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Effect of seed coating treatments on field performance of soybean (*Glycine max* (L.) Merrill)

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Abstract
A field experiment was carried out during *kharif* season of 2011-2012 at experimental field of Seed Technology Research Unit, Dr. PDKV, Akola (MS) to study the effect of seed coating treatments *viz*. polymer coating @ 3ml/kg of seed, flowable thiram @ 2.4/kg seed, polymer + flowable thiram, vitavax 200*@ 2g/kg, polymer + vitavax 200*@ 2wg/kg of seed and Control stored in two packaging materials i. e. Gunny bag and HDPE bag upto 8 month with or without combination at ambient condition on field performance of soybean The results revealed that the polymer @ 3 ml/kg + vitavax 200* 2g/kg of seed stored in HDPE bag were higher initial plant stand (284.33), early flowering (43 days) and more plant height (57.60 cm) which matured early (69.33 days). However, the maximum no. of pods per plant (58.50), no. of seeds per plant (8.53 g), hundred seed weight (10.60g), yield per plant (20.39 g), were found due to application of polymer @3 ml/kg + vitavax @ 2 g/kg seed treatment. Hence polymer @3 ml + vitavax 200* @ 2 g/kg of seed treatment stored in HDPE bag was most beneficial for enhancing the yield and yield attributes of soybean.

Keywords: Soybean, seed coating, polymer & fungicide coating

Introduction
Soybean (*Glycine max* (L.) Merrill) is an important grain crop legumes in India. Being a legumes, It is a unique crop of versatile nutritional attribute, yielding both oil and protein. In World, soybean is grown over an area of 103.00 lack ha with a production of 103.37 lack ha and with average productivity 24q ha. The annual soybean area in Vidarbha is 18.49 lack ha with production of 20.25 lack ha and productivity 10.39 q/ ha. It has been establish that under tropical condition, rapid loss of seed yield and yield attributing character. Seeds can store satisfactorily under control condition with low temperature and low moisture. The major problem in soybean cultivation is the delicate nature of seed coat (8 µm), which is fragile and is prone to damage embryo during various stages *viz*. harvesting, threshing, processing, seed treatment, transport and storage. To overcome such problem, seed technologies like to overcome such problem, seed technologies like seed enhancement and seed treatment include priming, pelleting, coating and artificial seeds are some important.
Methods to enhance seed and seedling performance, through addition of chemical to protect seed from pathogens and to improve germinations. The soybean seed coated with polymer and fungicide showed significant effect on field performance and yield attributing character.

Materials and Methods
The experiment was conducted at the field of Seed Technology Research Unit, Dr. Panjabrao Deshmukh Krishi Vidyapeeth, Akola during kharif season of 2011-2012. The soybean seeds treated with polymer coating (polycot @ 3ml/kg seed diluted in 5ml of water), flowable thiram (royal flow 40 SC) 2.4 ml/kg, polymer + flowable thiram (royal flow 40 SC) @ 2.4ml/kg, vitavax 200*(containing thiram and carboxyl 37.5%) @ 2 g/kg and polymer + vitavax 200*@ 2g/kg of seed. Treated seeds stored in two packaging material i.e. Gunny bag and HDPE bag under ambient condition. The experiment was laid out in Factorial Randomized Block Design with two factor and three replication consisting twelve treatments in combinations.
Initial plant stand, early flowering and plant height (cm), matured early, no. of pods per plant, hundred seed weight (g), yield per plant (g),

Results and Discussion
The higher initial plant stand (284.33), early flowering (43 days) and more plant height (57.60 cm) which matured early (69.33 days). However, the maximum no. of pods per plant (58.50),

no. of seeds per plant (8.53 g), hundred seed weight (10.60 g), yield per plant (20.39 g), were found due to application of polymer @3 ml/kg + vitavax @ 2 g/kg seed treatment. All above parameters was not influenced significantly due to different seed treatments and interaction effect. The present results on above morphological parameters are in accordance with findings of Saha and Basu (1981) [8], Voroveni *et al* (1986) [11], El-Samadisy *et al* (1988) [5], Rama Rao and Gopal Singh (1997) [7], Archer *et al* (2003) [1].

Table 1: Effect of seed coating treatments on Initial plant stand, Day to 50% flowering, Plant height (cm), Day to maturity, No. of Pods/Plant, 100 Seed Weight(g), Seed Yield / Plot (kg/plot), Seed Yield/ha (q/ha) and Seed yield /plant (g)

	Initial plant stand	Day to 50% flowering	Plant height (cm)	Day to maturity	No. of Pods/Plant	100 Seed Weight(g)	Seed Yield / Plot (kg/plot)	Seed Yield/ha (q/ha)	Seed yield /plant (g)
P1T0	244	43	55.90	69.33	37.50	10	2.04	22.67	8.03
P1T1	253.33	43	56.46	70	48.50	10	2.15	23.89	8.34
P1T2	257.33	45.10	56.13	70.67	50.50	10	2.20	24.45	8.38
P1T3	267	45.67	57.60	69.67	55.50	10	2.28	25.33	8.45
P1T4	269	43	56.86	69.33	50.50	10.60	2.24	24.22	8.27
P1T5	271.33	44	56.96	70.67	58.00	10.60	2.31	25.67	8.23
P2T0	260.33	43	56.73	69.33	38.50	10	2.09	23.22	8.36
P2T1	260.33	43.33	56.10	70.66	48.50	10.20	2.17	24.11	8.49.
P2T2	266.33	45	56.60	69.33	52.00	10.30	2.23	25.44	8.50
P2T3	272	46.33	56.90	69.33	58.50	10	2.30	25.52	8.53
P2T4	271	43.33	56.73	70	50.50	10.60	2.27	25.22	8.32
P2T5	284.33	43.33	56.86	71	60.00	10.60	2.34	26.00	8.52
S.E(m)±	0.77	1.00	0.60	0.29	0.69	0.78	0.004	0.01	0.013
CD at 5%	2.25	NS	NS	0.85	1.45	NS	0.013	0.03	0.04

Significantly initial plant stand, higher no. of pods per plant, no. of seeds per pod, seed yield per plot were found in polymer @3ml + vitavax 200* @ 2g/kg of seed treatment. Interaction effect also found significant and observed maximum due application of polymer and fungicide. The present results are an accordance with research conducted by Copland *et al* (1990) [3], Hwang and Sung (1991) [6], Sampaio and Sampaio (1994) [9], Egli and Tekrony (1995) [4], Vieira *et al* (1999) [10], Baudet and Peske (2006) [2].

Hence polymer @3ml + vitavax 200* @ 2g/kg of seed treatment stored in HDPE bag was most beneficial for enhancing the yield and yield attributes of soybean.

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