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Genotype specificity for *in vitro* regenerability of pigeonpea genotypes

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ABSTRACT

***In vitro* response at various stages of regeneration was observed to be genotype specific and it varies according to concentrations of growth hormones.Among the two genotypes under study TAT-10 recorded early response for shoot bud initiation and recorded higher average number of shoots / explant followed by better elongation and rooting as compared to genotype PKV TARA in both the explants over all the treatments understudy. Rooting and hardening were genotype independent.**

Key words : Pigeonpea, genotypes, *In vitro* regeneration

INTRODUCTION

Red gram or pigeonpea [*Cajanus cajan* (L) Millsp.] is an important grain legume of the semi-arid tropics and forms a significant component of the diet of vegetarians. The morphogenetic response of pigeonpea is known to be a genotypes specific phenomenon (Mohan and Krishnamurthy, 1998). Successful transformation of pigeonpea for these reasons will be greatly aided by genotype / variety specific determination of critical parameters on improving *in vitro* regeneration.

Vichita Yadav and Laxmi Chand (1998) used in genotype Bahar and UPAS-120 , Singh *et al.*(2002) reported genotype T7, Bahar and UPAS-120 of pigeonpea for *in vitro* proliferation and regeneration (Naidu *et al.,* 1995).

MATERIALS AND METHODS

The experimental material of present investigation comprised of two varieties of pigeonpea *viz.*, TAT- 10 and PKV - TARA. The genetically pure seeds were obtained from Senior Research Scientist, Pulses Research Unit, Dr. Panjabrao Deshmukh Krishi Vidyapeeth, Akola. The explant used for *in vitro* regeneration was decapitated mature embryonic axes and leaf with petiole.Different combination of MS basal medium with varied concentrations of auxin (NAA,IAA) and cytokinin (BAP) and plain MS basal medium as control were tried.

Statistical analysis:

Five culture bottles each with three explants were used per replication for each treatment. Every treatment was replicated trice. Thus observations were recorded for 45 explants.

The data of present investigation was analysed and ANOVA was carried out by using Factorial Completely Randomized Design. The mean and standard error, critical difference were calculated as per procedure given by Panse and Sukhatme (1958). F test was used to test the significance.

RESULTS AND DISCUSSION

The results of the present experiment as well as relevant discussions have been presented under following heads :

Establishment of explants and shoot induction:

Different combination of MS basal medium with varied concentrations of auxin (NAA) and cytokinin (BAP) and plain MS basal medium as control were tried for establishment of the explants, in both the genotypes under study namely TAT-10 and PKV-TARA. The DCMEA explants get increased in size and showed swelling at base and the leaf with petiole explant get increased in size after 7 days of inoculation. The genotype TAT 10 and PKV TARA showed per cent establishment of DCMEA explant ranged between 90.67 to 100 per cent.

The genotype TAT-10 had recorded minimum 9 and 15 days, respectively where as the genotype PKV-TARA had recorded minimum 15 and 22 days, respectively for explants DCMEA and leaf with petiole for initiation of shoot bud after inoculation. Thus from table.1, it is concluded that among the two genotypes under study TAT-10 showed early response for both the explants as compared to genotype PKV-TARA over all the treatments under study.

These results showed the critical role of genotype in initiation of shoot bud induction. The variation in response of genotype could be attributed to the early physiological duration of genotype TAT-10 (120 days- early) as compared to mid-late genotype PKV-TARA (180 days-

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