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Effect of boron, plant growth regulators and jeevaamrit on fruit yield and economic feasibility of F bael (*Aegle marmelos* L.) Cv. Nb-9

Ranjeet Kumar and Sanjay Pathak

Abstract
An experiment was carried out to study the Effect of boron, plant growth regulators and jeevaamrit on fruits yield and economic feasibility of bael (*Aegle marmelos* L.) cv. NB-9 under sodic soil conditions in the year 2019-20 and 2020-21. The experiment trial comprises twelve treatments *viz.* T_1 (Control), T_2 (Boric Acid 0.6%),T_3 (NAA 25ppm), T_4 (GA_3 30ppm), T_5 (BA 250 ppm), T_6 (CPPU 100 ppm), T_7 (Jeevamrit 20%), T_8 (Boric Acid 0.6% + NAA 25ppm), T_9 (Boric Acid 0.6% + GA_3 30ppm), T_{10} (Boric Acid 0.6% + BA 250 ppm), T_{11} (Boric Acid 0.6% + CPPU 100 ppm), T_{12} (Boric Acid 0.6% + Jeevaamrit 20%) in simple Randomized Block Design.
The data recorded and analysed statically revealed that the fruit yield and Benefit-cost ratio were significantly influenced through the application of different plant growth regulators, boron and Jeevaamrit. The highest fruit yield with the treatment of T_8 (Boric Acid 0.6% + NAA 25ppm) whereas the minimum was found with the treatment of T_1 (Control) during both the experimental year (2019-20 and 2020-21). The Maximum Cost benefit ratio was recorded with the treatment of T_3 (NAA 25ppm) which was followed by T_8 (Boric Acid 0.6% + NAA 25ppm) whereas the minimum was recorded with T_1 (Control) during both year.

Keywords: Feasibility, NAA, CPPU, jeevaamrit, *Aegle marmelos* L.

Introduction
The bael (*Aegle marmelos* L.) is an important indigenous fruit of India, which belongs to the family Rutaceae and have a diploid chromosome number is 2n=18. The tree is medium to tall, Deciduous; slow growing up to the height of 5-10m. The flowering takes place in May-June. The fruit matures in the month of December and ripens in the April and May. Ripened fruits have very fragrant and pleasantly flavoured pulp. The bael has high medicinal properties each part of the bael is used for medicinal purpose. It acts as an antioxidant, antimicrobial, anti-cancer, and anti-diabetic, anti-diarrhoeal and in the prevention of liver. Bael is nutritious and can form an important dietary supple. Compared to orange and grapefruit, bael fruit contains about three times the total soluble solids (TSS) and at least 1.5 times as many calories. Gavimath *et al.* (2008) [4] reported that this plant was promising in the development phytomedicine for the bacterial diseases. Marmelosin ($C_{13}H_{12}O_3$) is the most important, therapeutically active principle of bael fruit. It is isolated as a colourless crystalline compound Dixit and Dutt (1932) [2]. Kirtikar and Basu (1935) [10] have extensively described the medicinal properties of bael fruit. It is said that the ripe fruit is a tonic, a restorative, an astringent, a laxative, and good for the heart and brain. The unripe fruit is regarded as astringent, digestive and stomachic and is prescribed to treat diarrhea and dysentery. Most tropical and subtropical fruits have a limited storage life, but bael fruit has a potentially long post-harvest storage life because of its hard outer shell, which can withstand transport and marketing hazards. Value addition in the bael is also an easy process giving higher return. The trees are found in the wild areas in Uttar Pradesh, Orissa, Bihar, West Bengal, Madhya Pradesh, and Rajasthan, etc.,
Boron has synergetic actions with the NAA and CPPU for the fruit yield. Naphthalene acetic acid high fruit retention leads to superior yield than any other chemicals.
Gibberellins also improve yield and cheap and easy availability are two major factors for the general application. N-(2-Chloro - 4 – pyridyl) – N- phenylurea (CPPU) and Benzyl Adenine are highly active cytokinin-like plant growth regulator that reduces drop. Flaishman *et al.* (2001) [3] and Guireguis *et al.* (2003) [6] are reported in pear have reported the beneficial

effects of using CPPU in reducing fruit drop and increasing productivity as well as improving fruit yield. Jeevaamrit is a rich bio-formulation that contains consortia of the beneficial microbes, it is important to provide a congenial environment to the microorganism which helps in making essential nutrients available for the plant growth.

