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Propagation Techniques of Punica Grantaum L

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***Abstract* : *Punica granatum* bush or small tree of the family Lythraceae and its fruit. The juicy arils of the fruit are eaten fresh, and the juice is the source of grenadine syrup, used in flavourings and liqueurs. Pomegranate is high in dietary fibre, folic acid, vitamin C, and vitamin K. The objective of the present study was to develop nursery technique of *Punica granatum* through seed and stem cutting. Therefore an experiment was carried out by seed sowing in different medium (sand, vermiculite) and different places (mist chamber , shade net, open beds) with different pre-sowing water treatments (normal water, soaking for 12 hours, soaking for warm water 12 hours and control).The result indicated that highest seed germination (54.6 %) was observed after cold water soaking for 12 hours with vermiculite in mist chamber followed by treatment of Control (45 %) with vermiculite in mist chamber. Vegetative propagation was conducted with halfripe shoot cuttings prepared from healthy and vigrous plants. Cutting were treated with different IBA (Indole 3 butyric acid) concentration and Rootex powder. Pre-treated cuttings were planted in Vermiculite and Sand under mist chamber, shade house and open.The cutting were pre-treated with IBA 1000 ppm performed best (63.3 %) in mist chamber.IBA 3000 ppm and Rootex reduced the rooting percentage as 46.6 % and 38.3 % respectively.**

Keywords : Seed sowing, Vegetative propagation, IBA

1. INTRODUCTION

The *Punica granatum* is a fruit-bearing deciduous shrub in the family Lythraceae, that grows between 5 and 10 m (16 and 33 ft) tall. In Uttarakhand locally it is called Dadim. This is the most undervalued fruit of uttarakhand. Dadim belongs to the family of Pomegranate.It is almost same as pomegranate except the size and taste. Dadim is smaller in size and tastes sour and sweet equally. Dadim is approximately 40% of the size of pomegranate. A well ripen pomegranate has more sweet in taste and little bit of sour but in Dadim sour and sweet both tastes are in equal ratio.Pomegranate is also used in food and as a spice condiment. Dadim is very effective in the treatment of Hyperacidity. Because of its cooling effect on the body Pomegranate is very good for people suffering from ulcerations anywhere in the gut.Pomegranates as a Treatment for Cancer, Osteoarthiritis and other Diseases. The pomegranate has been used in natural and holistic medicine to treat sore throats, coughs, urinary infections . Dadim helps to relieve the burning and inflammation in stomach or duodenal ulcers boosting healing and preventing blood loss that occurs internally from these wounds. Dadim is very good for Anemia especially due to Iron deficiency. It is a rich source of Iron in case of its deficiency. So it appears to be highly important to develop its propagation techniques and generate awareness amongst the masses along with its regular conservation in wild.

2. MATERIAL AND METHODOLOGY

2.1Description of experimental Area

The experiment was conducted in the Dwarson nursery of Research wing of Uttarakhand forest department at Kalika, Ranikhet from 2016 to 2019. The area is situated at N 290 22.751´ latitude and E 790 25.955´ longitude at an altitude of 1775 m. The climate of the area is temperate.Temperature ranging from 10 C to 300 C and receive 1800 mm annual rainfall. Frost occurs December to February and snowfall occasionally occurs in winter.

2.2 EXPERIMENTAL MATERIAL AND DESIGN

The cuttings of half ripe shoots of *Punica granatum* were collected from healthy and vigorous plants. 15 cm long cuttings were prepared and immediately treated with IBA (Indole 3 Butyric Acid) 1000 PPM (100mg/100g), IBA 3000 PPM (300mg/100g) , Rootex and Control. Both treated and untreated cuttings were tagged and planted in mist-chamber , Shade house, control in sand & vermiculite beds at 5 cm spacing. Humidity was maintained above 60 %, temperature 250 c to350 c and fogging one minute at 30 minutes interval . Experiment consisted of 4 treatments and each treatment was replicated thrice with 20 cuttings per treatment.

