

Effect of nursery mixtures on nutrient content and quality parameters of seedlings of different tree species

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ABSTRACT

The study was conducted in nursery at Regional Agricultural Research Station, Bijapur during January 2007. The results indicated that, the nitrogen and potassium content in seedling of tree species were influenced significantly due to different nursery mixtures, but phosphorus content was not significantly influenced. The N content (2.80%) was highest in black soil : vermicompost : black sand (1:1:1) closely followed by black soil : vermicompost : black sand (2:1:1) (2.63%), but potassium content (1.26%) was highest in black soil : vermicompost : black sand (2:1:1), closely followed by black soil : vermicompost : black sand (1:1:1) (1.25%) were at par with each other. Among tree species, *Gliricidia sepium* registered higher N and K content in their seedlings (2.64% and 1.23%, respectively). With regards to seedling quality, seedling vigour index of black soil : vermicompost : black sand (2:1:1) and shoot : root ratio of red soil : FYM : white sand (2:1:1) were highest at all growth stages. However, interaction effect was found to be non significant.

Key words : Black sand, Seedling vigour index, Shoot : Root ratio, Vermicompost

INTRODUCTION

The concept of plantation forestry and also growing trees in agroforestry models in the semi-arid tracts of north Karnataka is gaining popularity. It requires successful production of healthy and vigorous seedlings in nursery at low cost using locally available resources. The nursery mixture influences the quality of seedlings to a greater extent. Seedlings raised in good media can ensure better establishment and growth when planted in the main field. The nursery mixture should have enough nutrients, good water holding capacity and drainage to ensure the growth of better seedlings (Noble, 1993). Normally the nursery mixture used for raising container stock involves red soil : FYM : white sand (2:1:1). But the availability and the cost of red soil and white sand has increased the cost of nursery mixtures, particularly in the dry tract of black soils. Hence, the locally available black soil and black sand could be used as an alternative. Further the possibility of using vermicompost as an alternative to FYM also needs to be evaluated. Hence, different nursery mixtures were tested to identify optimum and economic nursery mixture to produce seedlings of important tree species of the tract with better quality. The state forest department is engaged in raising the seedlings and using it for planting in community land besides supplying to farmers on demand. But for raising seedlings, traditionally red earth, white sand and FYM are always used in 2:1:1 proportion. These nursery mixture components are expensive in black soil areas of north Karnataka.

The studies have made it possible to identify alternate

nursery mixtures which are based on the use of black soil and black sand. The economic conditions of farmers of dryland tracts are very poor. Hence, they cannot afford to spend more on production cost of planting stock in general and nursery mixture in particular. If technology is given to raise the seedlings with locally available material at a low cost, the afforestation of these degraded lands will be possible. Hence, keeping these points in view the present investigation was under taken to study the effect of different nursery mixture on silvicultural parameters of different tree species.

MATERIALS AND METHODS

The nursery experiment was conducted during January 2007 at Regional Agricultural Research Station, Bijapur farm of University of Agricultural Sciences, Dharwad, Karnataka. The experiment was laid out with Randomized Block Design with factorial concept with three replications consisted of 30 treatment combinations, comprising five nursery mixture viz., N₁ – Red soil : FYM : White sand (2:1:1), N₂ – Black soil : FYM : Black sand (1:1:1), N₃ – Black soil : FYM : Black sand (2:1:1), N₄ – Black soil : Vermicompost : Black sand (1:1:1) and N₅ – Black soil : Vermicompost : Black sand (2:1:1) and six tree species viz., T₁ – *Acacia nilotica*, T₂ – *Albizia lebbek*, T₃ – *Dalbergia sissoo*, T₄ – *Gliricidia sepium*, T₅ – *Inga dulce* and T₆ – *Azadirachta indica*. In all five different nursery mixtures (weight basis) were prepared as per treatment and evaluated six tree species of local importance. The required inputs like red soil, white

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