Material and Method

The present investigation Effect of boron, plant growth regulators and Jeevamrit on fruit yield and economic feasibility of bael (*Aegle marmelos* L.) cv. NB-9 under sodic soil condition. was under taken at Main Experimental Station, Horticulture, A.N.D.U.A.&T., Kumarganj Ayodhya, Uttar Pradesh, India during the year 2019-20 and 2020-2021. Geographically, this area situated in typical saline alkali belt of Indo- gangetic plains of eastern U.P. at 26.47 N latitude, 88.12°E longitudes and at an altitude of 113 meter from mean sea level. The region enjoys sub-humid and subtropical climate receiving a mean annual rainfall of about 1215 mm out of which about 85% is concentrated from mid-June to end of September with an average annual rainfall of 764.01mm and relative humidity of 66.76 per cent.

The winter months prevails from November to March with mild to severe cool temperature ranging from 17.9 to 33.1°C. The severe cold temperature 17.9°C was recorded in the month of January and occasionally winter rains and frost was also noticed. The summer months occur from April to June with an average temperature of 39.2 to 41.4°C. The dry and hot wind waves were also noticed in the months of mid-May and June.

Fourteen years old tree of varietal block of NB-9 was taken up as experimental material. Which are planted at the distance of 8×8m in Square system, manure fertilizer and other orchard management practices were followed as per recommended package and Practices for Bael.

The experiment was conducted in simple Randomized Block Design having twelve treatments *viz* T_1 (Control), T_2 (Boric Acid 0.6%),T_3 (NAA 25ppm), T_4 (GA_3 30ppm), T_5 (BA 250 ppm), T_6 (CPPU 100 ppm), T_7 (Jeevaamrit 20%), T_8 (Boric Acid 0.6% + NAA 25ppm), T_9 (Boric Acid 0.6% + GA_3 30ppm), T_{10} (Boric Acid 0.6% + BA 250 ppm), T_{11} (Boric Acid 0.6% + CPPU 100 ppm), T_{12} (Boric Acid 0.6% + Jeevaamrit 20%). The spraying was done twice, first at first week of November and second at first week of December. The observations were recorded at monthly interval for fruit yield and Economics of the bael cultivation during the investigation. Statistical analysis of the data obtained in the different sets of experiments were calculated, as suggested by Panse and Sukhatma (1989).

Fruit yield (kg /tree): The average yield of fruits per tree was recorded by counting the fruits retaining at maturity on each tree and multiplying with average weight of fruits. The fruit yield is expressed in kg/tree.

Fruit yield (q/ha.): The average yield of fruits q/ha was recorded by number of fruits/tree is multiple by number of plants in 1 ha. Area and divided by 100. The fruit yield is expressed in q/ha.

Economic Analysis

Gross income (Rs ha^{-1}): The yield of bael (treatment wise) was converted into gross income based on the prevailing market price.

Net income (Rs ha^{-1}): The net income was calculated for each treatment by deducting the cost of production from the gross income obtained in each treatment.

Cost of cultivation (Rs ha^{-1}): The cost of cultivation of bael (treatment wise) was calculated separately by adding the value of each inputs i.e., labour charges, cost of chemicals etc. in each treatment during the experimental period.

Benefit: Cost ratio: The Benefit: Cost ratio of different treatment was calculated by dividing the net income by respective cost of cultivation of different treatments using the following formula.

$$\text{Benefit: Cost ratio} = \frac{\text{Net income}}{\text{Total cost of cultivation}}$$

Results and Discussion

Effect of different treatments on the fruit yield per plant

The data in table-1indicated that the fruit yield per plant of bael fruit significantly varies with the application of different plant growth and Jeeva Amrit in individual or in combination with the born. All the treatments from January to May during both the years (2019-20 and 2020-21) were found significantly superior over the T_1 (Control)

From 1st January to 31st January the highest fruit yield of bael per hectare (131.17kg, 142.04kg during 2019-20 and 2020-21 respectively) was recorded from the plants treated with treatment T_8 followed by treatment T_{10} during both the years. The lowest fruit yield (118.67kg, 110.24kg during 2019-20 and 2020-21 respectively) was recorded in the treatment T_1 (water spray) in both years. Treatment T_6 was statistically at par during the year 2019-20 T10, T8, and T11 similarly, treatment T12, T7 and T4 were also found non-significant; Treatment T1, T2, T5, and T9 were found non-significant during the year 2019-20. During 2020-21 treatments T_8, T10; T3, T12, T7; T4, T5 and T9 were also found at par

From 1st February to 28th February highest fruit yield per plant (129.86kg, 154.62kg during 2019-20 and 2020-21 respectively) was noted in the treatment T_8 in both years but followed by T_3 in 2019-20 whereas, T_{11} in 2020-21. The lowest fruit yield was noted in treatment T_1 in both years. Treatment T10, T_{12}; T_9, T_{11}; T_4, T_7 was found at par during 2019-20 and during the year 2020-21 T_{11}, T_{12}; T3,T_{10}; T_7, T_6; T_4, T_2 were found at par.