The seeds of *Punica granatum* were collected from region of Ranikhet, Uttarakhand. Pulp was removed immediately after seed collection and dried in shady place. Germination studies were conducted in mist chamber , shade house and open beds.The different Medium Vermiculite and sand were used for seed germination. The seeds were pre-soaked in normal water for 12 hours and warm water for 12 hours with control treatment. 50 seed were taken for per treatment per medium per replication seeds.

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TABLE 1 :Rooting and sprouting percentage of *Punica granatum* in different IBA treatments, different mediums and different places.

TREATMENT (T1) IBA 1000 ppm						
MEDIUM	**MIST CHAMBER (P1)**		**SHADE HOUSE (P2)**		**OPEN BEDS (P3)**	
	R %	S %	R %	S %	R %	S %
VERMICULITE (M1)	51.6	88.3	38.3	83.3	30	78.3
SAND (M2)	45	88.3	31.6	86.6	33.3	75
TREATMENT (T2) IBA 3000 ppm						
VERMICULITE (M1)	46.6	60	46.6	60	25	76.6
SAND (M2)	43.3	86.6	33.3	86.6	33.3	83.3
TREATMENT (T3) ROOTEX						
VERMICULITE (M1)	38.3	56.6	31.6	81.6	28.3	76.6
SAND (M2)	38.3	86.6	30	90	26.6	80
CONTROL						
VERMICULITE (M1)	45	70	33.3	83.3	33.3	73.3
SAND (M2)	38.3	86.6	30	90	26.6	80

TABLE 2 : Germination percentage of *Punica granatum* in different pre sowing water treatments, different mediums and different places.

GERMINATION %			
MEDIUM	**MIST CHAMBER (P1)**	**SHADE HOUSE (P2)**	**OPEN BEDS (P3)**
Treatment (T1) Normal Water soaking for 12 hours			
VERMICULITE (M1)	54.6	36.6	41.3
SAND (M2)	42	34	22.6
Treatment (T2) Hot water soaking for 12 hours			
VERMICULITE (M1)	28	14.6	14.6
SAND (M2)	26	15.3	14
Control (C)			
VERMICULITE (M1)	48	42.6	27.3
SAND (M2)	47.3	30.6	22.6

