

Influence of Salicylic acid on seed germination of Pigeon pea (*Cajanus cajan* L.)

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Abstract - Pigeon pea is an important cash crop in India. The present investigation deals with the study of effect of various concentrations of salicylic acid (SA) on the germination performance of pigeon pea (cv. Durga and Nirmal-3) seeds. The seeds of these varieties were collected from agriculture station, Islampur and exposed to different concentrations of salicylic acid (Control-D/W, 5 ppm, 10 ppm, 25 ppm, 25 ppm and 50 ppm). At 24 hrs, the seed germination was not recorded in all treatments. But, successive induction in germination was observed from 48 to 120 hrs. The results revealed that, 5 ppm and 10 ppm of salicylic acid showed significantly increased germination percentage over the control in both cultivars. Thus, results obtained in present study clearly indicate that both cv. Durga and Nirmal-3 were showed best germination with salicylic acid. Hence, application of salicylic acid can be beneficial for obtaining the higher yield.

Key Words-Pigeon pea, Salicylic acid, seed germination.

1. INTRODUCTION

Pigeon pea (*Cajanus cajan* L.) is belongs to family Fabaceae and most important food legume cash crop in India. It is also called as red gram, congo pea and gurgu pea. Pigeon pea is a major source of protein, Carbohydrate, minerals, and B- Complex vitamins particularly in vegetarian diets [1]. The typical nutritional values in seeds are 10 % moisture, 19.2 % protein, 1.5 % fat, 57.3 % carbohydrate 8.1 % fibers and 3.8 % ash [2]. Pigeon pea generally grows on a broad range of agro climates and geographical conditions. Pigeon pea generally forms root nodules in associated with soil *Rhizobium* spp. and fix atmospheric nitrogen. Pigeon pea leaves are also medicinally important [3].

Salicylic acid (SA) is one of the endogenous growth regulators, naturally occurring signaling molecule and its major role in growth and development of plants [4, 5]. Salicylic acid is important in many physiological processes includes photosynthesis [6], nutrient uptake and transport [7], flowering and inhibition of fruit ripening [8]. But, no any strong evidence available on the effects of salicylic acid on enhances seed germination of pigeon pea. Therefore, present investigation is important on possible role of salicylic acid on seed germination in important cash crop pigeon pea.

2. MATERIAL AND METHODS

The morphologically healthy seeds of pigeon pea cv Durga and Nirmal-3 were first surface sterilized with 1 % HgCl₂ for 2 min and then washed with distilled water to remove toxic elements. The petri plates were sterilized with hot air oven and lined with blotting filter paper at the bottom. The surface sterilized ten seeds were placed in each petri plates. The desired treatments were given by adding 6 cm³ of aqueous treatment solution (Control-D/W, 5 ppm, 10 ppm, 25 ppm and 50 ppm of salicylic acid). The petri plates were incubated in a BOD incubator at 26±0C in dark and investigation were recorded at different stages of germination from 24 to 120 hrs.

3. RESULT AND DISCUSSION

The results obtained in the present investigation are summarized in table 1. The results indicated that, at the 24 hrs incubation the germination was not recorded in all treatments. But, successive induction of germination was observed from 48 to 120 hrs. The 5 ppm and 10 ppm of salicylic acid significantly increases germination percentage in both cultivars over the control. Similar, results were obtained by Jadhav and Bhamburdekar [9], according to them, seed germination performance in groundnut increases with

application of salicylic acid. According to Rajjou *et al.*, [10] under saline condition, salicylic significantly stimulated seed germination in *Arabidopsis*. The presoaking of wheat seeds with salicylic acid increased the germination percentage under saline soil. Salicylic acid may acts as a potential non enzymatic antioxidant and plant growth regulator (PGR). According to Bhupider and Usha [11], Salicylic acid induce flowering and control uptake of iron. The required concentration of salicylic acid is variable from plant to plant such as, 40 ppm for groundnut [12], 100 ppm for Sesame [13] and 100 ppm for tomato [14].

From present investigation it has been concluded that, seed treatment with salicylic acid influence seeds germination performance in Pigeon pea. Hence, application of salicylic acid can be beneficial for obtaining the higher yield.

Table1. Effect of Salicylic acid on germination percentage in pigeon pea

Variety	Salicylic acid (ppm)	% Germination				
		24 hrs	48 hrs	72 hrs	96 hrs	120 hrs
Durga	Control-(D/W)	-	50	80	90	100
	5	-	30	80	90	100
	10	-	50	80	100	100
	25	-	50	80	90	100
	50	-	40	70	90	100
Nirmal-3	Control-(D/W)	-	10	50	70	90
	5	-	10	70	90	100
	10	-	10	70	90	100
	25	-	10	60	80	100
	50	-	10	70	80	90

Each value is a mean of three replications containing 10 seeds per plate.

Due to poor performance data are left unexpressed where the mark (-) is given.

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4. REFERENCES

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