From 1st March to 31st March the highest fruit yield per plant (131.421 kg, 159.12kg, during 2019-20 and 2020-21 respectively) was counted in T_8 (Boric Acid 0.6% + NAA 25ppm) followed by T_{12} in 2019-20 and T_3 and T_{12} in 2020-21; However, the minimum fruit yield (67.34 kg, 60.453kg during 2019-20 and 2020-21 respectively) was found in T_1 (water spray). Treatments T_2, T_3; T_9 T_{10} T_{11} were found at par during the year 2019-20 similarly treatments T_2, T_3 and T_{11}; T_9 T_{10}; T_2, T_5 were also found at par during 2020-21

From 1st April to 30th April the highest fruit per plant was recorded (132.86 kg, 160.10kg in 2019-20 and 2020-21 respectively) in plants sprayed with T_8 (Boric Acid 0.6% + NAA 25ppm) followed by T_{12} which was at par with T_3during both the years. The minimum fruit yield per plant (46.08kg during 2019-20 and 42.58kg during 2020-21) was noted in the plants sprayed with water T_1 (water spray) during both years. Treatment T_9, T_{11}; T_6, T_7 were statistically at par during the year 2019-20 similarly, T_3 and T_{11}; T_9 T_{10}; T_2, T_5 were also

found at par during 2020-21.

From 1st May to 31st May the maximum fruit yield per plant was recorded (131.58 kg, 159.49kg in 2019-20 and 2020-21 respectively) in plants sprayed with T_8 (Boric Acid 0.6% + NAA 25ppm) followed by T_3 statistically at par with T_{12} during the both the experimental years (2019-20 and 2020-21) and minimum fruit yield per plant (29.66kg, 30.06kg during 2019-20 and 2020-21 respectively) in the plants sprayed with water T_1 (water spray)during both the years. Treatment T_9, T11; T_6, T_7 were statistically at par during the year 2019-20 similarly, T_{12} and T_{11}; T_9 T_{10}; T_2, T_5 were also found at par during 2020-21.

Table 1: Effect of different treatments on the fruit yield per plant

Treatments	Fruit Yield Per Plant (kg)									
	2019-20					2020-21				
	1-31 January	1-28 February	1-31 March	1-30 April	1-31 May	1-31 January	1-28 February	1-31 March	1-30 April	1-31 May
T_1 (CONTROL)	118.678	89.330	67.340	46.088	29.664	110.24	84.77	60.46	42.58	30.06
T_2 (BORIC ACID 0.6%)	119.444	103.722	87.648	72.189	63.614	136.00	126.24	108.50	95.12	85.41
T_3 (NAA 25PPM)	123.297	119.748	115.416	113.399	112.740	142.97	146.12	145.60	145.95	147.02
T_4 (GA3 30PPM)	122.040	109.306	97.361	83.835	77.326	131.59	127.02	118.46	108.92	105.40
T_5 (BA 250PPM)	118.968	100.242	81.990	64.890	52.500	132.42	118.66	106.43	92.98	85.02
T_6 (CPPU 100 PPM)	128.100	113.472	101.530	89.904	83.512	138.91	133.42	126.75	121.28	119.60
T_7 (JEEVA AMRIT 20%)	122.571	108.031	97.573	89.712	85.095	142.04	138.06	133.85	126.43	123.01
T_8 (BORIC ACID 0.6% + NAA 25PPM)	131.176	129.867	131.421	132.860	131.583	146.46	154.62	157.25	158.20	159.49
T_9 (BORIC ACID 0.6% + GA3 30PPM)	119.439	112.329	108.286	105.105	101.389	133.07	132.93	127.57	126.59	125.38
T_{10} (BORIC ACID 0.6% + BA 250PPM)	130.720	117.546	107.184	97.812	93.149	146.11	141.26	132.56	127.23	124.03
T_{11}(BORIC ACID 0.6% +CPPU 100PPM)	124.889	112.707	106.932	102.078	97.665	151.89	150.55	145.07	143.49	143.66
T_{12} (BORIC ACID 0.6% + JEEVA AMRITA 20%)	122.640	118.206	115.940	114.900	112.454	142.35	148.15	146.33	146.38	144.52
S.Em±	1.70	2.26	1.84	1.12	1.03	1.94	2.14	2.25	2.21	1.31
CD or LSD	4.99	6.63	5.40	3.28	3.02	5.69	6.26	6.59	6.48	3.85