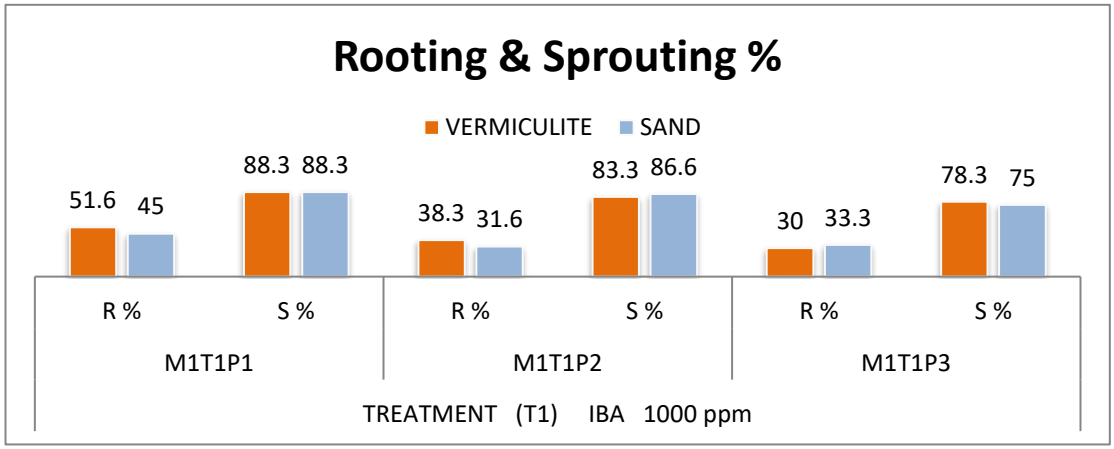

Fig. 1 Effect of IBA Concentration on Rooting & Sprouting percentage

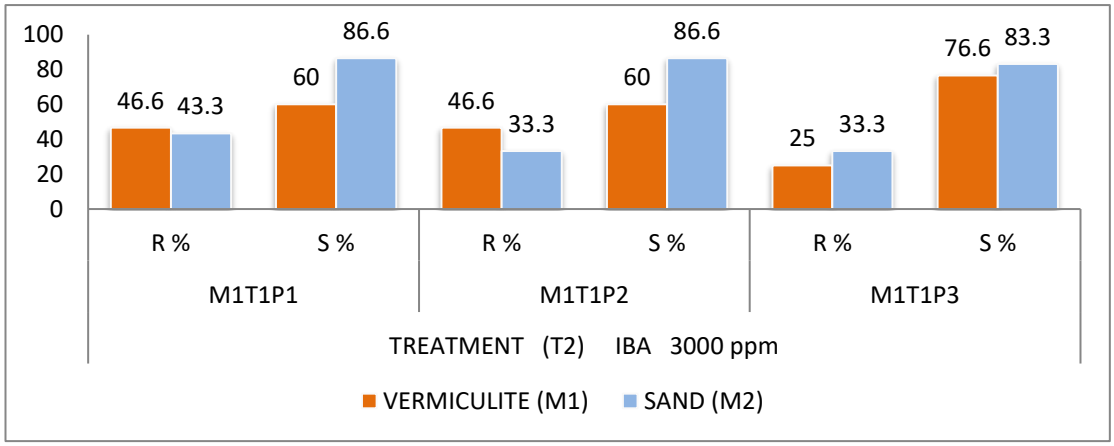

Fig. 2Effect of IBA Concentration on Rooting & Sprouting percentage

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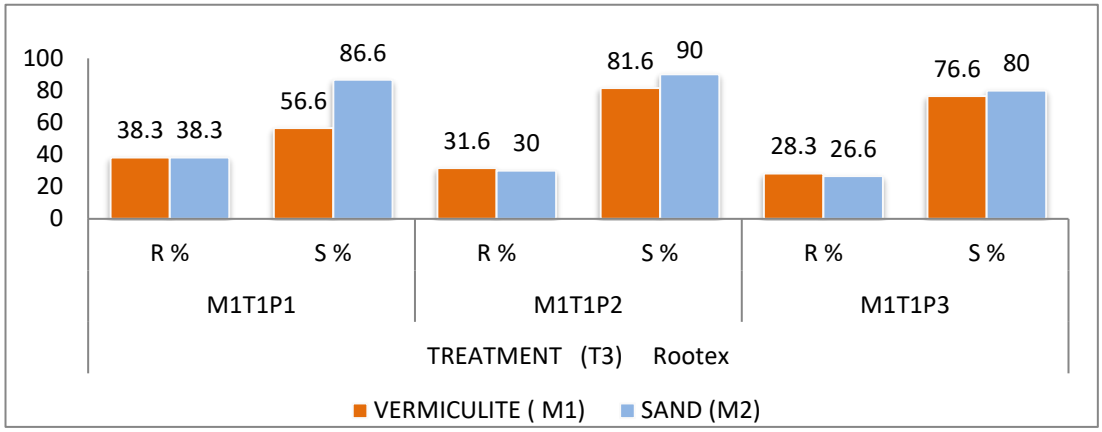

