



Effect of planting dates and genotypes on root characteristics and yield of mungbean and urdbean during spring season

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Abstract : Two sets of experiments one each on mungbean and urdbean were undertaken during spring seasons of 2001-02 and 2002-03 at Govind Ballabh Pant University of Agriculture and Technology, Pantnagar to evaluate the root characteristics and yield of mungbean and urdbean under various planting dates and varieties. In each set of experiment, nine treatments consisted of three varieties each of mungbean (Narendra M-1, Pant M-2 and Pant M-5) and urdbean (Narendra U-1, Pant U-19 and Pant U-35) and three common planting dates (February 20, March 12 and April 1) were laid out separately in split-plot design keeping planting dates in the main plots and varieties in sub-plots with three replications. Results revealed that March 12 planting of mungbean and urdbean produced higher no. of grains/pod, pods/plant and improved source-sink relationship which led to generation of significantly higher grain yield than February 20 and April 1. While, the bolder grains were recorded under February 20 planting conditions. Grain yield / ha was significantly higher in Pant M-2 variety of mungbean and Narendra U-1 of urdbean, whereas Pant M-5 variety of mungbean and Pant U-19 of urdbean recorded the highest harvest index, respectively during the course of investigation. Planting of mungbean and urdbean beyond February had better root development. The no. of nodules / plant, dry weight of nodules, primary root length and dry weight of root/plant of mungbean and urdbean were recorded higher under late sowing of April-1. Narendra M-1 variety of mungbean and Narendra U-1 of urdbean recorded higher number of nodules/ plant, dry weight of nodules, primary root length and dry weight of root/plant during both the seasons. Despite the production of higher 1000-seed wt., Pant M-5 variety of mungbean and Pant U-19 of urdbean yielded lower.

Key Words : Mungbean, Planting dates, Roots, Urdbean, Varieties, Yield

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INTRODUCTION

Mungbean and urdbean are the important pulse crops of summer season grown in India. The production of pulses in India was 13.1 million tonnes against the requirement of 20 million tonnes (Gupta *et al.*, 2004) indicating the shortfall which is to be minimized either by increasing the area under pulses or by increasing the productivity of pulses.

Most of the pulse crops used to be grown in rainfed, less fertile and discarded soils and there is less area under pulses in northern part of the country particularly where rice-wheat cropping sequence is dominating. One of the possible ways to increase the area under pulses in north India is to grow in non-

conventional seasons like spring/summer or in intercropping system with the major crops of the region like sugarcane and potato. Short duration varieties of mungbean maturing in 60-70 days and of urdbean in 80-90 days are now available and can be grown in fields vacated by potato, mustard and sugarcane during spring season in irrigated agro-ecosystem.

Maximum yield potential of mungbean and urdbean can be exploited under appropriate combination of variety, environment / planting time and agronomic practices. The establishment and growth of crop plants depend much on sound root system. It is also true to postulate that plants with better developed root system are able to absorb nutrients efficiently from different layers of the soil profile and hence,

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