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Biomass and economic viability of wheat-*Eucalyptus tereticornis* Sm based agroforestry system in Central India

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Abstract
The study was conducted during 2016-17 and 2017-18 at Village- Majitha, Block- Sahpura, District- Jabalpur to find out the economic viability of the Wheat- *Eucalyptus tereticornis* based Agroforestry system with different weed control treatment. The economic analysis on the basis of two year data revealed that the higher gross monetary return (153086 and 152318 Rs ha^{-1} yr^{-1}) and net monetary return (122819 and 124165 Rs ha^{-1} yr^{-1}) recorded under hand weeding over other weed control treatment and weedy check (GMR: 137882 and 133674 Rs ha^{-1} yr^{-1}; NMR: 108615 and 106521 Rs ha^{-1} yr^{-1} during 2016-17 and 2017-18, respectively). Hand weeding registered (11.56 and 14.21 %) higher net monetary return over weedy check during both the year. The maximum benefit cost ratio (4.06 and 4.41) recorded under hand weeding due to higher grain yield, Straw yield and higher biomass of tree over rest of the weed control treatment during both the year. The profitability was lowest under weedy check (3.71 and 3.92) due to lower grain yield on account of higher crop weed competition. The agroforestry system provide higher net monetary return and B:C ratio than growing of wheat alone and tree alone.

Keywords: Wheat, tree, agroforestry, net monetary return, B:C ratio

Introduction
Agroforestry systems allow greater diversity and sustainability in use of land, in comparison with conventional systems. Agroforestry systems can be defined as an integrated approach of using the benefits from combining forest products with crops and livestock, whether sequentially or simultaneously, in such way that they interact ecologically and economically (Dubois, 1996; Young, 1991) [6, 19]. In terms of community ecology, the presence of more than one species in a single expanse of land is justifiable provided the species involved occupy different niches and, or, provided interference between each other is minimal (Budowski, 1991) [2].

From an economic standpoint, combining agricultural with forest crops as opposed to using monoculture reduces investment risks. Diversifying production is a protection strategy to minimize the susceptibility of the various activities involved to technological factors, to market price fluctuations and to performance of crop outputs (Ramírez *et al*., 2001) [16]. Agroforestry gives more income to the farmers per unit of land than pure agriculture or forestry. Several studies in different part of country suggested that agroforestry is more profitable than only agriculture or forestry (Chandra, 1986 and Patel, 1988) [3, 13]. In general, yield and income from crops grown under trees were reduced than their pure cropping, but these reductions were compensated by relatively higher fuel and fodder production from trees in agrisilviculture system.

Wheat (*Triticum aestivum* L.) is widely intercropped cereal crop during *rabi* season (November - April) with Eucalyptus, Poplar, and other fast growing tree species in Northern states of India *viz.*, Uttarakhand, Punjab, Haryana, Uttar Pradesh and Bihar, parts of Central and Eastern states such as Madhya Pradesh, Chhattisgarh and West Bengal. It is a prime source of carbohydrates and protein which has served as a staple diet for mankind (Nural-lslam and Johanson, 1987) [12]. Ecologically, wheat is adapted to a variety of climates and stressed environments including salinity. However, different biotic and abiotic stresses cause reduction in grain yield to various extents depending upon their nature and intensity. In agroforestry systems, reduction in yield of wheat is generally observed under the shade of tree crown and weeds due to resource competition (Puri and Bangarwa, 1992 and Awan *et al.*, 2015) [15, 1]. Eucalyptus is the most successful fast growing, industrial agroforestry tree species in India with extremely high productivity up to 10 - 30 m^3 ha^{-1} yr^{-1}.

Intercropping with high density short rotation tree species is the best option to meet the increasing food and industrial raw material requirement through sustainable utilization of natural resources (Sarvade *et al.*, 2014) [17].

