

Result of Sample Tree Enumeration of Jalgaon Forest Division

Jalgaon forest division is one of the forest divisions of Dhule circle. The forest areas are spread over in twelve talukas of Jalgaon District. The divisional headquarter is at Jalgaon. The Forests area are situated between 20⁰ -15'-34" to 21⁰ -24'-55" North latitude and 74⁰ -45'-54" to 76⁰ -20'-49" East longitude. The boundaries of the division are as follows.

North - Tapi River & Division boundary of Yawal Forest Division.

South - District boundary of Aurangabad and Jalna district.

West - District boundary of Dhule and Nashik district.

East - State boundary of Madhya Pradesh and district boundary of Buldhana district

Forest Area:- In view of Management & Legal Status, as per Annual Administration Report, the details of forest area of Jalgaon Division as on dated 31/3/2018 are as follows.

Table No-1
Classification of Forest area according to Management & Legal status

(Area in Sq. km.)					
Sr. No.	Controlling Agency	Reserved forest	Protected forest	Un-classed forest	Total Forest
1.	Area in charge of Forest Department	806.34	0	32.87	839.21
2.	Area in charge of F.D.C.M.	0	0	0	0
3.	Private Forest brought under possession of Forest Department	0	0	0	0
Total		806.34	0	32.87	839.21
% to total forest area		96.08	0	3.92	100

Jalgaon Forest Division consist of 8 Ranges. The Range wise Forest area under Scientific Management as recorded in Working Plan (2008-09 to 2017-18) by Shri T.S.K. Reddy, IFS Conservator of Forests Working Plan division Dhule is as under.

Table No.2

Sr. No	Names of Ranges	Total Forest area in (ha)
1.	Vadoda	14248.05
2.	Muktainagar	13973.00
3.	Jamner	14565.23
4.	Jalgaon	8949.05
5	Erandol	6826.01
6	Parola	8802.45
7	Pachora	6908.31
8	Chalisingaon	12642.03
Total		86914.13

Now Conservator of Forest, Working Plan Dhule has proposed following working circle wise forest area, for sample tree enumeration.

Table No.3

Working Circle wise Area proposed for tree enumeration

Sr. No.	Name of working circle	Population area in ha
1	Afforestation W. C.	12300.35
2	Improvement W.C.	44202.43
3	Anjan W.C.	7366.49
4	Babul W.C.	1209.93
5	Fodder W.C.	12995.34
6	Protection W.C.	8839.86
	Total	86914.40

Sampling plan of Tree Enumeration

Actually the tree enumeration work was done by Territorial staff of Jalgaon Division. during January-2019 to March-2019. The entire forest division's area was considered for sampling enumeration plan. The trees are enumerated in girth classes started from 31-45 cms to Above 150 cms. The girth is measured at breast height (g.b.h.).

The statistical sampling method namely "Systematic Line Plot Sampling with Random Start" was used for tree enumeration. The plot size is of 25"x25" (25 seconds x 25 seconds) i.e. 56.25 ha. In each plot of size 56.25 ha., 0.1 ha. plot was enumerated. The complete enumeration of trees, Natural regeneration, Grass and Medicinal plant species were carried out in these plots. Similarly qualitative measurements were also carried out.

On scrutiny of data and preparation of results i.e. (1) Stock per hectare was calculated and the result are being reported in the form of following statements.

Statement I : Estimated growing stock- No. of Sound trees in population area.

Statement II : Estimated growing stock- No. of Sound trees per ha.

Statement III : Percentage distribution of total stock of species over all girth classes.

Statement IV : Percentage of stock of species in a girth class to the total stock in that particular girth class.

Statement V : Estimated growing stock - volume in cum./ha.

Some noteworthy result on current enumeration is described in following Table No. 4(a)

Table No. 4 (a)

Statement showing estimated No. of trees per ha. in Previous (Aril 2002 to March 2003) and Current (Jan 2019 to Mar. 2019) tree enumeration

Sr. No	Name of Working Circle	Past enumeration (Nov. 2003 to Feb. 2004) No. of trees per ha.	Sr. No.	Name of Working Circle	Current enumeration (Jan. 2019 to March.2019) No. of trees per ha.
1	Soil & Moisture Conservation W. C.	107.98	1	Afforestation W. C.	43.73
2	Improvement W.C.	238.47	2	Improvement W.C.	90.66
3	Protection W.C	84.08	3	Anjan W.C.	67.59
4	Kuran W.C.	126.89	4	Babul W.C.	55.12
			5	Fodder W.C.	78.35
			6	Protection W.C.	78.18
Weighted Average		130.04	Weighted Average		78.46

It is observed that the total estimated number of trees per hectare in current enumeration (Jan-2019 to March-2019) is decreased as compared to previous (April-2002 to March-2003) tree enumeration.