Effect of boron, plant growth regulators and Jeevaamrit on Fruit yield per hectare

The data in table 2 indicated that the fruit yield per hectare of bael fruit significantly varies with the application of different plant growth and Jeeva Amrit in individual or in combination with the born. All the treatments from January to May during both the years (2019-20 and 2020-21) were found significantly superior over the T_1 (Control)

From 1st January to 31st January the highest fruit yield of bael per hectare (204.63 q, 171.97 q during 2019-20 and 2020-21 respectively) was recorded in the plants treated with treatment T_8 followed by treatment T_{10} in during the year 2019-20 whereas the highest value during the year 2020-21 was recorded in the plant treated with the T_{11} followed by treatment T 8. The lowest fruit yield per hectare (185.13 q, 171.97 q during 2019-20 and 2020-21 respectively) was recorded in the treatment T_1 (water spray) in both years. Treatment T_6 was statistically at par during the year 2019-20 T_{10}, T_8, and T_{11} similarly, treatment T_{12}, T_7 and T_4 were also found non-significant; Treatment T1, T2, T5, and T9 were found non-significant during the year 2019-20. During 2020-21 treatments T_8, T_{10}; T_3, T_{12}, T_7; T_4, T_5 and T_9 were also found at par From 1st February to 28th February highest fruit yield per hectare (202.59 q, 241.20 q during 2019-20 and 2020-21 respectively) was noted in the treatment T_8 in both years but followed by T_3 in 2019-20 whereas, T11 in 2020-21. The lowest fruit yield per hectare (139.35, 132.4 q, during 2019-20 and 2020-21 respectively) was noted in treatment T_1 in both years. Treatment T_{10}, T_{12}; T_9, T_{11}; T_4, T_7 was found at par during 2019-20 and during the year 2020-21 T_{11},T_{12}; T_3, T_{10}; T_7, T_6; T_4, T_2 were found at par.

From 1st March to 31st March the highest fruit yield per hectare (205.01q 245.31 q, during 2019-20 and 2020-21 respectively) was counted in T_8 (Boric Acid 0.6% + NAA 25ppm) followed by T_{12} in 2019-20 and T_3 and T_{12} in 2020-21; However, the minimum fruit yield per hectare (105.05 q, 94.31 q, during 2019-20 and 2020-21 respectively) was found in T_1 (water spray). Treatments T_2, T_3; T_9 T_{10} T_{11} were found at par during the year 2019-20 similarly treatments T_2, T_3 and T_{11}; T_9 T_{10}; T_2, T_5 were also found at par during 2020-21.

From 1st April to 30th April the highest fruit per hectare was recorded (207.26 q during 2019-20 and 246.79 q during 2020-21 respectively) in plants sprayed with T_8 (Boric Acid 0.6% + NAA 25ppm) followed by T_{12} which was at par with T_3during both the years. The minimum fruit yield per hectare (71.89 q during 2019-20 and 66.43 q during 2020-21 respectively) was noted in the plants sprayed with water T_1 (water spray) during both years. Treatment T_9, T_{11}; T_6, T_7 were statistically at par during the year 2019-20 similarly, T_3 and T_{11}; T_9 T_{10}; T_2, T_5 were also found at par during 2020-21.

From 1st May to 31st May the maximum fruit yield per hectare was recorded (205.269 q, 248.80q during 2019-20 and 2020-21 respectively) in T_8 (Boric Acid 0.6% + NAA 25ppm) followed by T_3 statistically at par with T_{12} during both the experimental years (2019-20 and 2020-21) and minimum fruit yield per hectare 46.27 q, 46.89 q during 2019-20 and 2020-21 respectively) in T_1 (water spray) during both years. Treatment T_9, T_{11}; T_6, andT_7 were statistically at par during the year 2019-20 similarly, T_{12} and T_{11}; T_9 T_{10}; T_2, and T_5 were also found at par during 2020-21.

