

Effect of Biostimulants on Economics of Dendrobium Orchid (*Dendrobium nobile* Lindl.) var. Sonia-17 Under Protected Cultivation

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ABSTRACT

The experiment on effect of biostimulants on economics of Dendrobium orchid var. Sonia-17 under protected cultivation was undertaken at farmer's field, Chapparamane during 2017 to 2019. Eight biostimulants in two combinations were taken for the study and RDF (Recommended Dose of Fertilizers) was taken as control. Among the different biostimulant combinations used Biovita (Brown sea weed extract)@1.5 per cent showed maximum gross returns (₹4,67,550), net returns (₹ 3,01,473.4) and cost benefit ratio (1.81) compared to other treatments. While, the control recorded lower gross returns, net returns and B:C ratio (₹3,11,550, 1,53,573.4 and 0.97, respectively).

Keywords: Biostimulant; Dendrobium orchid; Biovita

DESCRIPTION

Orchids, the spectacular cut flower among the flowers, are unique with their versatility in colour, form, size, shape and longer life span of the plant and flower. They belong to the largest and most highly evolved monocotyledons multiform family Orchidaceae and are native to Tropical Forests of Amazon and Indo-Malayan region [1].

The challenges faced by the agriculture sector are immense, today. The growing agricultural practices need more fertilizers for higher yield and the use of chemical fertilizers is inevitable for the yield sustainability. Hence, it becomes necessary to optimize the use of chemical fertilizer which can be achieved by supplementing organic components. At present, wide spread requirement for environment friendly agriculture for the production of quality flowers is in high demand. Efforts are underway for the sustainable way of crop production with organic fertilizers and biostimulants from natural resources to enhance the production of commercially important flower crops [2]. The present investigation emphasizes the influence of biostimulants on economics of Dendrobium orchid (*Dendrobium nobile* Lindl.) var. Sonia-17 under protected cultivation. The study was carried under naturally ventilated polyhouse condition

during 2017 to 2019 at farmer's field, chapparamane, sirsi under K R C College of Horticulture, Arabhavi. Three month old healthy tissue cultured plants of var. Sonia-17 were planted in orchid pots (earthen pots) and were placed on concrete benches. The experiment was laid out in Completely Randomized Design with seventeen treatments and two replications. Treatments T1: include Control (RDF-30:10:10@0.2% during vegetative stage and 10:20:20@0.2% during flowering stage), T2-Humigrow (Humic acid)@1%, T3-Humigrow@1.5%, T4-Super growth (Fulvic acid)@1%, T5-Fulvic acid@1.5%, T6-Biovita (Sea Weed Extract)@1%, T7- Biovita@1.5%, T8-Spic Cytozyme (GA3 0.001%)@0.3%, T9-Spic Cytozyme@0.5%, T10-Isabion@1%, T11-Isabion@1.5%, T12-Boom flower (Nitro Benzene)@1%, T13-Boom flower@1.5%, T14-Formula 15 (Humic Acid+Fulvic Acid+Amino acid)@1%, T15-Formula 15@1.5%, T16-Humicel plus (Humic Acid+Fulvic Acid+Sea Weed Extract)@ 1%, T17-Humicel plus@1.5%. RDF and biostimulants were applied as a foliar spray at weekly intervals. The economic returns were calculated for a standard polyhouse size of 560 m². The economic analysis revealed that, foliar application of Biovita@1.5 percent had resulted in the highest gross return of ₹4,67,550 with a net return and BC ratio of ₹3,01,473.4 and 1.81, respectively (Table 1).

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Treatment	Total cost of production (₹)	Flower yield/560 m ² (Nos.)	Gross returns (₹)	Net returns (₹)	B:C ratio
T1-Control(RDF)	1,57,976.60	20,770	3,11,550	1,53,573.40	0.97
T2-Humigrow@1%	1,64,726.60	23,090	3,46,500	1,81,773.40	1.1
T3-Humigrow@1.5%	1,64,726.60	26,090	3,91,350	2,26,623.40	1.38
T4-Super growth@1%	1,64,186.60	25,370	3,80,550	2,16,363.40	1.32
T5-Super growth@1.5%	1,64,186.60	28,900	4,33,500	2,69,313.40	1.64
T6-Biovita@1%	1,66,076.60	29,050	4,35,700	2,69,623.40	1.62
T7-Biovita@1.5%	1,66,076.60	31,170	4,67,550	3,01,473.40	1.81
T8-Spic cytozyme @0.3%	1,65,176.60	21,960	3,29,400	1,64,223.40	0.99
T9-Spic cytozyme @0.5%	1,65,176.60	24,570	3,68,550	2,03,373.40	1.23
T10-Isabion@1%	1,66,526.60	20,980	3,14,770	1,48,243.40	0.89
T11-Isabion@1.5%	1,66,526.60	22,540	3,38,100	1,71,573.40	1.03
T12-Boom flower@1%	1,65,086.60	22,140	3,32,100	1,57,013.40	0.95

T13-Boom flower@1.5%	1,65,086.60	25,690	3,85,350	2,20,263.40	1.33
T14-Formula 15@1%	1,66,976.60	23,890	3,58,350	1,91,373.40	1.15
T15-Formula 15@1.5%	1,66,976.60	27,410	4,11,150	2,44,173.40	1.46
T16-Humicel plus@1%	1,65,986.60	28,740	4,31,100	2,65,113.40	1.6
T17-Humicel plus@1.5%	1,65,986.60	30,260	4,53,900	2,87,913.40	1.73

Note: Cost of spike -15

Table 1. Effect of biostimulants on cost economics of Dendrobium Orchid var. Sonia-17 grown under polyhouse of 560 m² area.

This was followed by Humicel plus@1.5 percent which recorded a net return ₹2,87,913.4 and B: C ratio of 1.73 with gross income of ₹4,53,900. The lowest net return was observed in control. The results are supported by Zwanenberg in chrysanthemum and Biswajit, et al. in summer rice [3,4].

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