Material and Methods

The field experiment was conducted at the farmer field Village- Majitha Block-Shahpura District- Jabalpur (M.P.) during rabi season 2016-17 and 2017-18. Wheat crop was intercropped in 4 years old *Eucalyptus tereticornis* trees with distance of 3 m X 1.5 m. The experiment was laid out in Randomized Block Design with ten treatments under three replications. The treatment combinations consisted of 2, 4-D @ 0.5 lit ha^{-1}, Metribuzin @ 0.250 Kg ha^{-1}, Butachlor @ 1 lit ha^{-1}, Clodinafop-propargyl @ 0.140 kg ha^{-1}, 2, 4-D @ 0.5 lit ha^{-1} *fb* metribuzin @ 0.250 Kg ha^{-1}, 2, 4-D @ 0.5 lit ha^{-1} *fb* butachlor @ 1 lit ha^{-1}, Metribuzin @ 0.250 Kg ha^{-1} *fb* butachlor @ 1 lit ha^{-1}, 2, 4-D @ 0.5 lit ha^{-1} + hand weeding at 30 DAS, Hand Weeding at 30 DAS and Weedy check. Wheat variety LOK-1 was sown with 25 cm row spacing at a depth of 4 cm from the top of the soil by opening furrows through a Kudal. The weed control treatments and herbicides were applied as post emergent at crop tillering stage i.e. about 30 DAS.

The grain yield, straw yield obtained by the harvesting and threshing of the wheat and for the measurement of the fresh biomass of eucalyptus tree, mean dbh of 30 trees (one tree in each replication) were taken and felled at ground level. Each felled tree was partitioned into different parts *viz.*, leaf, bark, branches and woody bole without bark and fresh weight of the each part of tree is recorded immediately with the help of spring balance. The sample of all part of the tree 0.5 kg were took in laboratory and kept in oven at 65 ^{0}C for 24 hours and oven dry weight is recorded. The oven dry weight is used for determination of oven dry mass on hectare basis. The cost of cultivation for each treatment was determined on the basis of different inputs used for raising the crop under different treatments on hectare area basis.

Gross monetary return (GMR)

The value obtained from the produce gained under each treatment was computed on the basis of existing market price of the produce. Total values of the produce (Grain and straw from crop and stand biomass of tree) were taken as gross monetary return (GMR) per hectare under different treatments.

Net monetary return (NMR)

Net monetary return (NMR) per hectare under each treatment was determined by subtracting the cost of cultivation of a particular treatment from the GMR of the same treatment.

Benefit: cost ratio (B: C ratio)

To estimate the benefit obtained from different treatment for each rupee of expenditure incurred, B: C ratio of each treatment was calculated as below;

$$\text{B: C ratio} = \frac{\text{Profit (Rs ha}^{-1})}{\text{Cost of cultivation (Rs ha}^{-1})}$$

Result and discussion

Grain Yield

The weed control treatments marked influence on grain yield of wheat during both the years. During first year of experimentation, the significantly higher grain yield was found under hand weeding at 30 DAS (19.75 q ha^{-1}) which was significantly superior over weedy check (13.07 q ha^{-1}) and rest of the weed control treatments. The 33.82% yield reduction was found under weedy check treatments over hand weeding 30 DAS. During second year, significantly higher grain yield was found under hand weeding at 30 DAS (18.20 q ha^{-1}) which was significantly superior over weedy check (12.07 q ha^{-1}) and rest of the weed control treatments. The yield reduction was found 33.68% on weedy check than the hand weeding 30 DAS (Table 1).

Straw yield

During first year of experimentation, the significantly higher straw yield was found under hand weeding at 30 DAS (46.54 q ha^{-1}) which was significantly superior over weedy check (34.99 q ha^{-1}) and rest of the weed control treatments. The 24.81% straw yield reduction was found under weedy check over hand weeding 30 DAS. During second year, significantly higher straw yield was found under hand weeding at 30 DAS (39.72 q ha^{-1}) which was significantly superior over weedy check (28.67 q ha^{-1}). The yield reduction was found 11.05% on weedy check treatment than the hand weeding at 30 DAS (Table 1).

Biomass of Eucalyptus tree

During first year of experiment at the age of 4th year of eucalyptus tree the total biomass of eucalyptus tree was found range between 100.82 to 103.48 t ha^{-1} was found under wheat-*Eucalyptus tereticornis* based agroforestry system. During second year at the age of 5th year of eucalyptus tree total biomass of tree was higher as compared to first year. The total biomass production of eucalyptus tree ranged from 127.59 to 132.13 t ha^{-1} was found under wheat-*Eucalyptus tereticornis* based agroforestry system (Table 1).