Fig.3Effect of Rootex on Rooting & Sprouting percentage

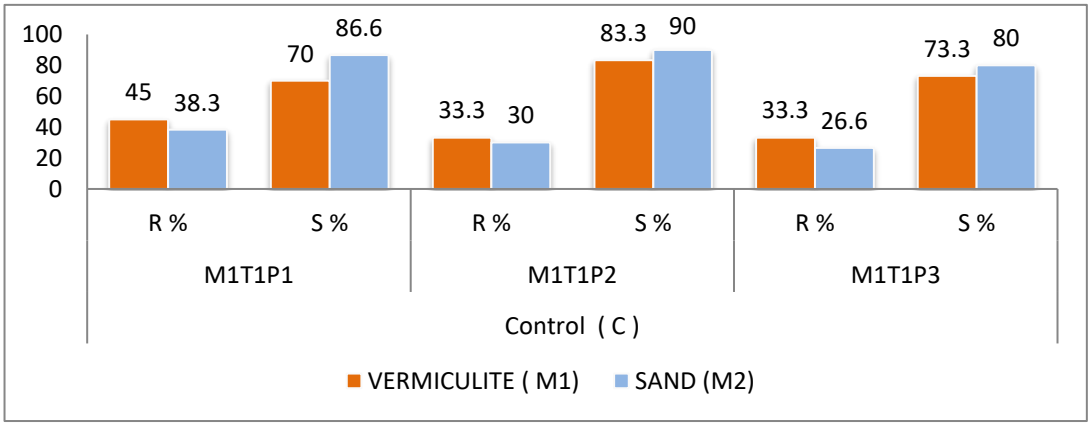

Fig. 4 Control Rooting and sprouting Percentage

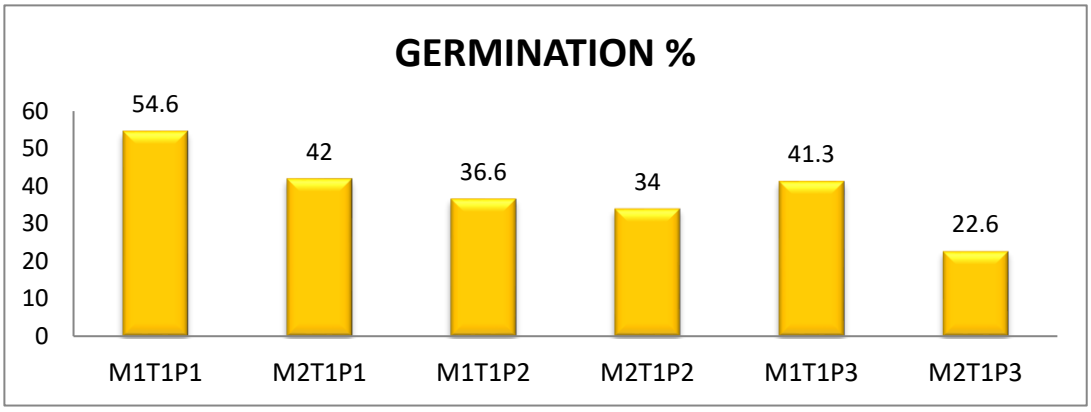

Fig. 5Effect of normal water soaking for 12 hours on seed germination in different mediums and different places.

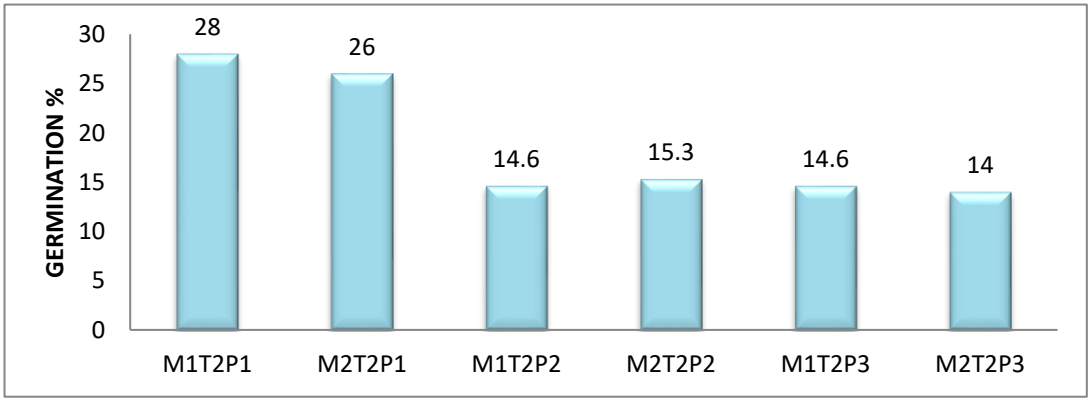

Fig. 6Effect of Hot water soaking for 12 hours on seed germination in different mediums and different places.