Table 4 (b)**Estimated percentage distribution of trees in 15U30 ,31 U 45 and remaining girth class to overall girth class**

Sr.No.	Working Circle	Girth class-wise estimated percentage of number of trees			
		15 U 30	31U45	Remaining Girth Classes	Total estimated No. of trees
1	Afforestation W. C.	0	64.33	35.67	100
2	Improvement W.C.	0	51.54	48.46	100
3	Anjan W.C.	0	32.53	67.47	100
4	Babul W.C.	0	61.42	38.58	100
5	Fodder W.C.	0	58.78	41.22	100
6	Protection W.C.	0	29.07	70.93	100
Weighted Average		0	50.67	49.33	100

Working circle wise estimated, number of sound trees per hectare are as follows.

Table No.5**Working Circlewise No. of sound trees per ha**

Sr. No.	Name of Working Circle	Total	General utility species	Special utility species	Minor forest produce species	Other species
1	2	3	4	5	6	7
1	Afforestation.W.C	43.73	1.72	19.00	17.46	5.55
	% of stock to total stock	100	3.94	43.44	39.93	12.69
2	Improvement W.C.	90.66	23.04	35.14	23.12	9.36
	% of stock to total stock	100	25.42	38.76	25.50	10.32
3	Anjan W.C	67.59	8.44	19.57	10.50	29.08
	% of stock to total stock	100	12.49	28.96	15.53	43.02
4	Babul W.C	55.22	0	23.48	2.61	29.13
	% of stock to total stock	100	0	42.52	4.72	52.76
5	Fodder W.C.	78.35	12.35	25.77	30.72	9.51
	% of stock to total stock	100	15.77	32.89	39.21	12.13
6	Protection W.C.	78.18	12.80	31.51	6.14	27.73
	% of stock to total stock	100	16.37	40.31	7.85	35.47
Total weighted average		78.49	16.17	29.39	21.98	10.95
% of stock to total stock		100	20.60	37.44	28.01	13.95

Table No.5A
Working Circlewise Volume in cum. per ha

Sr. No.	Name of Working Circle	Total	General utility species	Special utility species	Minor forest produce species	Other species
1	2	3	4	5	6	7
1	Afforestation.W.C	47.12	0.15	1.44	1.91	43.62
	% of stock to total stock	100	0.33	3.05	4.05	92.57
2	Improvement W.C.	11.81	2.89	4.91	2.68	1.33
	% of stock to total stock	100	24.49	41.55	22.69	11.27
3	Anjan W.C.	18.40	0.85	4.91	1.54	11.10
	% of stock to total stock	100	4.62	26.68	8.38	60.32
4	Babul W.C	7.33	0	2.22	0.09	5.02
	% of stock to total stock	100	0	30.35	1.24	68.41
5	Fodder W.C	8.52	1.24	3.43	2.86	0.99
	% of stock to total stock	100	14.56	40.26	33.57	11.61
6	Protection W.C.	85.76	1.71	7.86	0.81	75.38
	% of stock to total stock	100	2.00	9.17	0.94	87.89
Total weighted average		24.32	1.92	4.46	2.27	15.67
% of stock to total stock		100	7.91	18.32	9.35	64.42

Highlights from the results of tree enumeration as given in table No.5, are summarised below:

1) Afforestation Working Circle:-

Catagorywise percentage of Species to total growing stock in this working circle is as given below

Sr. No.	Category of Species	Name of Species	% to total growing stock
1	A:-Species of General Utility	Ain	0.33
2	B:-Species of Special Utility	Dhawada, Hiwar, Khair, Moin, Salai.	3.05
3	C:-Species of Minor Forest Produce	Palas, Behada, Bor, Neem, Tendu	4.05
4	D:-Other Species	Babhul,Lokhandi,Medsing, Pimpal, Sisoo, etc.	92.57

2) Improvement Working Circle:-

Catagorywise percentage of Species to total growing stock in this working circle is as given below

Sr. No.	Category of Species	Name of Species	% to total growing stock
1	A:- Species of General Utility	Ain, Bondara, Shisam, Teak.	24.49
2	B:-Species of Special Utility	Dhawada, Hiwar, Khair, Moin, Salai.	41.55
3	C:-Species of Minor Forest Produce.	Jambhul, Moha,Palas, Apta, Behada, Bel, Bor, Neem, Tendu.	22.69
4	D:-Other Species	Bhokar, Karanj, Babhul, Bahawa, Hinganbet, Kadamb, Kashid, Lokhandi, Medsing, Pimpal, Sisoo, etc.	11.27

