

Result of Sample Tree Enumeration of Yawal Forest Division

Yawal forest division is one of the forest divisions of Dhule circle. The forest area is situated between 21°03'28'' and 21°24'53'' North Latitude and 75°00'31'' East Longitude. The Tract is bounded as follows.

North :- State boundary of Madhya Pradesh.

East :- State boundary of Madhya Pradesh

South :- Tapi River

West :- Aner River

Configuration of the Ground:- The area falls in the Deccan Plateau. It has more or less western aspects due to the westward flow of Tapi River and its tributaries. The Satpudas forms a broad belt of mountain ranges standing as wall along the north bank of the Tapi River. The Central crest is about 610 mtrs. high. The highest peak viz. Panch –Pandu overlooking Yawal is 1073 mtrs. high. The area is drained by Tapi and its tributaries.

Forest Area:- According to Management & Legal Status, as per Annual Administration Report, 2016-17, the details of forest area of Yawal Division as on dated 31/3/2017 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
1.	Area in charge of Forest Department	890.58	2.44	4.02	897.04
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
4	Area in charge of Revenue department	0	0	12.48	12.48
Total		890.58	2.44	16.50	909.52
% to total forest area		97.92	0.27	1.81	100

Yawal forest division consist of 6 Ranges. The area under Scientific Management as recorded in Working Plan (2006-07 to 2015-16) by Shri V.R.Tiwari, Dy. Conservator of Forests, Working Plan Division, Dhule is as under.

Table No.2

Sr. No	Name of Ranges	Total area in (sq. km.)
1.	Chopda (West)	83.66
2.	Chopda (East)	111.39
3.	Yawal(West)	8912
4.	Yawal(East)	113.94
5.	Pal	76.62
6.	Raver	126.28
	Total	601.01

Now Dy. 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	Anjan Working Circle	23274.26
2	Improvement Working Circle	20771.56
3	Protection Working Circle	15556.26
4	FDCM Area Working Circle	22592.02
	Total	82194.10

Sampling plan of Tree Enumeration

Actually the tree enumeration work was done by Dy. Conservator of forest, Yawal Division during January 2018 to April, 2018. 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 31.62 meters x 31.62 meters, (i.e. each plot size is 0.1 ha.) has been enumerated in the Grid of 25"x25" (25 Second x 25 second) as per guidelines of National Working Plan Code, 2014. The complete enumeration of trees, Natural regeneration, NTFP species were carried out in these plots. 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 results in current enumeration is described in following Table No. 4(a)

Table No. 4 (a)

Statement showing estimated No. of trees per ha. in Previous (Oct 2004 to June 2006) and Current (Feb-2015 to Feb-2016) tree enumeration

Sr. No	Name of Working Circle	Past enumeration (Mar-2003 to Nov.2003) No. of trees per ha.	Sr. No.	Name of Working Circle	Current enumeration (Jan,2018 to April 2018) No. of trees per ha.
1	Anjan Working Circle	176.15	1	Anjan Working Circle	111.93
2	Afforestation Working Circle	197.67	2	Improvement Working Circle	80.86
3	Coppice with Reserve Working Circle	346.47	3	Protection Working Circle	60.35
4	Buffer Zone Working Circle	208.75	4	FDCM Area Working Circle	48.04
5	Miscellaneous Working Circle	155.27	-	--	--
6	Protection Working Circle	220.29	-	--	--
Weighted Average		242.15	Weighted Average		76.75

It is observed that the total estimated number of trees per hectare in current enumeration (Jan-2018 to Apr-2018) is decreased as compared to previous (Mar-2003 to Nov.2003) tree enumeration.

Table 4 (b)**Estimated percentage distribution of of trees in 15 U 30 and 31 U 45 and remaining girth class to overall girthclass.**

Working Circle	Girth class-wise estimated percentage distribution			
	15U30	31U45	Remaining Girth Classes	Estimated overall girth class
Anjan Woring Circle	30.11	25.61	44.28	100
Improvement Working Circle	28.83	31.33	39.84	100
Protection Working Circle	28.83	27.73	43.44	100
FDCM Area Working Circle	34.47	29.43	37.00	100
Weighted Average	30.74	28.51	40.75	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	Anjan Working Circle	111.93	28.40	35.50	4.43	43.60
	% of stock to total stock	100	25.37	31.71	3.96	38.96
2	Improvement Working Circle	80.86	40.56	18.18	7.59	14.58
	% of stock to total stock	100	50.11	22.49	9.38	18.03
3	Protection Working Circle	60.35	18.51	23.91	1.92	16.01
	% of stock to total stock	100	30.68	39.62	3.18	26.53
4	FDCM Area Working Circle	48.04	19.23	13.94	2.80	12.08
	% of stock to total stock	100	40.03	29.02	5.82	25.14
Total weighted average		76.75	27.07	23.00	4.30	22.38
% of stock to total stock		100	35.27	29.97	5.60	29.16

