

Rice Bean: Tribal Pulse of Eastern India¹

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Rice bean, *Vigna umbellata* (Thunb.) Ohwi & Ohashi, a native of southeast Asia (Burkill, 1935), is grown in India chiefly by the natives of the eastern and northeastern region (Watt, 1971). Since there is an enormous variability in this tribal pulse, a concentrated effort was made to explore the area. A brief note on the material collected and studied is presented.

Through explorations conducted from 1970 onwards, about 300 collections have been made from the tribal-dominated mountainous tracts of eastern (Bihar, Orissa) and northeastern (Assam, Meghalaya, Manipur, Mizoram) India, where this crop is grown in fields under shifting cultivation with other crops like maize and millets, or as a kitchen garden crop in courtyards. The material collected was mainly vine types, and only a few semibushy types could be located in Cherrapunji (Meghalaya) and Ukhrul (Manipur). Morphologically, all these belong to *rombiya* types (Burkill, 1935), and have hairy plant parts—stem, leaves, peduncles, pedicels, and pods. Considerable variation was noted in pod length (8–12 cm), grain size (Fig. 1, 2) and colour. Both uniformly coloured and speckled grains occurred in the collections. Of these, black and cream-coloured in the former, dark greenish in the latter mottled grain type, were the more common. Two rare collections from Mao hills, Manipur, presented unusual green grain types. In general, in grain colour variation, green mottled and cream-coloured beans were more common.

These collections (272) were evaluated at New Delhi from 1970–1979, and were scored for the number of days taken to flower, node of first pod formation, pod length (cm), seeds per pod, number of pods per peduncle, days taken to maturity and 100 grain weight (g). For pod length and seeds per pod, 10 fully developed pods on each plant at different nodes were measured and seeds counted. Average values for each character were used for the mean and coefficient of variation. Data on the whole region are given in Table 1, exhibiting the range of variation for the 7 characters studied. It was observed that:

- (a) coefficient of variation for days to flower was almost of the same magnitude, except for Manipur and Assam material, where it was much higher;
- (b) node of first pod formation exhibited high variation in the material from Manipur and Orissa, while it was low in the case of Assam collections;
- (c) Manipur material was rich in genotypes with longer pods; this, along with Meghalaya material, also possessed more seeds per pod;
- (d) collections from Assam and Bihar had higher number of pods per peduncle;
- (e) bold seeds were available in collections from Assam and Meghalaya; and
- (f) comparatively early genotypes were obtained from Assam.

It was observed that the crop was free from diseases, such as yellow mosaic,

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Fig. 1. Variation in pod size in rice bean; the pod on the extreme right represents the wild type.

Cercospora and bacterial leaf spot, from all of which other species of this genus suffer.

To have an estimate of the range of variation prevailing in different collections for protein content, 47 more promising accessions were analysed by dye-binding techniques in the Nuclear Research Laboratory, Indian Agricultural Research Institute, New Delhi. Most of the collections had protein content around 20%,

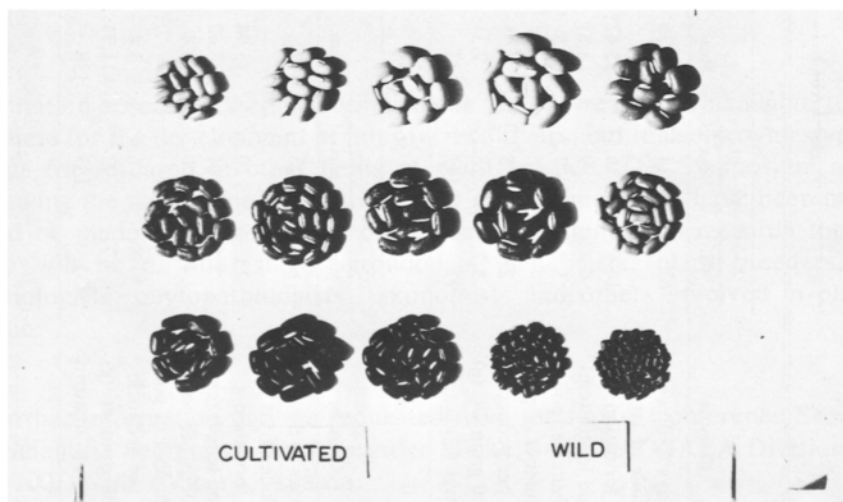


Fig. 2. Variation in grain size in rice bean; the two collections on the right are of the wild types.

TABLE 1. VARIATION IN RICE BEAN FROM EASTERN INDIA.

Character	Assam				Bihar				Manipur			
	Range		Mean	Coeff. of variation (%)	Range		Mean	Coeff. of variation (%)	Range		Mean	Coeff. of variation (%)
	Min.	Max.			Min.	Max.			Min.	Max.		
Days to flower	63	114	105.36	13	99	113	106	4	90	113	104	27
Node of 1st pod formation	14.5	16.5	15.42	4	13	19	15.33	9	12	22	15.8	14.7
Pod length (cm)	4.42	9	6.81	18	6.26	9.86	7.84	12	5.98	11.46	8.01	16
Seeds per pod	5.8	7.2	6.5	8	5	8.6	6.9	13	2.8	8.6	5.9	17.8
Number of pods per peduncle	2	5	2.95	31.4	2.2	5.4	3.25	31	1.6	5.8	3	29
100 grain wt. (g)	3.7	16.1	7.3	45	5.4	13.2	8.8	25	3	15	8.2	35.2
Days to maturity	97	147	137	10.5	133	151	140	4	128	153	141	4.4
	Meghalaya											
Character	Range		Mean	Coeff. of variation (%)	Range		Mean	Coeff. of variation (%)				
	Min.	Max.			Min.	Max.						
	Days to flower	88	113	107	6	101	111	105	4			
Node of 1st pod formation	13	20.3	15.94	6.5	12	18	15.5	12				
Pod length (cm)	5.56	11.6	7.42	16	5.64	9.88	7.32	14				
Seeds per pod	4	8.2	6.4	17	5.6	8.6	6.65	12				
Number of pods per peduncle	1.8	6.4	3.4	27	2.6	5.6	3.8	23				
100 grain wt. (g)	4.7	23	11.73	41	2.8	8.8	5.3	30				
Days to maturity	131	153	139	4	133	145	139	2				
	Orissa											

and quite a few from Meghalaya, Bihar and Assam, had higher values: 23.8, 23.4, and 24.1%, respectively.

The tribals of northeastern and eastern India use rice bean in various ways. More popular usages include: 1. eating the green pods raw, or more commonly, cooking them as vegetable; 2. unripe seeds from nearly mature pods are boiled and eaten (such boiled seeds are sold in village markets); 3. ripe, dry grains are cooked with or without rice; 4. after harvesting the pods the plants are utilized as fodder; 5. occasionally green leaves are used as a potherb.

LITERATURE CITED

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- Watt, G. 1971. A Dictionary of Economic Products of India. Vol. 5. Cosmo Publ., Delhi.

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