

Result of Sample Tree Enumeration of Beed Division

Beed forest division is the one of the forest divisions of Aurangabad circle. The Forest extends over Beed civil district. The headquarter is at Beed. The entire forest area of Beed division lies between 18⁰30' to 19⁰30' North latitude and 74⁰50' to 76⁰60' east longitude. The track is bounded as follows :-

North :- Aurangabad and Parbhani Districts .

East :- Parbhani and Osmanabad District.

South :- Osmanabad District.

West :- Ahmadnagar District

Configuration of the Ground:- Beed district can be divided into three broad physiographic divisions viz. The low lying northern division forming a part of the Godavari valley which may be described as lowland Beed, the higher part in the south forming part of the Balaghat plateau which may be described as the highland Beed and a third low lying undulating area south west and west of the highland Beed comprising almost the whole of the Ashti tahsil lying mostly in the river Sina basin.

Geology, Rock and Soil:- The district is underlain by the deccan trap of Cretaceous-Eocene age. The trap rocks belong to the type called 'Plateu Basalt' and are uniformed in composition corresponding that of dolerite or basalt with average specific gravity of 2.9. They are dark or dark greenish gray in colour.

Climate:- The entire tract situated in the tropics and has a hot and dry climate. The maximum temperature in May is about 40.7⁰ Celsius and the minimum temperature is about 10⁰ Celsius in December.

Forest Area:- According to Management & Legal Status, as per Annual Administration Report the following are the forest area figure as on dated 31/3/2013.

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
1.	Area in charge of Forest Department	179.37	31.12	19.27	229.76
2.	Area in charge of F.D.C.M.	---	---	---	---
3.	Private Forest brought under possession of Forest Department	---	---	---	---
4.	Area in charge of Revenue department	---	---	---	---
Total		179.37	31.12	19.27	229.76
% to total forest area		78.07	13.54	8.39	100

The Beed forest division consist of **five ranges** namely 1) Beed 2) Dharur 3) Ashti 4) Patoda 5) Parali.

The area under Scientific Management as recorded in Working Plan (2005-06 to 2014-15) by Shri S.K. Pathak, Dy. Conservator of Forests, Working Plan Division, Aurangabad is as under.

Table No.2

Sr. No	Name of Ranges	Total area in (ha)
1.	Ashti, Beed, Parli	21441.852

Now Conservator of Forest, Working Plan Aurangabad, has proposed following working circlewise 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 Working Circle	11352.068
2	New Working Circle	4068.852

3	Kuran Working Circle	7554.293
	Total	22975.213

Sampling plan of Tree Enumeration

Actually the tree enumeration work was done by Dy. Conservator of Forests, Beed Division in 2013-14. The entire forest division's area was considered for sampling enumeration plan. The trees are enumerated in girth classes started from 15-30 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 60 meters x 60 meters, was found to be suitable with the least standard error. The complete enumeration of trees, Natural regeneration, Grass and Medicinal 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.

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. for Previous (Dec 2003)
and Current tree enumeration (2013-14)

Sr. No	Name of Working Circle	Past enumeration (Dec 2003) No. of trees per ha.	Sr. No.	Name of Working Circle	Current enumeration (2013-14) No. of trees per ha.
1	Afforestation Working Circle	267.444	1	Afforestation Working Circle	110.867
2	Beed Range	295.002	2	New Working Circle	123.888
3	Kuran Working Circle	201.677	3	Kuran Working Circle	95.106
4	Dharur Range	56.819			
5	Ashti Range	440.925			
Weighted Average		277.883	Weighted Average		107.991

It is observed that the total estimated number of trees per hectare in current enumeration (2013-14) is 107.991. It comes to know that the No. of trees decreases as compared to the previous enumeration (Dec. 2003) i.e 277.883/ha.

Table 4 (b)

Estimated percentage of trees in 15 U 30 and 31 U 45 girth class.

