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## Short Communication

# Economic of ashwagandha as influenced by sowing methods and organic sources of nutrients

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### Abstract

Medicinal plant cultivation is becoming a tool for diversification of Indian agriculture as many farmers have been looking for some better alternative to diversify from traditional agriculture due to gradual reduction in profit, decline in productivity and increased incidence of diseases and pests. Cultivation of medicinal plants, especially high value medicinal plants is creating new dimension in the field of agriculture. The maximum cost of cultivation was found with raised bed method followed by ridge and furrow method and flat bed method, respectively. High gross return was gained by raised bed sowing method and in case of organic sources of nutrient, application of FYM @ 15 t ha<sup>-1</sup> gave highest gross return. Raised bed sowing method was gained maximum net return and similar trends were found with B:C ratio.

**Keywords:** gross return, net return and raised bed

### Introduction

Ashwagandha, the 3<sup>rd</sup> important prioritized medicinal plant listed by National Medicinal Plant Board (NMPB) is also known as Indian Ginseng. Herbal medicines strongly involves mass appeal being safer and inexpensive. Ashwagandha is a small woody shrub or herb that grows or reaches about 30-150 cm in height belongs to the family Solanaceae. It is an erect growing dicotyledonous evergreen shrub plant with fleshy long tap roots, found throughout the drier parts of India in waste places and on bunds. The stem and branches are covered with minute stellate hairs. Leaves are simple upto 10 cm long, ovate, pedicellate and alternate. Plant bears small (1cm long), greenish or yellow flowers borne together in short axillary clusters. The fruits or berries are smooth, spherical, yellow, red coloured with 6 mm diameter enclosed in an inflated and membranous calyx. The fruit has small kidney shaped yellow coloured seeds (Nigam and Kandalkar, 1995) [1]. The traditional use of 'Ashwagandha' was to increase energy, youthful vigour, endurance, strength, health, nurture the time elements of the body, increase vital fluids, muscle fat, blood, lymph, semen and cell production. The total alkaloid content in the roots of the Indian types has been reported to vary between 0.13 and 0.31%, though much higher yields (upto to 4.3%) have been recorded elsewhere.

### Materials and Methods

The study was under taken with a view to find out the effect of different sowing methods and organic sources of nutrient and on yield and quality of ashwagandha. The experiment was carried out during *rabi* season 2016-17 at college of agriculture, IGKV Raipur. There were eighteen combinations of three sowing methods in main plot flat bed, ridge bed and raised bed and six sub plots control, FYM @ 10 t ha<sup>-1</sup>, FYM @15 t ha<sup>-1</sup>, vermicompost @ 5 t ha<sup>-1</sup>, vermicompost @ 7.5 t ha<sup>-1</sup> and NPK 40:60:20 kg ha<sup>-1</sup>. Treatments were replicated thrice in split plot design. All the data on cost of cultivation, gross income, net income and B:C ratio were recorded and statistically analyzed. Half dose of N and full dose of FYM, vermicompost, P, K were applied uniformly at sowing as a basal dose and remaining half of N was given as top dressed in two equal split. The allocation of these treatments was done randomly and all the cultural practices were followed as per recommended. Ned leaves on the observational plants were counted manually.

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## Results and Discussion

The data revealed that there is a conspicuous variation in the profitability due to varying different sowing methods and organic sources of nutrient in Ashwagandha. With respect to sowing method, the maximum cost of cultivation (44,529 ha<sup>-1</sup>) was found with raised bed method followed by ridge and furrow method (43,854 Rs ha<sup>-1</sup>) and flat bed method (42,729 Rs ha<sup>-1</sup>), respectively. This might be due to more number of labours engaged for preparation of bed of different sowing methods. High gross (1,69667.03 Rs ha<sup>-1</sup>) return was gained by raised bed sowing method and in case of organic sources of nutrient, application of FYM @ 15 t ha<sup>-1</sup> gave highest gross return of (1,92552.78 Rs ha<sup>-1</sup>) followed by FYM @ 10 t ha<sup>-1</sup> (1,77256.50 Rs ha<sup>-1</sup>). Raised bed sowing method was gained

maximum net return (1, 22758 ha<sup>-1</sup>) followed by ridge and furrow (1, 01317 ha<sup>-1</sup>) and flat bed method (94197 ha<sup>-1</sup>). Similar trends were found with B:C ratio. Ram *et al.* (2011)<sup>[2]</sup> reported that the highest net returns and B:C ratio were recorded in raised bed sowing of soybean which were significantly higher than flat bed and ridge furrow methods of planting. Among the different organic sources of nutrient, application of FYM @ 15 t ha<sup>-1</sup> was obtained maximum gross (1, 92852 ha<sup>-1</sup>) and net return (1,54551 ha<sup>-1</sup>). However, highest B:C ratio (5.10) was obtained with application of FYM @ 10 t ha<sup>-1</sup>. Tiwari (2006) reported that vermicompost and farmyard at 10 and 20 t ha<sup>-1</sup> resulted in net returns (Rs. 3,30,800, 3,60,000 and 3,58,100 ha<sup>-1</sup>), and benefit : cost ratios (2.18, 2.33 and 2.27) of safed musli than the control.

**Table 1:** Gross return (Rs. ha<sup>-1</sup>), Cost of cultivation (Rs. ha<sup>-1</sup>), Net return (Rs. ha<sup>-1</sup>) and B: C ratio of ashwagandha as influenced by different sowing methods and organic sources of nutrient

Treatments	Gross return (Rs. ha <sup>-1</sup> )	Cost of cultivation (Rs. ha <sup>-1</sup> )	Net return (Rs. ha <sup>-1</sup> )	B:C ratio
<b>Main plot : Sowing methods (MS)</b>				
M <sub>1</sub> : Flat bed sowing method	135044.00	42729.00	94197.00	3.48
M <sub>2</sub> : Ridge bed sowing method	146312.00	43854.00	101317.00	3.69
M <sub>3</sub> : Raised bed sowing method	169667.00	44529.00	122758.00	4.09
<b>Sub plot :Organic sources of nutrient (S)</b>				
S <sub>1</sub> : Control	83746.00	27865.00	63545.00	3.01
S <sub>2</sub> : FYM @ 10 t ha <sup>-1</sup>	177256.00	34665.00	140828.00	5.10
S <sub>3</sub> : FYM @ 15 t ha <sup>-1</sup>	192552.00	38065.00	154551.00	5.05
S <sub>4</sub> : Vermicompost @ 5 t ha <sup>-1</sup>	129930.00	57865.00	65543.00	2.24
S <sub>5</sub> : Vermicompost @ 7.5 t ha <sup>-1</sup>	170574.00	72565.00	94993.00	2.34
S <sub>6</sub> : NPK 40:60:20 kg ha <sup>-1</sup>	147986.00	30103.00	117083.00	4.79

## Conclusion

The maximum cost of cultivation (44,529 ha<sup>-1</sup>), gross (1,69667.03 Rs ha<sup>-1</sup>) return and maximum net return (1, 22758 ha<sup>-1</sup>) were found with raised bed method. Similar trends were found in organic sources of nutrient. Higher benefit cost ratio were found under raised bed and application of FYM @ 10 t ha<sup>-1</sup>.

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