Acknowledgement

The authors are thankful for the financial assistance given by The Kirkhouse Trust, London (UK) for collection and evaluation of Dolichos germplasm.

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Evaluation of Winged Bean Germplasm

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Key Words: Winged Bean, Evaluation, Germplasm

Winged bean (*Psophocarpus tetragonolobus*), also called as God-sent vegetable, originated in South-East Asia perhaps Papua New Guinea and is an important leguminous vegetable in Bangladesh, Burma Thailand, Vietnam, Malaysia, Indonesia, Ghana, Nigeria and Sri Lanka. It is commonly grown in Southern India. All parts of the plant like immature pods (2.9-21.5% protein), tender shoots (2.8-5.6% protein), flowers (2.92% protein), young leaves (3.24% protein) and tuberous roots (8-20% protein) are consumed as protein, calcium and iron rich vegetable (Shanmugavelu, 1989; Long *et al.*, 1993; Neeliyara *et al.*, 2001). Boiled ripe seeds are also consumed as protein (31.8 %), fat (17.5 %), energy (757 KCal/ 100 g) and calcium (86.3 mg/ 100 g) rich food (Neeliyara *et al.*, 1999). To fight protein malnutrition of the vast population, its cultivation and use as food in Jharkhand was the need of the hour. Keeping this in view, nine germplasm of winged bean were introduced from NBPGR, Regional Station, PKV Campus, Akola (Maharashtra) and evaluated at HARP, Ranchi to know the genetic variation for green pod yield and its components in addition to some qualitative characters and also to identify the promising lines suitable for cultivation in this Chotanagpur plateau region of Jharkhand.

Nine germplasm lines were grown in RBD with three replications with a spacing of 100 cm x 60 cm during *kharif* seasons of 2001, 2002 and 2003. Recommended cultural practices were followed to raise a successful crop each year. The observations were recorded on plant height, number of branches/ plant, days to 50% flowering, pod length, pod breadth, pod weight, number of pods/ plant and green pod yield/ plant. The analysis of variance for mean data considering a single year's mean value of three replications as a single replication was calculated by the method suggested by Panse and Sukhatme (1985).

The analysis of variance for eight characters indicated non-significant differences among the nine genotypes of winged bean for all the characters studied except number of branches/ plant. Maximum and minimum number of branches/ plant were recorded in EC-178331 (3.74) and AKWB-1 (2.77), respectively. However, the characters like plant height, number of pods/ plant, days to 50% flowering and pod weight exhibited considerable

range in their expression, which indicated the scope of improvement in these characters through selection. The maximum plant height was recorded in genotype Mysore Local (253.02 cm) and minimum in NBRI Sel. (209.19). EC-178313 (61.32) and NBRI Sel. (49.17) recorded the maximum and minimum numbers of pods/ plant, respectively. AKWB-1 was the earliest and took 79.89 days to come to 50 % flowering stage whereas the latest flowering took place in 84.66 days in EC-178331. The maximum and minimum weight of pod were recorded in AKWB-1 (17.38 g) and Mysore Local (14.06 g), respectively. In respect of green pod yield, AKWB-1 (1.1 kg/ plant; 183.33q/ ha) and EC-142665 (1.08 kg/ plant; 180q/ ha) were the top performing entries. Khurana *et al.* (1990) similarly evaluated 12 introduced winged bean lines at Hisar (Haryana) and reported the maximum green pod yield >100 q/ ha. In respect of pod shape, flat on sides, rectangular and semi-flat shaped pods were produced by four, three and two lines, respectively. The green, semi-flat podded line AKWB-1 was the earliest (79.89 days) and topped in respect of green pod yield (183.33 q/ ha) and green pod weight (17.38 g).The line also exhibited better performance in respect of plant height (233.45 cm), pod length (16.74 cm), pod breadth (2.29 cm) and number of pods/ plant (59.92). The green, flat podded line EC-142665 also exhibited better performance over general mean in respect of green pod yield (180 q/ ha), plant height (242.01 cm), pod length (17.52 cm), pod weight (16.80 g) and number of pods/ plant (60.96). Hence, the promising winged bean germplasm lines AKWB-1 and EC-142665 can be promoted for cultivation among the vegetable growers of Chhotanagpur region of Jharkhand to ensure nutritional security to the people of this region through large-scale production and consumption of this protein rich leguminous vegetable.

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Screening of ICARDA's Lentil Material for Rust Resistance in India

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Key Words: Lentil, Resistance, Rust, *Uromyces fabae*

Lentil (*Lens culinaris* Medik.) is an important pulse crop grown worldwide. Its ability to thrive well on relatively poor soils under diverse agro-climatic conditions has ensured its survival as a crop species to the present day. High protein content coupled with unique aroma of its culinary preparations impart a special position to human diet world over. The Indian subcontinent is the largest lentil-producing region in the world. However, the productivity of lentil has remained static for the past several years. In the recent years the severe incidence of rust in major lentil growing areas has been identified as a main production constraint of lentil. The lentil rust is caused by the fungus *Uromyces fabae* (Pers) de Bary. Under epidemic conditions it can cause up to 70-100% yield losses (Accatio, 1963-64, Sepluveda, 1985). Although effective chemical control measures are available to the some extent, development of resistant varieties is the most economic and eco-friendly means to control the disease. The systematic evaluation of germplasm and advanced breeding lines are essential