Working Circle	Girth class-wise estimated percentage of number of trees (%)			
	15U30	31U45	Remaining Girth Classes	Total estimated No. of trees
Afforestation Working Circle	76.656	17.263	6.081	100
New Working Circle	88.281	7.363	4.356	100
Kuran Working Circle	84.099	12.755	3.146	100
Weighted Average	81.161	14.026	4.813	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 Working Circle	110.867	1.318	25.313	23.301	60.935
	% of stock to total stock	100.00	1.19	22.83	21.02	54.96
2	New Working Circle	123.888	1.254	19.767	27.563	75.304
	% of stock to total stock	100.00	1.01	15.96	22.25	60.78
3	Kuran Working Circle	95.106	0.266	9.619	21.892	63.329
	% of stock to total stock	100.00	0.28	10.11	23.02	66.59
Total weighted average		107.991	0.961	19.17	23.593	64.267
% of stock to total stock		100.00	0.89	17.75	21.85	59.51

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 Working Circle	11.958	0.218	2.439	2.335	6.966
	% of stock to total stock	100.00	1.820	20.400	19.530	58.250
2	New Working Circle	13.146	0.100	1.931	2.922	8.193
	% of stock to total stock	100.00	0.760	14.690	22.230	62.320
3	Kuran Working Circle	10.164	0.022	0.929	2.337	6.876
	% of stock to total stock	100.00	0.220	9.140	22.990	67.650
Total weighted average		11.579	0.133	1.853	2.44	7.154
% of stock to total stock		100.00	1.15	16.00	21.07	61.78

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	Lendia and Teak	1.189
2	B:-Species of Special Utility	Arjun, Dhawada, Hiwar, Khair, Moin, Salai	22.833
3	C:-Species of Minor Forest Produce	Apta, Behada, Bel, Biba, Bor, Chandan, Charoli, Chinch, Jambhul, Moha, Neem, Palas Shiras, Shitafal and Tendu.	21.016
4	D:-Other Species	Babul, Bhokar, Dudhi, Karanj Kashid, Koshimb,Pimpal, Subabhul sisoo, etc.	54.962

2) New 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	Lendia, Teak	1.013
2	B:-Species of Special Utility	Dhawada, Hiwar, Khair, Salai, Shiwan.	15.956
3	C:-Species of Minor Forest Produce	Apta, Biba, Bor, Chandan, Jambhul, Moha, Neem, Nilgiri, Palas, Sitafal and Tendu.	22.249
4	D:-Other Species	Babhul, Kashid, Lokhandi, Medsing, Sisoo, Subabhul etc.	60.784

3) Kuran 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	Bondara, Lendia,	0.279
2	B:-Species of Special Utility	Arjun, Dhawada, Hiwar, Khair, Salai, Shiwan	10.114
3	C:-Species of Minor Forest Produce	Apta, Biba, Bor, Chandan, Chinch, Moha, Neem, Nilgiri, Palas, Shiras, Sitafal and Tendu	23.019
4	D:-Other Species	Babhul, Bahawa, Bhokar, Lokhandi Pimpal, Sisoo, Subabhul etc.	66.589

Table No.6

Availability of Teak in Previous (Dec. 2003) Enumeration

Sr. No	Name Working Circle	Total growing Stock	Teak/Ha	% of stock of trees to the total stock
1	2	3	4	5
1	Afforestation W.C.	267.444	0.169	0.063

2	Kuran W.C.	201.667	0	0
3	Ashti Range	440.925	0	0
4	Dharur Range	56.819	0	0
5	Beed Range	295.002	1.071	0.363
	Weighted Average	277.883	0.381	0.137

Table No.6(A)

Availability of Teak in Current (2013-14) enumeration.

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 Working Circle	110.867	0.186	0.167
2	New Working Circle	123.888	0.018	0.014
3	Kuran Working Circle	95.106	0	0
	Total (Weighted Average)	107.991	0.100	0.093

Estimated growing stock of Medicinal plant, Natural regeneration and grass per Ha.

Table No. 7

A) Medicinal plant, per ha (Sample plot size 5 Mtr.X 5 Mtr.)

Sr. No.	Working Circle	Population area (Ha.)	No. of sample plots	Sample area (Ha.)	No. of Medicinal Plants in sample area	No. of Medicinal Plants per Ha.
1	2	3	4	5	6	7
1	A.W.C.	11352.068	373	0.9325	1254	1345
2	New W.C.	4068.852	155	0.3875	4	10
3	Kuran W.C.	7554.293	262	0.6550	4	6
	Total	22975.213	790	1.975	1262	639

Working Circle wise name of species of Medicinal Plants found in sample plot are as follows.