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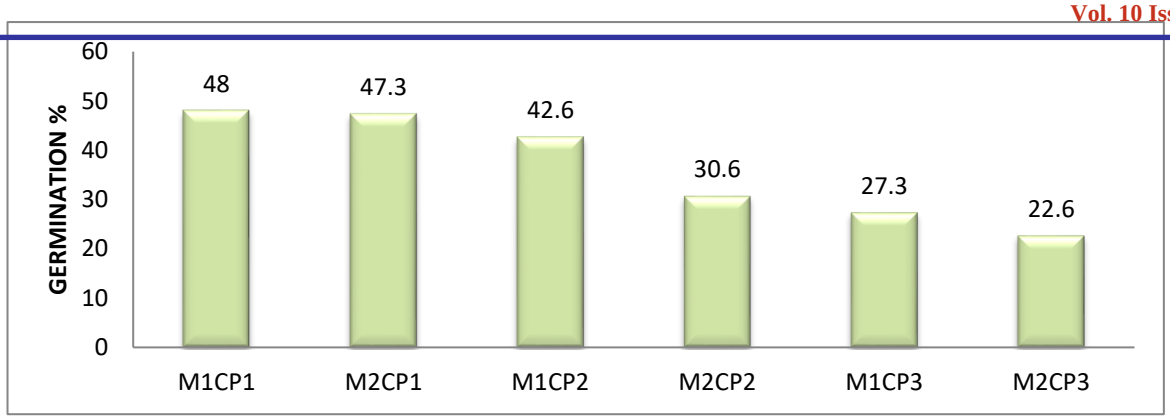

Fig. 7 Control seed germination in different mediums & different places.

3. RESULT AND DISCUSSION :

Development of nursery technique is a very important tool to raise desired genetic plants in a short period and fulfilling the aim of enhancing the desired population and species conservation. Cutting of 5 -10 cm mature wood with heal performed well in mid-August. (Sheat. W. G., 1948). Previous studies indicate that best seed germination was observed when seed sowing was done soon after ripening of seeds in cold atmosphere. Fruit flesh can inhibit seed germination (Huxley. A., 1992). Different IBA concentrations were studied to understand their effect in promoting sprouting and rooting percentage in *Punica granatum*in different places and mediums. The results in Table 1 clearly shows that cutting treated with IBA 1000 ppm produced maximum 51.6 % rooting (Fig. 1) followed by 46.6 % in IBA 3000 ppm (Fig. 2) and 38.3 % rooting (Fig. 3) in Rootex treatment and 45 % in Control(Fig. 4) while on the other hand maximum sprouting 90 % and minimum 25 % was observed in Rootex &Control and IBA 3000 ppm respectively (Fig. 3 & 4) . Present study showed that treatment enhancing IBA concentration above 1000 ppm causes reduction in rooting percentage. The treatment of IBA 1000 ppm found to be the best for rooting in cuttings.

Seeds were collected soon after ripening; seeds pulp were removed immediately then dried in sunlight and sown in September. Pre sowing water treatments, mediums and places werestudied to analyze the seed germination. The data in Table 2 indicate that maximum 54.6 % germination observed in Mist chamber (P1) with Vermiculite (M1) after normal water soaking for 12 hours (T1) (Fig. 5) followed by 28 % in shade house with Vermiculite(M1) after normal water soaking for 12 hours. (T1) (Fig 6.) . Untreated seeds (control) were observed 48 % germination in Mist chamber (P1) with Vermiculite (T1) (Fig. 7). Higher germination found after normal water soakingfor 12 hours (T1) compare to others pre-sowing water treatment. Among the places mist chamber observed maximum germination percentage compare to other places. Among the mediums of Vermiculite was found maximum germination percentage compare to other mediums. The overall results of this study indicate that seed sowing after ripening of seeds is significant more suitable and easy method for artificial reproduction. On the other hand cutting propagation is more time taking and gives lesser result compare to seed germination. So we recommend artificial regeneration by seed sowing for utmost result within a short time.

Fig a

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Fig b

Fig c

Fig a, b , c : Propagation of *Punica granatum* by stem Cutting

REFRENCE :

[1] Parvez daudi, Vivek Pandey Propogation Technique of Pyracantha crenulata (D. Don.) M. Roem International Journal of Technology Enhancements and Emerging Engineering Research , VOL 3 , ISSUE 09 issn 2347- 4289.
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