Economics of wheat cultivation

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

Cost of cultivation was determined treatment wise on the basis of market price of various common and variable agro input used. The highest cost of cultivation was incurred in hand weeding (18699 Rs ha^{-1} yr^{-1}) followed by metribuzin @ 0.250 Kg ha^{-1} *fb* butachlor @ 1 lit ha^{-1} (18562 Rs ha^{-1} yr^{-1}), 2, 4-D @ 0.5 lit ha^{-1} + hand weeding at 30 DAS (18479 Rs ha^{-1} yr^{-1}) and metribuzin @ 0.250 Kg ha^{-1} (18262 Rs ha^{-1} yr^{-1}). Minimum cost of cultivation was incurred under weedy check (17699 Rs ha^{-1} yr^{-1}) during both the year (Table 2).

Gross monetary return (Rs ha^{-1} yr^{-1})

The perusal data showed that the minimum gross monetary return was found under weedy check (35228 and 32414 Rs ha^{-1} yr^{-1} during 2016-17 and 2017-18, respectively). However, it was increased with the application of weed control treatment. The significantly higher gross monetary return was found under hand weeding at 30 DAS (50711 and 47458 Rs ha^{-1} yr^{-1} during 2016-17 and 2017-18, respectively) and proved significantly superior over chlodinafop-proparzyle @ 0.140 kg ha^{-1}, 2, 4-D @ 0.5 lit ha^{-1} + hand weeding at 30 DAS, metribuzin @ 0.250 Kg ha^{-1} and 2, 4-D 0.5 lit ha^{-1}. However, metribuzin @ 0.250 Kg ha^{-1} *fb* butachlor @ 1 lit ha^{-1} and butachlor @ 1 lit ha^{-1} was found minimum gross monetary return among the weed control treatments during both the year (Table 2).

Net monetary system (Rs ha^{-1} yr^{-1})

The perusal of data showed that the lowest net monetary return was found under weedy check (17529 and 14715 Rs ha-

^{1} yr^{-1} during 2016-17 and 2017-18, respectively) followed by butachlor @1 lit ha^{-1} (18862 and 15870 Rs ha^{-1} yr^{-1} during 2016-17 and 2017-18, respectively). However, the hand weeding at 30 DAS was found to be the most economically viable as it fetched the maximum net monetary return (32012 and 28759 Rs ha^{-1} yr^{-1} during 2016-17 and 2017-18, respectively) over clodinafop-proparzyle @ 0.140 kg ha^{-1}, 2, 4-D @ 0.5 lit ha^{-1} + hand weeding at 30 DAS, metribuzin @ 0.250 kg ha^{-1} and all other weed control treatments during both the year (Table 2).

Benefit cost ratio

It refers to net monetary return under weed management practice with each rupee of investment. The data on benefit cost ratio as affected by different weed control treatment during both the year of experimentation (Table 2).

Among different weed control treatments the highest benefit cost ratio was found under hand weeding at 30 DAS (1.71 and 1.54 during 2016-17 and 2017-18, respectively) which proved significantly superior over rest of the weed control treatment and weedy check which found significantly lower benefit cost ratio (0.99 and 0.83) followed by butachlor @ 1 lit ha^{-1} (1.05 to 0.88) and metribuzin @ 0.250 Kg ha^{-1} *fb* butachlor @ 1 lit ha^{-1} (1.10 and 0.89) during both the year under wheat- *Eucalyptus tereticornis* based agroforestry system.

Economics of Eucalyptus cultivation

Cost cultivation (Rs ha^{-1} yr^{-1})

The data pertaining to cost cultivation of tree presented in Table 3. It was revealed that, average cost cultivation of tree was higher during first year than second year. The average cost cultivation was 11568 Rs ha^{-1} yr^{-1} was found during first year and 9454 Rs ha^{-1} yr^{-1} was found during second year.

Gross monetary return (Rs ha^{-1} yr^{-1})

The data pertaining from Table 3 showed that the gross monetary return from the tree was higher during second year than first year. The data showed that the gross monetary return was varied from 100025 to 102654 Rs ha^{-1} yr^{-1} during first year and 101260 to 105267 Rs ha^{-1} yr^{-1} was found during second year.

Net monetary return (Rs ha^{-1} yr^{-1})

The data pertaining from Table 3 showed that the net monetary return from the tree was higher during second year than first year. The data showed that the net monetary return was varied from 88457 to 91086 Rs ha^{-1} yr^{-1} during first year and 92206 to 95813 Rs ha^{-1} yr^{-1} was found during second year.