Sr. No.	Working Circle	Name of species of Medicinal Plants
1	2	3

1	A.W.C.	Afumahi,Aratti,Bartondi,Chillahari,Dasmul,Dhawada,Ghaneri, Glyricidia,Gultura,Gulwel,Gunjwel,Henkal,Hiwar,Jakhamjuddi, Jatropha,Karwand,Kawalimuli,Kharmata,Marwel,Neem, Pivalwel,Rantulas,Sambar,Shinduli,Tambatwel,Tantani,Tarota, Tendu,Unhali,Wasanwel,Weltur.
2	New W.C.	Bahala,Ghaneri,Henkal,Kawlamuli,Sitafal,Tantani,Tarota, Unhali,Wasanwel
3	Kuran W.C.	Aratti, Ghaneri,Henkal,Jakhamjudi,Jetrafa,Nirgudi,Pandharfal, Ratota, Tantani,Tarota, Unhali,Wasanwel

B) Natural Regeneration plant, per ha (Sample plot size 5 Mtr. X 5 Mtr.)

Sr. No.	Working Circle	Population area (Ha.)	No. of sample plots	Sample area (Ha.)	No. of Regenerated Plants in sample area	No. of Regenerated Plants per Ha.
1	2	3	4	5	6	7
1	A.W.C.	11352.068	373	0.9325	1313	1408
2	New W.C.	4068.852	155	0.3875	205	529
3	Kuran W.C.	7554.293	262	0.6550	281	429
	Total	22975.213	790	1.975	1799	911

Working Circle wise name of species of Natural regeneration found in sample plot are as follows.

Sr. No.	Working Circle	Name of species of Natural Regeneration
1	2	3
1	A.W.C.	Amoni,Apta,Bartondi, Bhutekas,Bor, Chichora,Dhawada,Getuli,Ghaneri,Githuli,Glyricidia,Henkal Hiwar, Jatropha,Kamoni,Karanj,Karbet,Karwand,Kashid, Kawaliwel, Kawand, Khair, Kharsate, Lendi, Lokhandi, Medshingi, Neem,Palas, Pandafali, Pitawani, Pushpgiri, Rohita, Sabar, Salai, Siras, Sissoo, Sitafal, Subabhul, Tambat, Tantani, Tarota, Teak, Teltibat, Tendu
2	New W.C.	Pandharphal, Sitafal
3	KuranW.C.	Babhul,Bor, Dhawada, Glyricidia, gultura, Henkel, Hiwar, Jatropha, Kar, Karbet, Khair, Lokhandi, Neem, Palas, Pandharfal, Sitafal,Tarota,Tendu

C) Grass Species, per ha (Sample plot size 1 Mtr.X 1 Mtr.)

Sr. No.	Working Circle	Population area (Ha.)	No. of sample plots	Sample area (Ha.)	No. of Grass roots in sample area	No. of Grass roots per Ha.
1	2	3	4	5	6	7
1	A.W.C.	11352.068	373	0.0373	96322	2582359
2	New W.C.	4068.852	155	0.0155	39049	2519290
3	Kuran W .C.	7554.293	262	0.0262	56296	2148702
	Total	22975.213	790	0.0790	191667	2426165

Working Circle wise name of species of Grass found in sample plot are as follows.

Sr. No.	Working Circle	Name of Grass Species
1	2	3
1	A.W.C.	Chikad,Chimukkate,C hirkad,Dhasdi,Gajargawat, Godhadi, Haral, Hematta, Jakhamjudi, Kalikusali, Karkudi, Kunda , Kurmadi, Kusali,Marwel, Mothikusali, Pandharikusali, Pawana, Ranmatki, Rosha, Surkad, Tantani, Thombdigawat,Tinkandikusali
2	New W.C.	Jakhamjudi, Kalikusali, Kunda,Kusali, Pawana
3	Kuran W.C.	Klikusali, Pawana

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. 8

Table No.8
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 Working Circle	11352.068	134.280	1.18	8.66
2	New W. Circle	4068.852	55.800	1.37	11.61

3	Kuran W.C.	7554.293	94.320	1.25	15.00
	Total	22975.213	284.400	----	----

**Chief Forest Statistician,
Maharashtra State, Nagpur.**

