC-100186 (Uttarkashi)
	TC-100187 (Uttarkashi)
	TC-100193 (Dehradun),
	TC-140814 (Nainital)
	N-1040 (Nainital)
High Yielding	TC-91567 (Almora),
	TC-91758 (Almora),
	TC-100192 (Dehradun)
	N-24 (Chamoli),
	N-1029 (Nainital)
	P-114 (Dehradun)
	P-1890 (Almora)
Field tolerance	TC-81855 (Almora)
	TC-81860 (Muzzafarnagar)
	TC-91567 (Almora)
	TC-91927 (Muzzafarnagar)
	TC-100190 (Tehri)
	TC-100193 (Dehradun)
	TC-100353 (Almora),
	N-47 (Almora)
	N-830 (Almora)
	P-513 (Pauri).

IC-91567, P-513 were found to be tolerant against Cercospora leaf spot and yellow mosaic virus whereas IC-91729 was found to be tolerant to Cercospora leaf spot, powdery mildew and rust. TC-81855, TC-81860, P-513 were found to be tolerant against yellow mosaic virus. Besides these, TC-100190, 100193, TC-100353, N-47, N-830 were also found to be tolerant against powdery mildew.

So far, a total of 47 accessions ca 4000 seeds alongwith passport and evaluation data were deposited to NATIONAL SEED GENEBANK, Conservation Division, NBPGR, Pusa, New Delhi for long-term storage.

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