Benefit cost ratio

The data pertaining from Table 3 showed that the benefit cost ratio from the tree was higher during second year than first year. The data showed that there was no significant difference on benefit cost ratio from trees. The benefit cost ratio was varied from 7.65 to 7.87 during first year and 9.71 to 10.13 was found during second year.

Economics of Agroforestry system

Cost of cultivation

The determination of cost of various treatments not only gives the picture to the farmers of varying economic status to choose the weed control practices but also gives information to compare the further economic parameters. Cost did not vary due to time of application of post of emergence herbicides among different weed control treatments (Table 4). The cost was lowest under weedy check (29267 and 27153 Rs ha^{-1} yr^{-1}) and among weed control treatment hand weeding (30267 and 28153 Rs ha^{-1} yr^{-1}), Metribuzin @ 0.250 Kg ha^{-1} *fb* butachlor @ 1 lit ha^{-1} (30130 and 28016 Rs ha^{-1} yr^{-1}), 2, 4-D @ 0.5 lit ha^{-1} + hand weeding at 30 DAS (30047 and 27933 Rs ha^{-1} yr^{-1}), 2, 4-D @ 0.5 lit ha^{-1} *fb* metribuzin @ 0.250 Kg ha^{-1} (30010 and 27896 Rs ha^{-1} yr^{-1}), 2, 4-D @ 0.5 lit ha^{-1} *fb* butachlor @1 lit ha^{-1} (29747 and 27633 Rs ha^{-1} yr^{-1}), Metribuzin @ 0.250 Kg ha^{-1} (29830 and 27716 Rs ha^{-1} yr^{-1}), 2, 4-D @ 0.5 lit ha^{-1} (29447 and 27333 Rs ha^{-1} yr^{-1}) for one hectare under wheat- *Eucalyptus tereticornis* based agroforestry system

Gross and Net Monetary return

The values of GMR and NMR were minimum under weedy check plots due to minimal grain and straw yields. However, there was appreciable improvement in the values of both the economic indices when weed control in wheat was done chemically and mechanically. Gross monetary return from the produce obtained under different treatment which can be realized from the marketable produce obtained with them. The gross monetary return values are directly related to the quantity and selling rate of produce. Net monetary return is the actual gain under treatment and it is the main concern of any researcher and farmer. The economic analysis on the basis of two year data (Table 4) revealed that the higher gross monetary return (153086 and 152318 Rs ha^{-1} yr^{-1}) and net monetary return (122819 and 124165 Rs ha^{-1} yr^{-1}) recorded under hand weeding over other weed control treatment and weedy check (GMR: 137882 and 133674 Rs ha^{-1} yr^{-1}**;** NMR**:** 108615 and 106521 Rs ha^{-1} yr^{-1} during 2016-17 and 2017-18, respectively). Hand weeding registered (11.56 and 14.21 %) higher net monetary return over weedy check during both the year. The higher gross and net monetary return was due to higher grain yields and straw yield under wheat- *Eucalyptus tereticornis* based agroforestry system (Chopra and Chopra 2012, Kumar *et al.* 2013, Upsani *et al.* 2014) [5, 9, 18]. The net monetary return was higher during second year than first year because higher production from tree. The probable reason of higher return in managed agroforestry system, is that sufficient return obtained from both tree and crop component whereas in tree alone or crop alone. Several studies in different part of country suggest that agroforestry is more profitable than only agriculture or forestry (Chandra, 1986 and Patel, 1988, Islam *et al.* 2008, Nayak, 2011; Koshta *et al*., 2011) [3, 13, 7, 14, 8].

Profitability

The maximum benefit cost ratio (4.06 and 4.41) recorded under hand weeding due to higher grain yield, Straw yield and higher biomass of tree over rest of the weed control treatment during both the year. The profitability was lowest under weedy check (3.71 and 3.92) due to lower grain yield on account of higher crop weed competition (Table 4). The present results were also confirmed with the findings of Panchal (2013) [14], Nayak *et al.* (2014) [11] and Chauhan *et al.* (2015) [4].