The major factor that governs the yield in the bael crop is the fruit retention. The yield is directly correlated with the fruit retention that's why the same treatment T_8 gave the highest fruit yield per plant as well as per hectare. The findings are in close agreement with Bhat *et al.* (2006) [1] in eureka lemon, Greenberg *et al.* (2006) [5] in Washington navel orange and Kaur *et al.* (2000) [9] in Pant lemon-1

Table 2: Effect of boron, plant growth regulators and jeevaamrit on Fruit Yield per hectare (Quintal)

Treatments	Fruit Yield per hectare(Quintal)									
	2019-20					2020-21				
	1-31 January	1-28 February	1-31 March	1-30 April	1-31 May	1-31 January	1-28 February	1-31 March	1-30 April	1-31 May
T_1 (CONTROL)	185.138	139.354	105.050	71.897	46.276	171.97	132.24	94.31	66.43	46.89
T_2 (BORIC ACID 0.6%)	186.333	161.806	136.731	112.615	99.238	212.16	196.93	169.26	148.38	133.24
T_3 (NAA 25PPM)	192.343	186.807	180.049	176.902	175.874	223.03	227.95	227.13	227.69	229.35
T_4 (GA3 30PPM)	190.382	170.517	151.883	130.783	120.629	205.27	198.15	184.80	169.92	164.43
T_5 (BA 250PPM)	185.591	156.377	127.904	101.228	81.900	206.57	185.10	166.03	145.05	132.64
T_6 (CPPU 100 PPM)	199.836	177.016	158.387	140.250	130.279	216.70	208.14	197.73	189.20	186.57
T_7 (JIVA AMRIT 20%)	191.211	168.528	152.214	139.951	132.748	221.59	215.38	208.80	197.23	191.89
T_8 (BORIC ACID 0.6% + NAA 25PPM)	204.635	202.593	205.017	207.262	205.269	228.47	241.20	245.31	246.79	248.80
T_9 (BORIC ACID 0.6% + GA3 30PPM)	186.325	175.233	168.926	163.964	158.167	207.59	207.38	199.01	197.48	195.59
T_{10} (BORIC ACID 0.6% + BA 250PPM)	203.923	183.372	167.207	152.587	145.312	227.94	220.36	206.79	198.48	193.49
T_{11}(BORIC ACID 0.6% +CPPU 100PPM)	194.827	175.823	166.814	159.242	152.357	236.95	234.86	226.31	223.84	224.12
T_{12} (BORIC ACID 0.6% + JEEVA AMRITA 20%)	191.318	184.401	180.866	179.244	175.428	222.06	231.11	228.27	228.35	225.45
S.Em±	3.03	2.90	2.00	2.69	1.93	3.27	2.72	3.14	2.81	3.08
CD or LSD	8.89	8.51	5.87	7.89	5.66	9.60	7.98	9.21	8.24	9.03

Effect of boron, plant growth regulators and Jeevaamrit on economic returns

The economics of crop cultivation on bael plants under various treatment combinations of foliar application of boron, plant growth regulators, and Jeeva amrit were calculated on the basis of input-output analysis. The results obtained on various components of crop economics are presented in Table 3 and Appendix-I.

Cost of cultivation (Rs ha^{-1}):

The cost of cultivation is divided into two categories: fixed and variable costs. The fixed cost was consistent across all treatments however, the variable cost varies due to pricing variances in the various chemicals used. The highest cost of cultivation (1,53,246 Rs/Ha in both the years) was determined using T_{12} (Boric Acid 0.6 percent + Jeevaamrit 20 percent), followed by T_{11} (Boric Acid 0.6 percent + CPPU 100 ppm), while the lowest cost of cultivation (1,19,296 Rs/Ha in both the years) was calculated with T_1 (water-spray)

Gross return

The results presented in Table 4.3revealed that different plant growth regulators, boron, and Jeeva-amrit have statistically significant effects on gross return. The gross return was assessed for several treatment combinations and found that T_8 (Boric Acid 0.6% + NAA 25ppm) had the highest gross return (Rs 656862.336ha^{-1}, 796174.1ha^{-1} in 2019-20 and 2020-21 respectively) followed by T_3 (NAA 25ppm), which was equivalent to T_{12} (Boric Acid 0.6% + Jeevaamrit 20%). In control, the minimal gross return (Rs. 148082.688ha^{-1}, Rs. 150050.7 ha^{-1} in 2019-20 and 2020-21 respectively) was recorded (T_1- Water spray). T_3, T_{12}; T_6, T_7; T_9, T_{11} were determined to be statistically at par during 2019 whereas, T_3, T_{12}, T_{11}; T_6, T_7, T_9T_{10} and T_2, T_5 were found statistically at par during year 2020-21.

