

File No. J-11018/1/4/2015-RE-IV  
Government of India  
Ministry/Deptt. of Rural Development  
(MGNREGA Division)

Krishi Bhawan, New Delhi,  
Dated:- 16<sup>th</sup> Sept. ,2016

To,

All Principal Secretary/Commissioner  
Department of Rural Development/Panchayati Raj  
All States/UTs

**Subject:- Significance of spacing between plants.**

Sir/Madam

As per Schedule I, of Mahatma Gandhi National Rural Guarantee Act, Para 4 (1), I. (v) "Afforestation, tree plantation and horticulture in common and forest lands, road margins, canal bunds, tank foreshores and coastal belts duly providing right to usufruct to the households covered in paragraph 5", and as per para 4 (1), II. (ii) Improving livelihoods through horticulture, sericulture, plantation, and farm forestry; are the permissible activity pertaining to plantation works under MGNREGA.

Trees are the assets which lasts for a long time. It was observed in many States that while conducting plantation works proper spacing was not maintained as per the objective of the plantation. Basically Spacing depends on the purpose with which the plantation is carried out or say on the objective of management, when one has to decide to go for the production of fuelwood, fodder, timber, or fruit production in a given area. Therefore spacing criteria as a guidance, for few plant species is provided in Annexure-1 and request to procure the spacing criteria for additional species planned in your State/UT from the concerned technical Department which are not included in the provided list.

Please do circulate the compiled information to the field functionaries at the earliest so as to conduct the plantation works under MGNREGA systematically.

Yours Faithfully

  
(Dr. Suparna S Pachouri)  
Director (MGNREGA)

## Annexure-1

### Significance of Spacing between plants –

The spacing criteria for few tree species while conducting Block Plantation under MGNREGA is provided in Table 1 and 2. The required spacing needs to be selected as per the objective of management for each plant specie.

**Table - 1 - Suggested spacing criteria for important Timber/Fuelwood/Fodder yielding tree species**

S.No	Plant	Plant spacing (m)	No. of plants per ha.
1	Teak ( <i>Tectona grandis</i> )	2.0 x 2.0	2500
		3.0 x 3.0	1111
		4.0 x 4.0	625
		5.0 x 5.0	400
		6.0 x 6.0	277
		7.0 x 7.0	204
		8.0 x 8.0	156
		9.0 x 9.0	123
		10.0 x 10.0	100
2	Sissoo ( <i>Dalbergia sissoo</i> )	2.5 x 2.5	1600
		3.0 x 3.0	1111
3	Indian Rosewood ( <i>Dalbergia latifolia</i> )	9.0 x 9.0	123
4	Neem ( <i>Azadirachta indica</i> )	8.0 x 8.0	156
		9.0 x 9.0	123
		10.0 x 10.0	100
5	Eucalyptus ( <i>Eucalyptus spp.</i> )	2.0 x 2.0	2500
		3.0 x 2.0	1666
		4.0 x 2.0	1250
		5.0 x 2.0	1000
6	Subabul ( <i>Leucaena leucocephala</i> )	2.0 x 2.0	2500
7	Casuarina ( <i>Casuarina equisetifolia</i> )	2.0 x 2.0	2500
8	Khejri ( <i>Prosopis cineraria</i> )	5.0 x 5.0	400
9	Babul ( <i>Acacia arabica</i> )	3.0 x 3.0	1111
		4.0 x 4.0	625
10	Bamboo ( <i>Dendrocalamus spp</i> )	3.0 x 3.0	1111
		4.0 x 4.0	625
		5.0 x 5.0	400
11	Mahua ( <i>Madhuca indica</i> )	8.0 x 8.0	156
12	Jamun ( <i>Syzygium cumini</i> )	10.0 x 10.0	100
13	Karanj ( <i>Pongamia pinnata</i> )	2.0 x 3.0	1666
		3.0 x 3.0	1111

14	Gulmohar ( <i>Delonix regia</i> )	5.0 x 5.0	400
14	Arjun ( <i>Terminalia arjuna</i> )	6.0 x 6.0	277
14	Mahogany ( <i>Sweitenia mahogany</i> )	3.0 x 3.0	1111
17	Khamar, Ghamar ( <i>Gmelina arborea</i> )	2.0 x 2.0	2500
		3.0 x 3.0	1111
		5.0 x 5.0	400
18	Chinaberry, Bakain, ( <i>Melia Azedarach</i> )	4.0 x 3.0	833
19	Malabar Neemwood, Mahanim, ( <i>Melia dubia</i> )	5.0 x 5.0	400
		8.0 x 8.0	156
20	Maharukh ( <i>Ailanthus excelsa</i> )	3.0 x 3.0	1111
		5.0 x 5.0	400
21	Siris ( <i>Albizia lebbek</i> , <i>A. procera</i> )	3.0 x 3.0	1111
22	Poplar ( <i>Populus spp.</i> )	2.0 x 2.0	2500
		3.0 x 3.0	1111
		4.0 x 4.0	625
		5.0 x 4.0	500
23	Tamarind ( <i>Tamarindus indica</i> )	8.0 x 8.0	156
		9.0 x 9.0	123
		10.0 x 10.0	100
		11.0 x 11.0	82
		12.0 x 12.0	69
		13.0 x 13.0	59
		14.0 x 14.0	51
		15.0 x 15.0	44
24	Drum stick ( <i>Moringa oleifera</i> )	3.0 x 3.0	1111
25	Mulberry ( <i>Morus alba</i> )	6.0 x 6.0	277
	Mulberry for Sericulture	1.0 x 1.0	10000
	Mulberry for Sericulture	2.0 x 1.0	5000
26	Sandal ( <i>Santalum album</i> )	4.0 x 4.0	625
		5.0 x 5.0	400
27	Rubber ( <i>Hevea brasiliensis</i> )		
	Budded Plants for hilly region	6.7 x 3.4	445
	Budded Plants for Plains	4.9 x 4.9	420
	Seedlings for hilly regions	6.1 x 3.0	539
	Seedlings for Plains	4.6 x 4.6	479
28	Coconut ( <i>Cocos nucifera</i> )	7.5 x 7.5	177
29	Cashew ( <i>Anacardium occidentale</i> )	7.0 x 7.0	204
	Cashew - High density planting	5.0 x 4.0	500
30	Baheda ( <i>Terminalia bellerica</i> )	3.0 x 3.0	1111
31	Harra ( <i>Terminalia chebula</i> )	9.0 x 9.0	123
		10.0 x 10.0	100

