

A NOTE ON THE PERFORMANCE OF CHIR PINE SEEDLINGS RAISED FROM SEED OF SELECTED STANDS

K.M. Siddiqui and M. Khan*

The authors had an opportunity during May, 1977, to observe seed collection of Chir pine (*Pinus roxburghii* Sarg.) in Dader forest of Siran Forest Division for supply to the forest departments. The seed trees were highly malformed and slow growing at the lowest level of the species altitudinal range e.g. 1000 meters. About a kilogram of this seed was procured and sown in the nursery at Nawanshehr (Abbottabad) alongwith the seed of this species which was collected from seed stands selected from amongst the best natural stands of chir pine in the same locality under our Agricultural Research Council project (1). This note compares the performance of one year old seedlings raised from two types of seed.

Although importance of the origin and quality of the parent tree for seed collection is well known, still no emphasis is apparently given to this aspect by the field staff while collecting seed for planting purpose. Seed is generally collected through petty contractors or illiterate labour by the forest departments. Since collectors are paid by weight, they try to make the bulk as conveniently as possible. The most convenient trees to collect seed from, are short-statured, slow growing and crooked trees which are easy to climb. Incidentally such trees are also prolific seed producers. It is no wonder that the quality of planting stock in the nurseries is usually poor both in growth and stem form. All our efforts of planting and tending would be worthwhile if the planting stock has been raised from seed of genetically superior trees. In Agriculture, most of the increased production is due to use of seed of improved varieties. Similar results are being achieved for many forest tree species in different countries.

Seed of chir pine obtained from the commercial sources as well as that of selected seed stand at Dadar was sown during August, 1977, at Nawanshehr nursery in polythene tubes of $7\frac{1}{2} \times 17\frac{1}{2}/2$ cm. size. The polythene tubes contained a uniform mixture of two parts of soil, one part of sand and one part conifer forest humus. The plants were watered daily with a rose-cane except on rainy days. Observations regarding height growth, branchiness and mortality were recorded during June, 1978 on 100 randomly selected plants in each of two seed sources. Two strings were fixed parallel and about 0.3 meter apart, in the centre of nursery bed. Observations were made on both types of seedlings falling within these strings. Counting of seedlings was started at one end and stopped when 100 seedlings were counted. In all about ten thousand plants were raised from these sources.

*The authors are respectively Director Forest Products Research Division and Forest Ranger, Pakistan Forest Institute, Peshawar.

The data regarding height, growth, branchiness and mortality are summarised in Table 1. The data were analysed statistically and differences between growth rate of seedlings raised from seed of selected and commercial stands were found to be highly significant. The seedlings raised from seed of second type of stand also exhibit a high branching percent as compared to those raised from seed of selected seed stand. Although mortality of the seedlings in the nursery is low, still it is high in the former type of seedlings than in the latter. Both types of seedlings have been planted in the field and similar results are expected regarding their performance in field plantings.

TABLE 1

Performance of Chir pine seedlings from selected and commercial stands.

Character	Dadar selected stand	Dadar commercial stand
Average height cm.	26.9	16.2
Branchiness %	12	23
Mortality %	Nil	3

Normally, a gain of 5 to 10% in growth is generally expected from seed of natural seed stands because of low selection differential (2). In case of Chir pine however, a gain of upto 70% in height growth is observed. This is due to the fact that commercial seed, as mentioned before, is collected from the poorest stands. These results also indicate the usefulness of selection of seed stands and collection of seed from them in Pakistan. Further, since establishment of artificial seed stands based on the results of progeny tests take considerable time, seed stands are generally preferred for seed collection for afforestation purpose during the interim period.

A country-wide national research programme of tree introduction and improvement is in operation since 1977 at the Pakistan Forest Institute, Peshawar, wherein seed stands and plus trees of all important timber species are being selected. Seed from plus tree is used for raising nurseries for establishment of progeny tests-cum-seed orchards. On the other hand, seed from selected seed stands is supplied to the field officers for general planting. So far, 12 seed stands of Chir pine over 60 hectares have been selected and marked in Hazara, Swat, Murree Kahuta and Kotli Forest Divisions for this purpose. In this connection studies are also being undertaken on seed production and its periodicity, germination and seedling percentage and nursery techniques of Chir pine as well as other coniferous species (3). The results so obtained would be useful for practical forestry in Pakistan.

References

1. SIDDIQUI, K.M. (1977.) National programme of tree introduction and improvement in Pakistan. Proc. of 3rd World Cons. on For. Tree Breeding, Canberra, Australia (In press).
2. SIDDIQUI, K.M. (1978.) Seed production in Chir pine, 1978 and future trends. Pakistan Jour. For. 28(3:). 157-178.
3. WRIGHT, J.W. (1976.) Introduction to Forest Genetics. Academic Press, N. Y: 188-9