Net return

Table 4.3 shows that the application of boron, plant growth return and Jeevaamrit significantly influenced the net return in the cultivation of bael. Bael trees treated with treatment T_8 (Boric Acid 0.6% + NAA 25ppm) significantly yielded the highest net return of Rs. 509676.836 ha^{-1} during the year 2019-20 and 648988.6 ha^{-1} during the year 2020-21 followed by T_3 (NAA 25ppm). In the control, the minimum net return was estimated at Rs. 28786.688ha^{-1} (T1- Water spray).

Benefit: Cost ratio (Rs ha^{-1})

Data presented in table 4.3 revealed that the benefit: cost ratio significantly influenced the application of different plant growth regulators, boron and Jeeva-amrit. The highest net return (3.71 in 2019-20 and 5.15 in 2020-21) was computed under the treatment T_3 (NAA 25ppm) which was followed by T_8 (Boric Acid 0.6% + NAA 25ppm). The minimum value (0.24 and 0.26 in 2019-20 and 2020-21) was estimated in the T_1 (water spray).

The variation in the cost of cultivation was due to different combinations and prices of inputs applied for better yield. The yield was also a major factor which cause a difference in net return per rupees invested (B: C ratio). Similar findings also reported by Meena *et al.* (2013) [11] noted a maximum benefit: cost ratio with the application of 100 ppm NAA and 0.4% ferrous sulphate in ber. Rajput *et al.* (2015) [13] also reported the maximum beneficial effect of foliar application of 0.2% boron + NAA 150 ppm guava cv. L-49. Jain *et al.* (2015) [7] in Nagpur Mandarin and Kumar *et al.* (2010) in banana

Table 3(a): Economics of different plant growth regulators treatments

Treatment	2019-20						
	Yield (q/ha)	Cost of cultivation (Rs/ha)			Gross return (Rs/ha)	Net return (Rs/ha)	Benefit cost ratio
		Fixed Cost	Variable Cost	Total Cost			
T1	46.27584	119296	0	119296	148082.688	28786.688	0.24
T2	99.23784	119296	27750	147046	317561.088	170515.088	1.16
T3	175.8744	119296	139.5	119435.5	562798.08	443362.58	3.71
T4	120.62856	119296	53.754	119349.754	386011.392	266661.638	2.23
T5	81.9	119296	775	120071	262080	142009	1.18
T6	130.27872	119296	2325	121621	416891.904	295270.904	2.43
T7	132.7482	119296	6200	125496	424794.24	299298.24	2.38
T8	205.26948	119296	27889.5	147185.5	656862.336	509676.836	3.46
T9	158.16684	119296	27803.75	147099.75	506133.888	359034.138	2.44
T10	145.31244	119296	28525	147821	464999.808	317178.808	2.15
T11	152.3574	119296	30075	149371	487543.68	338172.68	2.26
T12	175.42824	119296	33950	153246	561370.368	408124.368	2.66
S.Em±					6941.68	28786.688	0.03
CD at 5%					20356.17	12111.22	0.10

Table 3(b): Economics of different plant growth regulators treatments

Treatment	2020-21						
	Yield (q/ha)	Cost of cultivation (Rs/ha)			Gross return (Rs/ha)	Net return (Rs/ha)	Benefit: cost ratio
		Fixed cost	Variable cost	Total cost			
T1	46.89	119296	0	119296	150050.73	30755	0.26
T2	133.24	119296	27750	147046	426366.72	279321	1.90
T3	229.35	119296	139.5	119435.5	733931.28	614496	5.15
T4	164.43	119296	53.754	119349.8	526166.78	406817	3.41
T5	132.64	119296	775	120071	424434.82	304364	2.53
T6	186.57	119296	2325	121621	597033.22	475412	3.91
T7	191.89	119296	6200	125496	614055.94	488560	3.89
T8	248.80	119296	27889.5	147185.5	796174.08	648989	4.41
T9	195.59	119296	27803.75	147099.8	625876.99	478777	3.25
T10	193.49	119296	28525	147821	619167.74	471347	3.19
T11	224.12	119296	30075	149371	717170.69	567800	3.80
T12	225.45	119296	33950	153246	721453.82	568208	3.71
S.Em±					11368.57	6736.14	0.05
CD at 5%					33337.85	19753.42	0.14

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