Table 1: Grain yield, straw yield and Tree biomass of wheat as influenced by different treatments under wheat- *Eucalyptus tereticornis* based agroforestry system

Treatment		Grain Yield (q ha^{-1})		Straw Yield (q ha^{-1})		Tree biomass (t ha^{-1})	
		2016-17	2017-18	2016-17	2017-18	2016-17	2017-18
T_1	2, 4-D @ 0.5 lit ha^{-1}	16.67	15.17	39.92	31.21	101.40	131.28
T_2	Metribuzin @ 0.250 Kg ha^{-1}	17.04	15.32	40.10	31.85	102.22	132.63
T_3	Butachlor @ 1 lit ha^{-1}	13.97	12.85	35.41	28.94	100.82	128.09
T_4	Clodinafop-propargyl @ 0.140 kg ha^{-1}	17.63	16.18	41.36	34.52	100.89	128.31
T_5	2, 4-D @ 0.5 lit ha^{-1} *fb* metribuzin @ 0.250 Kg ha^{-1}	15.84	15.23	38.82	32.64	102.59	127.84
T_6	2, 4-D @ 0.5 lit ha^{-1} *fb* butachlor @ 1 lit ha^{-1}	15.27	14.17	37.67	31.95	103.36	129.46
T_7	Metribuzin @ 0.250 Kg ha^{-1} *fb* butachlor @ 1 lit ha^{-1}	15.00	13.70	36.50	27.99	102.06	132.43
T_8	2, 4-D @ 0.5 lit ha^{-1} + hand weeding at 30 DAS	17.19	16.04	40.22	30.56	102.80	131.63
T_9	Hand Weeding at 30 DAS	19.75	18.20	46.54	39.72	103.20	132.13
T_{10}	Weedy check	13.07	12.07	34.99	28.67	103.48	127.59
SEm±		0.40	0.54	0.82	1.37	1.56	1.35
CD (P=0.05)		1.17	1.57	2.39	3.99	4.56	3.95

Table 2: Effect of weed management treatments on gross and net monetary returns and benefit cost ratio in wheat under wheat- *Eucalyptus tereticornis* based agroforestry system

Treatment		Cost of cultivation (Rs ha^{-1} yr^{-1})		Gross monetary return (Rs ha^{-1} yr^{-1})		Net monetary return (Rs ha^{-1} yr^{-1})		B:C ratio	
		2016-17	2017-18	2016-17	2017-18	2016-17	2017-18	2016-17	2017-18
T_1	2, 4-D @ 0.5 lit ha^{-1}	17879	17879	43050	38804	25171	20925	1.41	1.17
T_2	Metribuzin @ 0.250 Kg ha^{-1}	18262	18262	43734	39314	25472	21052	1.39	1.15
T_3	Butachlor @ 1 lit ha^{-1}	17999	17999	36861	33869	18862	15870	1.05	0.88
T_4	Clodinafop-propargyl @ 0.140 kg ha^{-1}	18049	18049	45194	41887	27145	23838	1.50	1.32
T_5	2, 4-D @ 0.5 lit ha^{-1} *fb* metribuzin @ 0.250 Kg ha^{-1}	18442	18442	41264	39486	22822	21044	1.24	1.14
T_6	2, 4-D @ 0.5 lit ha^{-1} *fb* butachlor @ 1 lit ha^{-1}	18179	18179	39875	37358	21696	19179	1.19	1.06
T_7	Metribuzin @ 0.250 Kg ha^{-1} *fb* butachlor @ 1 lit ha^{-1}	18562	18562	38975	34973	20413	16411	1.10	0.89
T_8	2, 4-D @ 0.5 lit ha^{-1} + hand weeding at 30 DAS	18479	18479	44026	40055	25547	21576	1.38	1.17
T_9	Hand Weeding at 30 DAS	18699	18699	50711	47458	32012	28759	1.71	1.54
T_{10}	Weedy check	17699	17699	35228	32414	17529	14715	0.99	0.83
SEm±		-	-	723.19	1300.94	723.19	1300.94	0.04	0.07
CD (P=0.05)		-	-	2110.54	3796.79	2110.54	3796.79	0.11	0.21

Sale rate of wheat in 2016-17 was Rs 1625 Rs. q^{-1} and during 2017-18 was Rs 1735 Rs. q^{-1} . The sale rate of Wheat straw is 4 Rs/Kg

Table 3: Gross and net monetary returns and benefit cost ratio of eucalyptus tree under wheat- *Eucalyptus tereticornis* based agroforestry system