3) Protection Working Circle:-

Catagorywise percentage of Species to total growing stock in this working circle is as given below

Sr. No.	Category of Species	Name of Species	% to total growing stock
1	A:-Species of General Utility	Ain, Bondara, Shisam, Teak.	2.00
2	B:-Species of Special Utility	Dhawada, Hiwar, Khair, Kudai, Moin, Salai.	9.17
3	C:-Species of Minor Forest Produce	Palas, Apta, Awala, Behada, Bel, Bor, Chandan, Chinch, Hirda, Neem, Tendu.	0.94
4	D:-Other Species	Babhul,Bahawa,Dudhi, Hinganbet, Lokhandi, etc.	87.89

4) Babul Working Circle:-

Catagorywise percentage of Species to total growing stock in this working circle is as given below

Sr. No.	Category of Species	Name of Species	% to total growing stock
1	A:- Species of General Utility	----	0
2	B:-Species of Special Utility	Dhawada, Hiwar, Khair.	30.35
3	C:-Species of Minor Forest Produce	Apta, Bor, Neem.	1.24
4	D:-Other Species	Babhul, Hinganbet, etc.	68.41

5) Anjan Working Circle:-

Catagorywise percentage of Species to total growing stock in this working circle is as given below

Sr. No	Category of Species	Name of Species	% to total growing stock
1	A:-Species of General Utility	Ain, Bondara, Teak.	4.62
2	B:-Species of Special Utility	Dhawada, Kalamb, Hiwar, Khair, Moin, Salai	26.68
3	C:-Species of Minor Forest Produce	Moha, Palas, Apta, Awala, Behada, Bor, Chandan, Chinch, Neem, Sitafal, Tendu.	8.38
4	D:-Other Species	Babhul, Bahawa, Dudhi, Hinganbet, Lokhandi, etc.	60.32

6) Fodder Working Circle:-

Catagorywise percentage of Species to total growing stock in this working circle is as given below

Sr. No	Category of Species	Name of Species	% to total growing stock
1	A:-Species of General Utility	Ain, Bondara, Teak.	14.56
2	B:-Species of Special Utility	Dhawada, Kalamb, Arjun, Hiwar, Khair, Moin , Salai.	40.26
3	C:-Species of Minor Forest Produce	Palas, Apta, Behada, Bor, Neem, Neelgiri, Shiras, Tendu.	33.57
4	D:-Other Species	Babhul, Bahawa, Lokhandi, Medsing, etc.	11.61

Table No.6

Availability of Teak in Previous (Nov. 2003 to Feb.2004) Enumeration in (No. of sound trees per ha.)

Sr. No	Name Working Circle	Total growing Stock	Teak/Ha	% of stock of trees to the total stock
1	2	3	4	5
1	Soil & Moisture Conservation W. C.	107.98	0.19	0.18
2	Improvement W.C.	238.47	84.98	35.64
3	Protection W.C.	84.08	11.26	13.39
4	Kuran W.C.	126.89	16.39	12.92
	Weighted Average	130.05	3.63	2.79

Table No.6 (A)
Availability of Teak in Current (January,2019 to March,2019) enumeration.
(No. of sound trees per ha.)

Sr. No	Name Working Circle	Total growing Stock	Teak/Ha	% of stock of Teak trees to the total stock
1	2	3	4	5
1	Afforestation W. C.	43.73	0	0
2	Improvement W.C.	90.66	20.44	22.55
3	Anjan W.C.	67.59	7.59	11.23
4	Babul W.C.	55.21	0	0
5	Fodder W.C.	78.35	7.60	9.70
6	Protection W.C.	78.18	10.53	13.47
Total (Weighted Average)		78.49	13.55	17.27

Statistical Analysis: -

The Statistical personnel of the office of the Chief Forest Statistician, Maharashtra State, Nagpur has carried out the statistical analysis of the data. The percentage standard error is calculated for each Working Circle is given in the following table No. 7

Table No.7
Working circlewise standard error

Sr. No.	Name of working circle	Population area in ha	Sample area in ha	Intensity of sampling %	% Standard Error
1	Afforestation W. C.	44202.43	20.90	0.17	14.69
2	Improvement W.C.	44202.43	79.00	0.18	4.76
3	Protection W.C.	8839.86	13.20	0.15	7.99
4	Babul W.C.	1209.93	2.30	0.19	14.02
5	Anjan W.C.	7366.49	14.10	0.19	8.98
6	Fodder W.C.	12995.34	20.80	0.16	9.77
	Total	118816.48	150.30	0.13	--

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