

## GROWTH RATE OF TREE SPECIES

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Very often enquiries from field foresters are made to ascertain the comparative rate of growth of different tree species over a period of time. With a view to finding out as to how *Dalbergia sissoo*, *Salmalia malabarica*, *Eucalyptus citriodora* and *Populus deltoides* I-63/51 would compare under the climatic conditions obtaining in Peshawar, a study was laid-out in February, 1978. 120 plants of each species were planted in 16 subplots at a spacing of 4 x 4 m. In each subplot, 30 plants were planted, 480 plants in all. Planting was done in a randomised complete block design in 4 replications.

While root and shoot cuttings of *Dalbergia sissoo* and *Salmalia malabarica* from 8-month old nursery were used, tube plants of *E. citriodora* and entire plants of *P. deltoides*, both one year old, were planted. During the last several years a variety of agricultural crops one after the other were sown in between the lines. These include wheat, maize, Trifolium (Berseem) and sesamum etc. It means that the available land between the lines of the trees was regularly cultivated to the benefit of the trees. These conditions normally do not exist in the irrigated plantations. However, one advantage which the irrigated plantations have is the supply of canal water which is rich in silt and other nutrients. In this case, mostly tube well water was used. The over all average of irrigations given per seasons comes to 12 with about 8 cm depth of water given with every irrigation. The total depth of irrigation water delivered in one season was, therefore, was about one meter. This may also be kept in mind that the agricultural crops also shared this water with the trees.

Recording of data on height and diameter was started in 1979. This is attached as appendix 1.

### Conclusion

#### Height

Maximum height has been attained by poplars (17.87 m) followed by *E. citriodora* (16.37 m). These two species are significantly different in height from *Dalbergia sissoo* (13.48m) and *Salmalia malabarica* (12.95 m).

#### Diameter

The position was different in this parameter: *Salmalia malabarica* (25.2 cm) and poplar (23.6 cm) are in the same group followed by *Dalbergia sissoo* (20 cm) and *E. citriodora* (17.7 cm).

This should serve as a guide to the field foresters for comparing the rate of growth of different species in the field and enable them to make a choice of species for maximum volume production per unit area.

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**Appendix 1. Comparison of growth of four species at Peshawar.  
Growth data 1979 – 1985**

| Year. | <i>Salmalia malabarica</i><br>Semel |         | <i>E. citriodora</i> |         | <i>Dalbergia sissoo</i><br>Shisham |         | <i>Populus deltoides</i> 63/51<br>Poplar |         |
|-------|-------------------------------------|---------|----------------------|---------|------------------------------------|---------|------------------------------------------|---------|
|       | Dbh (cm)                            | Ht. (m) | Dbh (cm)             | Ht. (m) | Dbh (cm)                           | Ht. (m) | Dbh (cm)                                 | Ht. (m) |
| 1979  | —                                   | 1.27    | —                    | 2.45    | —                                  | 1.97    | —                                        | 5.35    |
| 1980  | 9.2                                 | 3.82    | 6.8                  | 7.39    | 6.7                                | 5.31    | 13.9                                     | 10.83   |
| 1981  | 14.4                                | 6.63    | 10.9                 | 10.97   | 11.6                               | 8.61    | 18.3                                     | 15.31   |
| 1982  | 18.4                                | 8.15    | 12.8                 | 12.57   | 14.0                               | 9.83    | 20.3                                     | 16.46   |
| 1983  | 19.8                                | 9.22    | 14.6                 | 13.64   | 14.8                               | 10.44   | 21.0                                     | 16.61   |
| 1984  | 21.7                                | 11.73   | 16.4                 | 16.0    | 16.9                               | 12.76   | 21.1                                     | 17.79   |
| 1985  | 25.2                                | 12.95   | 17.7                 | 16.37   | 20.0                               | 13.48   | 23.6                                     | 17.87   |