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	Anjan Working Circle	17.92	2.67	6.13	0.28	8.84
	% of stock to total stock	100	14.87	34.22	1.56	49.36
2	Improvement Working	10.20	4.17	2.60	1.16	2.28
	% of stock to total stock	100	40.84	25.48	11.38	22.30
3	Protection Working Circle	11.16	2.01	4.79	0.23	4.13
	% of stock to total stock	100	18.04	42.88	2.06	37.01
4	FDCM Area Working Circle	5.49	1.95	1.47	0.35	1.72
	% of stock to total stock	100	35.59	26.79	6.32	31.29
Total weighted average		11.27	2.73	3.70	0.51	4.33
% of stock to total stock		100	24.17	32.85	4.54	38.44

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

1) 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	Bija, Bondara, Shisam, Teak, Tiwas	28.40
2	B:-Species of Special Utility	Dhawada, Hiwar, Kalamb, Sawar, Khair, Salai, Shiwan	35.50
3	C:-Species of Minor Forest Produce	Apta, Awala, Bor, Charoli, Moha, Neem, Nilgiri, Palas, Shiras, Tendu	4.43
4	D:-Other Species	Amaltas, Anjan, Bhahawa, Bhutyakes, Dhaman. Dudhkudi, Giripushpa, Glirisidiya, Henkar, Kansar, Moin, Pangara, Phasi, Ratrani, Rohan, Sadada, etc.	43.60

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	Bija, Bondara, Kakad, Shisam, Teak, Tiwas.	40.52
2	B:-Species of Special Utility	Dhawada, Kalamb, Khair, Salai, Sawar, Shiwan	18.18
3	C:-Species of Minor Forest Produce.	Apta, Awala, Bel, Bor, Neem, Palas, Shiras, Tendu	7.59
4	D:-Other Species	Anjan, Bahawa, Dhaman. Dudhkudi, Hirani, Kadhai, Kansar, Karanj, Lokahandi, Moin, Phasi, Sadada, etc.	14.58

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	Bija, Bondara, Kakad, Teak, Tiwas.	18.51
2	B:-Species of Special Utility	Arjun, Dhawada, Hiwar, Khair, Salai.	23.91
3	C:-Species of Minor Forest Produce	Apta, Bor, Charoli, Jambhul, Neem, Palas, Tendu	1.92
4	D:-Other Species	Anjan, Bhahawa, Bherra, Bhutyakes, Dhaman. Dudhkudi, Ganyar, Ghatbor, Kudi., Moin, Phasi, etc.	16.01

4) **FDCM Area 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, Shisam, Teak	19.23
2	B:-Species of Special Utility	Dhawada, Hiwar, Kalamb, Khair, Salai, Shiwan	13.94
3	C:-Species of Minor Forest Produce	Apta, Awala, Bor, Charoli, ,Neem, Palas, Shiras, Tendu	2.80
4	D:-Other Species	Amaltas, Anjan, Dudhkudi, Kad, Kansar, Kau, Moin, Mothya, Papada, Phasi, Sadada, etc.	12.08

Table No.6

Availability of Teak trees per ha. in Previous (Mar-2003 to Nov.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	Anjan Working Circle	176.15	45.59	25.88
2	Afforestation Working Circle	197.67	34.67	17.54
3	Coppice with Reserve Working Circle	346.47	169.70	48.97
4	Buffer Zone Working Circle	208.75	30.36	14.54
5	Miscellaneous Working Circle	155.27	60.09	38.70
6	Protection Working Circle	220.29	66.86	30.55
	Weighted Average	242.71	84.51	34.92

Table No.6(A)

Availability of Teak trees per ha. in Current (Jan,2018 to April,2018) 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	Anjan Working Circle	111.93	27.80	24.84
2	Improvement Working Circle	80.86	38.48	47.59
3	Protection Working Circle	60.35	17.14	28.40
4	FDCM Area Working Circle	48.04	18.45	38.41
	Total (Weighted Average)	76.75	25.91	33.76

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. 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	Anjan Woring Circle	23274.26	41.3	0.18	7.17
2	Improvement Working Circle	20771.56	36.9	0.18	10.50
3	Protection Working Circle	15556.26	27.6	0.18	10.56
4	FDCM Area Working Circle	22592.02	40.1	0.18	11.17
	Total	82194.10	145.9	0.18	--

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

