

## GROWTH OF HYBRID POPLAR (PxE cv I-214)

S. Hasan Abbas

[An abstract from article entitled "Stem Analysis of Hybrid Poplar (PxE cv I-214) by S. Hasan Abbas and Raja Walayat Hussain — unpublished)].

Hybrid Poplars, the fast growing trees have been under trial in the country for the last 20-25 years and have proved to be very promising. Whereas experiments are still going on to decide about the management practices for this tree, an attempt was made to study the growth of clone PxE cv-I-214 through stem analysis.

Five trees, selected at random, out of 30 in a demonstration plot in Pakistan Forest Institute, were analysed according to procedure given in the Silvicultural Research Code Vol 3 by A.L. Griffith and Jagdamba Prasad (1949).

The curves were drawn for Age-Diameter, Age-Height and Age-Volume and the relative parameters estimated from those curves are produced in the tables below:—

*d b h (u. b) estimations and increments*

Age	dbh inches	CAI inches	MAI inches	dbh cm	CAI cm	MAI cm
1	0.5		0.50	1.27		1.27
2	1.8	1.3	0.90	4.57	3.30	2.29
3	4.1	2.3	1.36	10.41	5.84	3.47
4	6.4	2.3	1.60	16.26	5.85	4.06
5	8.3	1.9	1.66	21.09	4.83	4.22
6	9.9	1.6	1.65	25.25	4.06	4.19
7	11.2	1.3	1.60	28.45	3.30	4.06
8	12.0	0.8	1.50	30.48	2.03	3.81
9	12.6	0.6	1.40	32.00	1.52	3.56

*Total Height estimations and increments*

Age	Height Ft.	CAI Ft.	MAI Ft.	Height m	CAI m	MAI m
1	17		17	5.18		5.18
2	28	11	14	8.53	3.35	4.26
3	35	7	12	10.67	2.14	3.56
4	41	6	10	12.50	1.83	3.12
5	46	5	9	14.02	1.52	2.80
6	50	4	8	15.24	1.22	2.54
7	54	4	8	16.46	1.22	2.35
8	56	2	7	17.07	0.61	2.13
9	59	3	7	17.98	0.91	2.00

*Volume estimations and increments*

Age	Volume Cubic	CAI Feet	MAI	Volume Cubic	CAI Metres	MAI
1	0.35		0.35	0.010		0.010
2	1.00	0.65	0.50	0.028	0.018	0.014
3	1.90	0.90	0.63	0.054	0.026	0.018
4	3.20	1.30	0.80	0.091	0.037	0.023
5	4.95	1.75	0.99	0.140	0.049	0.028
6	7.20	2.25	1.20	0.204	0.064	0.034
7	10.10	2.95	1.45	0.286	0.082	0.041
8	13.40	3.25	1.68	0.379	0.093	0.047
9	17.10	3.75	1.90	0.484	0.105	0.054

**Discussion:***Diameter (d b h).*

The average d b h attained during 9 years was 12.6 inches (32 cm).

The CAI in d.b.h. had a rising trend during the first 2 years of growth, remained constant between 3rd and 4th years and then declined. So the highest CAI was obtained between 2nd and 4th years.

The MAI rose for the first 4 years, reached a maximum in the fifth year beyond which it fell gradually. The CAI and MAI intersected each other at the age of about 6 years.

*Height.* The average total height attained during 9 years was 59 ft (17.98 m). The highest CAI (11 ft or 3.53 m) occurred during 1st and 2nd years growth whence forth it fell gradually to 2-3 ft (0.61 to 0.91 m) in 8th and 9th year. The MAI was also highest between 1st and 2nd year after which it started decreasing.

*Volume.* The estimated volume produced during 9 years age was 17.15 cft (0.484 m<sup>3</sup>). The CAI and MAI remained highest during the 9th year of growth. Since the growth data were available only up to 9th year when both the increments had a rising trend, their culmination points were beyond that age. Hence no indication can be given to the age of maximum volume production.

The growth of this clone, given above, was compared with that in Italy in the table below. It was evident that the average ratio of growths, considering that in Italy as unity, was 1:0.35. This reflects on the fact that although the growing season in Pakistan is comparatively longer, the soil working and after care of the plants is not comparable with that in Italy. Only this fact retards the growth in our country to a large extent.

Table

Comparison of Growth of *P. x E cv I-214* on Acre Basis in Pakistan and Italy

(No. of Trees/acre = 112)

Age	PAKISTAN				ITALY*			
	Average DBH (inch)	Average Height (Feet)	Stand Vol.	MAI	Average DBH (inch)	Average Height (Feet)	Stand Vol.	MAI
3	4.1	35	212.8	70.9	6.89	32.81	657.34	214.35
4	6.4	41	358.4	89.6	8.64	41.01	1157.49	285.80
5	8.3	46	554.4	110.9	10.02	49.21	1729.09	342.96
6	9.9	50	806.4	134.4	11.15	57.41	2386.43	400.12
7	11.2	54	1131.2	161.6	12.15	63.98	3115.22	442.99
8	12.0	56	1500.8	187.6	13.03	70.54	3915.46	485.86
9	12.6	59	1915.2	212.8	13.78	77.10	4772.86	528.73

\*Extract of table on page 30 of study Report on Fast Growing species Project, Italy (1973) by Mahmood Iqbal Sheikh, Director, Forestry Research Division, Pakistan Forest Institute, Peshawar.