International Journal of Farm Sciences **3(1)** : 77-80, 2013

Multiple Nursery Planting Bar: a tool for maintaining optimum spacing in the field

SANDEEP SHARMA

Himalayan Forest Research Institute
Conifer Campus, Panthaghati, Shimla 171009 HP
Email for correspondence: sharmas@icfre.org

ABSTRACT

With the increasing emphasis on productivity enhancement in agriculture/horticulture/forestry sectors precision in every field method is of utmost importance. To realize the productive potential of every plant in the field accuracy in spacing is essentially required so that crop plants can grow without competing with one another for nutrients, water, sunlight or space. This article aims at offering simple technique based on locally developed field tool called Multiple Nursery Planting Bar (MNPB) to get necessary precision in maintaining spacing while planting medicinal plants especially Mushakbala (*Valeriana jatamansi*), Atish (*Aconitum heterophyllum*) and Kutki (*Picrorhiza kurrooa*). The farmer can also fabricate similar tool locally or even can modify this tool according to the crop type or desired spacing he wants to keep in his field on large scale basis.

Keywords: Productivity; precision; spacing; MNPB; medicinal plants

INTRODUCTION

Optimum growing space is must in the nursery/field for all the propagules for obtaining vigorous growth. Even full natural potential of all the individual plants can be realized by providing optimum space for growth and development, proper irrigation along with making available essential nutrients in desired quantities. Spacing or seed bed density is reported to have more effect than irrigation frequency on plant size and survival after planting (Stein 1988) as there is less competition for resources. Studies have also indicated a positive linear relationship between seed spacing and root growth potential (South et al 1990). Increasing precision in sowing decreases the optimum sowing rate leading to maximal stock production with smaller costs (Arp et al 1989). Some new sowing equipment for improving nursery practices were designed and developed by Gera et al (1996).

At experimental stage it is very easy to maintain desired spacing. Even for small areas/plots one can go for proper

spacing by measuring the actual distances from line to line and plant to plant with the help of tape, scale or measured sticks. But on commercial level it is a very tedious and time consuming operation. An attempt has been made at Himalayan Forest Research Institute, Shimla to design and develop planting tool for maintaining optimum spacing in the nursery/field. Highly efficient, precise and cost effective tool namely Multiple Nursery Planting Bar (MNPB) has been designed and developed for solving the problem of desired spacing at field or commercial level. This equipment is not only designed to mark the surface of nursery bed/ field for precision planting but also creating cavities or planting holes for inserting propagules of commercial crops. Therefore it is dual purpose equipment as it maintains desired spacing as well as creates cavities for inserting propagules in the soil. Its operation results into 9 bed marks at 30x30 cm spacing with around 10 cm deep cavity/ planting hole at each mark.

Specifications

A manually operated MNPB has been designed and developed for providing precise spacing in the nursery/field. It is made up of iron square (1 cm^2), flat irons (2.0x0.5 cm) and iron pegs (22 cm long and 1cm diameter with $1/3^{rd}$ portion at lower end tapering). The top portion of the equipment is made up of square irons frame of 90x90 cm dimensions. Three parallel square iron (1cm^2) rods of 90 cm length are welded at 15, 45 and 75 cm distance starting from any side of main frame. At 1 cm below the top main square frame flat irons (2.0x0.5 cm) are welded. Besides this three flat irons (2.0x0.5 cm) of 90 cm long also welded on main frame at 15, 45 and 75 cm distance in opposite side of the iron square rods. These parallel flats are welded basically to give strength to the equipment and making four equal size squares of 30 cm arms at the centre of this equipment. Long tapering iron pegs (22 cm long and 1 cm diameter) are welded at every corner of these four squares. There are in total 9 pegs welded in this structure at 30 cm distance from one another (Fig 1). The overall weight of the equipment is around 7 kg. The cost of this equipment came out to be around ₹ 1200.

Fig. 1: Multiple Nursery Planting Bar

Application of equipment in the field

It is manually operated equipment. One person can easily operate this equipment in the field as it is around 7 kg in weight. It is pertinent to mention here that some weight is required for easy insertion of pegs in the pulverized beds/field. For

using this equipment place it on one side of fully prepared nursery bed/field and then exert some pressure so that pegs could be inserted 10-15 cm deep in the bed. Now slowly lift the equipment from the field and repeat the operation in any direction of the bed/field. It results into bed marks at 30x30 cm spacing with around 10 cm deep cavity/ planting hole at each mark. Thereafter propagules of Mushakbala, Atish or any other species could be precisely transplanted at a very brisk pace in those planting holes. The use of this equipment can save lot of time of farmers/labourers while performing precision transplanting operations which subsequently result into better growth, development and yield (Fig 2, 3).

Fig 2. Equipment under application

Fig 3. Precision planting in Mushakbala

REFERENCES

Arp PA, Harris D and Stinson ED 1989. Enhancing the containers stock seedling efficiency in forest nurseries. Forestry Chronicle **65(6):** 423-430.

Gera M, Gera N and Bhandari AS 1996. Some new equipments for improved nursery practices. The Indian Forester **122(8):** 696-705.

South DR, Larsen HS, Boyer JN and Williams HM 1990. Seed spacing and seedling biomass: effects on root growth potential of Loblolly pine (*Pinus taeda*). New Forests **4(3):** 179-192.

Stein WI 1988. Nursery practices, seedling sizes and field performance. In: Proceedings of Combined Meeting of Western Forest Nursery Associations, 8-11 Aug, British Columbia General Technical Report, USDA Forest Service, RM-167, pp 15-18.

Received : 12.5.2012 *Accepted : 19.8.2012*