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Dry matter accumulation and its partitioning in association with seed yield and harvest index in greengram (*Vigana radiata* (L.) Wilczek) genotypes

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Experiment was carried out with six genotypes of greengram (*Vigna radiata*) viz., 2KM 13 , 2KM 17, 2KM 19, 2KM 33, 2KM 32 and Malviya jyoti at college of agriculture IGAU, Raipur (C.G.) during *kharif* season 2002, in randomized block design (RBD) with four replications to study the dry matter accumulation and its partitioning with respect to seed yield and harvest index. Study revealed that dry matter accumulation in different plant components increased upto maturity. Among all the genotypes 2KM 33 showed higher dry matter accumulation per plant and also higher value of seed yield and harvest index.

Key words : Greengram, Genotypes, Seed yield, Harvest index.

INTRODCTION

Dry matter production is an important yield determining and judging factor in field crops particularly in legumes. The increase in dry matter of legumes depends primarily on the equilibrium between photosynthesis and respiration (Yadav, 2001). Dry matter accumulation and harvest index are two major physiological parameters controlling the productivity of legumes. Study of pattern of dry matter production and its distribution in the different plant parts would give a better understanding of the genotypes in relation to its economic productivity. The productivity of legumes can be physiologically improved through selection traits for either dry matter accumulation or for harvest index or both (Patil *et al*.,1997). Thus the present investigation carried out to study the dry matter distribution pattern and its association with seed yield and harvest index in greengram genotypes.

MATERIALS AND METHODS

The experimental material comparised of six greengram genotypes. The experimental trail was carried out in a randomised block design (RBD) with four replication at college of Agriculture, IGAU, Raipur (C.G.). Every genotype sown in six rows was considered as a plot. Each experimental plot had gross plot size 4 x 2.4 m. The row to row and plant to plant spacing was 30 and10 cm respectively. Observations were recorded on five randomly selected competitive plants from each plot for total dry mater accumulation in each parts at vegetative, flowering and maturity stage. Pod dry weight was recorded at pod initiation and at maturity stage. Harvest index was calculated as suggested by Donald (1962).

RESULTS AND DISCUSSION

Statistical analysis revealed significantly differences among all the genotypes for dry matter accumulation in all plant parts viz., leaves, stem and root dry weight, at all growth stages (Table 1 and Fig. 1). Genotype 2KM 13 showed highest leaves dry weight at vegetative stage, while at flowering and maturity stage genotype 2KM 17 attained highest leaves dry weight. Genotype 2KM 32 observed lowest leaves dry weight at all growth stages. Data also revealed that, among all the genotype 2KM 33 attained highest stem dry weight at vegetative, flowering and maturity stage. At all growth stages 2KM 32 shows lowest dry weight of stem. Regarding the root dry weight Table shows that, genotype 2KM 17 attained highest value at vegetative, flowering and maturity stage, respectively. Genotype 2KM 19 exhibited lesser dry weight at every growth stage.

Among all the genotypes 2KM 33 and Malviya jyoti exhibited the highest and lowest pod dry weight at pod initiation and at maturity stage, respectively. Genotype 2KM 17 and 2KM 13 were at par with each other at each stage of observation.

Total plant dry weight differed significantly from vegetative to maturity stage (Table 2). Among all the genotype, 2KM 33 was found to be associated with highest dry weight per plant at vegetative and maturity stage, while

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