Treatment		Cost of cultivation (Rs ha^{-1} yr^{-1})		Gross monetary return (Rs ha^{-1} yr^{-1})		Net monetary return (Rs ha^{-1} yr^{-1})		B:C ratio	
		2016-17	2017-18	2016-17	2017-18	2016-17	2017-18	2016-17	2017-18
T_1	2, 4-D @ 0.5 lit ha^{-1}	11568	9454	100592	104193	89024	94739	7.70	10.02
T_2	Metribuzin @ 0.250 Kg ha^{-1}	11568	9454	101408	105267	89840	95813	7.77	10.13
T_3	Butachlor @ 1 lit ha^{-1}	11568	9454	100025	101660	88457	92206	7.65	9.75
T_4	Clodinafop-propargyl @ 0.140 kg ha^{-1}	11568	9454	100083	101830	88515	92376	7.65	9.77
T_5	2, 4-D @ 0.5 lit ha^{-1} *fb* metribuzin @ 0.250 Kg ha^{-1}	11568	9454	101775	101463	90207	92009	7.80	9.73
T_6	2, 4-D @ 0.5 lit ha^{-1} *fb* butachlor @ 1 lit ha^{-1}	11568	9454	102542	102740	90974	93286	7.87	9.87
T_7	Metribuzin @ 0.250 Kg ha^{-1} *fb* butachlor @ 1 lit ha^{-1}	11568	9454	101254	105100	89686	95646	7.76	10.12
T_8	2, 4-D @ 0.5 lit ha^{-1} + hand weeding at 30 DAS	11568	9454	101983	104470	90415	95016	7.82	10.05
T_9	Hand Weeding at 30 DAS	11568	9454	102375	104860	90807	95406	7.85	10.09
T_{10}	Weedy check	11568	9454	102654	101260	91086	91806	7.87	9.71
SEm±		-	-	1551	1074	1551	1074	0.13	0.11
CD (P=0.05)		-	-	4525	3135	4525	3135	0.39	0.33

Assumed sale rate of eucalyptus dried wood is Rs 5 per Kg during 2016-17 and 2017-18

Table 4: Economics of return (Rs. ha^{-1} yr^{-1}) under wheat- *Eucalyptus tereticornis* based agroforestry system from the direct selling of wood and crop products over the years

Treatment		Cost of cultivation (Rs ha^{-1} yr^{-1})		Gross monetary return (Rs ha^{-1} yr^{-1})		Net monetary return (Rs ha^{-1} yr^{-1})		B:C ratio	
		2016-17	2017-18	2016-17	2017-18	2016-17	2017-18	2016-17	2017-18
T_1	2, 4-D @ 0.5 lit ha^{-1}	29447	27333	143642	142997	114195	115664	3.88	4.23
T_2	Metribuzin @ 0.250 Kg ha^{-1}	29830	27716	145142	144581	115312	116865	3.87	4.22
T_3	Butachlor @ 1 lit ha^{-1}	29567	27453	136886	135529	107319	108076	3.63	3.94
T_4	Clodinafop-propargyl @ 0.140 kg ha^{-1}	29617	27503	145277	143717	115660	116214	3.90	4.22
T_5	2, 4-D @ 0.5 lit ha^{-1} *fb* metribuzin @ 0.250 Kg ha^{-1}	30010	27896	143039	140949	113029	113053	3.77	4.05
T_6	2, 4-D @ 0.5 lit ha^{-1} *fb* butachlor @ 1 lit ha^{-1}	29747	27633	142417	140098	112670	112465	3.79	4.07
T_7	Metribuzin @ 0.250 Kg ha^{-1} *fb* butachlor @ 1 lit ha^{-1}	30130	28016	140229	140073	110099	112057	3.65	4.00
T_8	2, 4-D @ 0.5 lit ha^{-1} + hand weeding at 30 DAS	30047	27933	146009	144525	115962	116592	3.86	4.17

T_9	Hand Weeding at 30 DAS	30267	28153	153086	152318	122819	124165	4.06	4.41
T_{10}	Weedy check	29267	27153	137882	133674	108615	106521	3.71	3.92
SEm±		-	-	1806.00	1566.50	1806.00	1566.51	0.06	0.06
Treatment (T) CD (P=0.05)		-	-	5270.54	4571.84	5270.54	4571.85	0.18	0.16

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