# A TYPICAL STAND PROFILE OF CHIR PINE (*PINUS ROXBURGHII*)

*by*

***Raja Walayat Hussain and Syed Hasan Abbas**

**ABSTRACT:** *A typical chir pine stand would comprise 90% or more of dominant and codominant trees and upto 10% of intermediate trees.*

## INTRODUCTION

Chir pine forests of Pakistan are being managed for about a century or so. The management was initially confined to their protection and conservation. With the preparation of the first working plans (1,7) the era of scientific management dawned and the forests previously having an irregular or unevenaged character were first subjected to treatment compatible to the silvicultural requirements of the species. These plans and their subsequent revisions tried to create regularity in the crop by the application of uniform system under which, besides other operations, ordinary thinnings aiming at the removal of trees of certain crown classifications were prescribed.

Researchers especially in USA classified trees into different crown classes basing their judgement on certain peculiar factors like vigour, rate of growth, mortality, form etc. (2,4,5,6,10). Partap Singh (11) differentiated trees into five clases on the plea that future development of tree depends upon species and the spread of its crown. In our forestry practices the classification given in silvicultural research code (4) is being followed. It recognises about a dozen classes based on the relative height and physical condition of trees. Of these, four principle classes are being practically used in carrying out thinnings in evenaged forests. They are:—

| | |
|---|---|
| (1) Dominant (D) | .. Trees forming topmost canopy layer with free crowns. |
| (2) Codominant or sub-dominant (C) | Lower than (1) with free crowns. |
| (3) Intermediate or dominated (I) | In between (2) and (4). |
| (4) Suppressed (S) | .. Clearly overtopped by above categories. |

* The authors are Research Officers in Forest Mensuration Branch at Pakistan Forest Institute, Peshawar.

Thinnings are always subjective in nature and threrefore, the actual mechanism and arrangement, while carrying out thinnings vary from person to person .To avoid the confusion and to reduce personal factor, composition of various crown classes in a typical stand was thus worked out on the basis of data collected from the left over trees in growth plots laid in 1969 and onward.

## METHOD AND PROCEDURE.

Tree data collected from 65 Chir plots laid in different age classes in Siran. Hazara tribal, Swat and Haripur forest divisions were categorised into three groups for each plot:

(*a*) Dominant and co-dominant

(*b*) Intermediate

(*c*) Suppressed and others.

No further sub-classification was attempted as it is very difficult to assign a particular sub-class to a tree in the field by occular observations. Even differentiation between dominant and codominant trees in undulating, slopy terrain of Chir zone is difficult without measuring their heights which is a time consuming process.

Number of trees in each category was projected on acre basis and then percentage of each category was worked out for each plot. Table given below gives details of the plots:

TABLE: **Showing distribution of plots with percentage of category 'a', 'b' and 'c' by age classes.**

| PERCENTAGE OF CATEGORY | | | AGE CLASSES (years) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| a | b | c | 16-25 | 26-35 | 36-45 | 46-55 | 56-65 | 66-75 | 76-85 | 86-95 | Total |
| | | | Number of plots | | | | | | | | |
| 76—80 | 20—24 | .. | .. | .. | 1 | 1 | 1 | .. | .. | .. | 3 |
| 80—85 | 15—19 | .. | .. | 1 | 1 | .. | 3 | .. | 1 | .. | 6 |
| 86—91 | 10—14 | .. | 1 | 4 | 5 | 3 | .. | .. | .. | .. | 13 |
| 91—95 | 5—9 | .. | .. | 2 | 3 | 2 | 2 | 1 | .. | 1 | 11 |
| 96—100 | 0—4 | .. | 2 | 2 | 8 | 7 | 5 | 4 | 3 | 1 | 32 |
| Total : | | | 3 | 9 | 18 | 13 | 11 | 5 | 4 | 2 | 65 |

## RESULTS AND DISCUSSION

It is evident from the foregoing that in all the plots at least 75% of the left over crop after thinning comprises of category 'a' trees. Almost one half of the total number of plots contain 96% and more of the trees of this category.

The weighted average percentage of 'a' and 'b' for each age class works out to be as under :—

| Age class (years) | Values (In percent) of a | b |
|---|---|---|
| 16—25 | 94.7 | 5.3 |
| 26—35 | 90.8 | 9.2 |
| 36—45 | 92.3 | 7.7 |
| 46—55 | 93.4 | 6,6 |
| 56—65 | 91.2 | 8.8 |
| 66—75 | 97.0 | 3.0 |
| 76—85 | 94.2 | 5.8 |
| 86—95 | 95.5 | 4.5 |
| Average : | 93.6 | 6.4 |

## CONCLUSION

The study shows that a typical Chir pine stand would be composed of more than 90 % of trees of category 'a' less than 10% of category 'b' and no tree belonging to category 'c'.

## ACKNOWLEDGEMENT.

Authors are grateful to Mr. Shaukat Ali, Forest Ranger who remained actively associated with this study. They are highly obliged to Mr. Ishtiaq Ahmad Qazi, Forest Mensuration Officer for evaluating the study critically.

## BIBLIOGRAPHY


1. Ahmad, Bashir. .. Revised working plan for Murree Kahuta Forests of Rawalpindi District 1953-54 to 1982-83.

2. Forbes, R. D. .. 1961 Forestry Hand Book 6. Pp. 40—41. The Ronald Press Company, N.Y.

3. Gevorkiantz, S.R., Paul O. Rudolf, & Paul J. Zehngraff 1943 A tree classification for aspen, jack pine and second growth red pine. Journal of Forestry 41: Pp. 268-274.

4. Griffith, A.L., & Jagdamba Parsad 1949 The Silviculture Research Code Vol. 3. The tree and crop measurement. Pp. 173-74. Manager of Publications DELHI.

5. Hornibrook, E.M. .. 1939 A modified tree classification for use in growth studies and timber marking in black hill ponderosa pine. Journal of Forestry Vol. 37 : Pp. 483-86.

6. Keen, F. P. .. 1936 Relative susceptibility of ponderosa pines to back beetle attack. Journal of Forestry 34 : Pp. 919-27.

7. Malik, Muhammad Azam .. 1965 Revised working plan for Chir, Reserved Forests of the Lower Siran and the Agror Vallies Siran Forest Division 1963-64 to 1973-74.

8. Monroe, A.V. .. 1905 Working plan for lower and upper Siran for 1905-6 to 1936-37. Government Printing, Peshawar.

9. Powell, Badan .. 1879 Working plan for Haripur Chir Forests for 1879 to 1904. Govt. Printing, Peshawar.

10. Schober, R. .. 1967 Ideas and proposals for a new system of thinning and tree classification XIV/IUFRO Congress VI Section 25: 61-95 Munich.

11. Singh, Partap .. 1951 The conception and classification of thinnings. Proceedings of the seventh silvicultural conference. Item 15 Paper 6. The Army Press Dehra Dun.