INDIAN JOURNAL OF ARID HORTICULTURE
2008, Vol. 3 (1) : 4-6

Performance of nitrogen and zinc on yield and physico-chemical composition of ber (*Zizyphus mauritiana* Lamk) fruits cv. Gola

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Abstract

A field experiment was carried out to study the influence of different levels of nitrogen (250, 500 and 750g plant^{-1} year^{-1}) and zinc sulphate (0.4, 0.6 and 0.8 per cent plant^{-1} year^{-1}) on yield and physico-chemical composition of ber fruits. Applications of 500g nitrogen and 0.6% zinc sulphate plant^{-1} exhibited highest fruit yield with maximum dry matter, pulp, pulp: seed ratio, TSS, ascorbic acid, reducing sugar, non reducing sugar, total sugars and minimum moisture and seed content.

Key words: *Ber, nitrogen, zinc, yield, physico-chemical quality parameters.*

Introduction

The ber (*Zizyphus mauritiana* Lamk) is hardy fruit plant, regular bearing habit and adaptability to adverse climatic condition. It can give better income on marginal lands where other fruit plant and crops can not survive. Since the ber crops is mainly grown in arid and semi-arid region where major and minor nutrients are lacking, the need for fertilizer application becomes essential. Among the major nutrients, nitrogen is considered to be the vital in case of ber and its requirement, depends on agro climatic situation where crop is grown.

In arid and semi-arid region, one of the factors which can ensure lucrative income from ber growing area continuously over number of years is proper feeding and judicious use of nutrients for plants. In case of ber nutrition, increase the fruit plant nutrient, nitrogen is major nutrient and zinc is minor nutrient, which are already deficient in Rajasthan soil (Akbary *et al.* 1995). Doses of these nutrients affect the quantity and quality of ber fruits. With this observation that present investigation was undertaken to carried out the application of nitrogen in soil in split and zinc as foliar spray on the performance of yield and quality of ber fruits.

Material and methods

The investigation was carried out on productive, healthy and vigorous ber trees cv. Gola at Central Arid Zone Research Institute, Krishi Vigyan Kendra Pali, during 2004-05 and 2005-06. The location was latitude 25° 47' 13" north altitudes and 73° 18' 42" east longitudes. The experimental soil was silty loam with available nitrogen (135.9kg ha^{-1}), available phosphorus (18.2kg ha^{-1}), potassium (256.1 kg ha^{-1}), Zinc (0.18 ppm) and p^{H} 8.3. The area received annual rainfall of 325.9 and 645.6mm and average minimum 3.2°C and maximum 43.4°C temperature. Of the total precipitation 90 per cent was received during July to September. The relative humidity ranged from 25 to 95 per cent during the experimental span. The treatments composed of three levels of nitrogen viz 250, 500 and 750g plant^{-1} year^{-1} and three levels of zinc sulphate 0.4, 0.6 and 0.8 per cent plant^{-1} year^{-1}. In all, there were ten treatment combinations including control. The experiment was laid out in RBD with factorial approach having three replications. Half dose was applied in month of July and remaining dose of nitrogen was applied in month of November. The zinc sulphate was sprayed thrice along with equal dose of lime for neutralization and teepol as a sticking agent in the 1st week of August, September and October.

All the common cultural practices were adopted and the ber trees were maintained under uniform conditions of orchard management. At the time ber fruit green colour turned light yellow colour (ripening stage), fruits were harvested and the yield was recorded accordingly. In all, there were 5 pickings. A sample of 500g fruits was collected randomly from 2nd picking from each treatment under all the replications to estimate the physico-chemical characteristics viz; moisture (%), dry matter (%), pulp

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