**Table – 2 -** The spacing criteria for some of the fruit yielding tree species as suggested in the operational guidelines of Mission for Integrated Development of Horticulture, 2014.

S.No	Plant	Plant spacing (m)	No. of plants per ha.	
1	Almond	4.0 x 4.0	625	
		3.0 x 3.0	1111	
2	Aonla	6.0 x 6.0	277	
		4.0 x 5.0	500	
		3.0 x 3.0	1111	
3	Apple	6.0 x 6.0	277	
	(RS –MM 111)	4.0 x 4.0	625	
	(RS –MM 111)	3.5 x 3.5	816	
	(RS-MM 111)	3.0 x 3.0	1111	
	(RS-M9)	3.0 x 1.5	2222	
	(RS-MM-106)	2.5 x 2.5	1600	
	(RS-M9)	1.5 x 1.5	4444	
4	Apricot	4.0 x 4.0	625	
		3.5 x 3.5	816	
5	Ber	6.0 x 6.0	277	
		5.0 x 5.0	400	
		4.0 x 4.0	625	
6	Cherry	4.0 x 4.0	625	
7	Citrus	(a) Lime & Lemons	3.0 x 3.0	1111
			4.0 x 4.5	555
	(b) Mandarin/Orange	6.0 x 6.0	277	
		5.0 x 5.0	400	
		5.4 x 5.4	342	
		5.0 x 4.5	444	
		4.5 x 4.5	493	
		4.0 x 5.0	500	
	(c) Sweet Orange	6.0 x 6.0	277	
	8	Custard apple	2.5 x 2.5	1600
9	Fig	4.0 x 4.0	625	
		2.5 x 2.5	1600	
10	Guava	6.0 x 6.0	277	
		3.0 x 6.0	555	
		3.0 x 3.0	1111	
		1.5 x 3.0	2222	
		1.0 x 2.0	5000	
11	Kiwi	6.0 x 6.0	277	
		4.0 x 6.0	416	
		4.0 x 5.0	500	
		4.0 x 4.0	625	

12	Litchi	10.0 x 10.0	100
		7.5 x 7.5	177
		6.0 x 6.0	277
13	Mango	10.0 x 10.0	100
		5.0 x 5.0	400
		4.0 x 6.0	416
		3.0 x 6.0	555
		3.0 x 4.0	833
		2.5 x 2.5	1600
14	Peach	3.0 x 2.5	1333
		2.5 x 2.5	1600
15	Pear	5.0 x 5.0	500
		4.0 x 4.0	625
		3.0 x 3.0	1111
16	Plum	3.5 x 3.5	816
		2.5 x 2.5	1600
17	Pomegranate	5.0 x 5.0	400
		5.0 x 4.0	500
		5.0 x 3.0	666
		5.0 x 2.5	800
		4.5 x 3.0	740
		4.0 x 3.0	833
18	Sapota	5.0 x 5.0	400
19	Walnut	6.0 x 6.0	277
		5.0 x 5.0	400

While conducting Roadside Tree Plantation under MGNREGA, as per the technical specification provided by Indian Roads Congress in the publication IRC: SP: 103-2014, for Rural Roads, and IRC: SP: 21-2009 for Highways, for the sake of better road safety, the first and second row of plants should be planted with small to medium sized trees and the third row with tall and shade bearing trees. The distance for the first row of trees should be 0.5 m away from the toe of the embankment. The spacing between plant to plant for first and second row should be 4 to 6 m. and from row to row should be minimum 3 m. The number of planted rows depends on the availability of land in the Right-of-Way. If enough space is not available then can go for first row (small and medium trees) and last row (with tall and shade bearing trees). But in rural roads generally much space is not available and when space is only available for one row, then can take either small or medium sized trees or a mix of small, medium and tall trees. At this time the spacing needs to be carefully managed as the tall and shade bearing trees require much spacing and small and medium sized trees require less spacing so when a uniform spacing between 4 to 6 m spacing is maintained then between two tall trees either one or two small or medium sized tree needs to be accommodated.