

Full Length Research Paper

Effect of ridge height and planting orientation on *Ipomea batatas* (sweet potato) production

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Ipomea batatas (sweet potato) yield vary widely among farmers due to improper ridging and planting orientation. This study was to establish the proper ridging and planting orientation, so as to enhance constant reliable yields among sweet potato producing farmers. The objectives of the study were to compare vine length and to determine root yield, central root diameter and root length among different ridge heights and planting orientations. A 3 x 3 factorial in a completely randomised block design with 3 replications was used. Ridge height had levels; 30, 40 and 50 cm while planting angle had levels; horizontal 180°, inclined 45° and vertical 90°. Vine length was measured at 3, 6, 9 and 12 weeks after planting and root yield, root diameter and root length were measured at harvesting. Data was analysed using M STAT C for variance between treatment means. The results showed interaction effect ($p = 0.05$) of ridge height and planting angle on the vine length, root diameter, length and yield. Lower ridges produced longer vines than higher ridges. Decreasing inclination of cuttings also increases vine length. Root diameter decreases with increasing ridge height while root length increased as ridge height increased. Medium ridge height (40 cm) with inclined planting angle may be recommended for higher root yields and horizontal planting angle on low ridges can be used to produce rounded swollen roots.

Key words: Ridge, height, planting orientation, sweet potato, vine, yield.

INTRODUCTION

Sweet potato tolerates a wide range of soils and even on poor acid soils, it gives satisfactory yields (Chipangura and Jackson, 2003). Though grown in areas with relatively high rainfall, it cannot withstand water logging conditions; hence, why they are grown on ridges and mounds (Gomes, 1999). It also has good drought tolerance ability. In Zimbabwe, its production is concentrated in natural regions I, II and III which have high rainfall and good soils (Chipangura and Jackson, 2003). Sweet potato was discovered to be potentially high yielding such that, it can yield up to 50 tonnes per hectare under minimum management (Coertze and Van den Berg, 1995). The area under sweet potato production in Zimbabwe has recently increased; however, most communal farmers have learnt by experience to grow sweet potatoes. Variable planting methods are being

used by sweet potato farmers in Zimbabwe. Many farmers believe that, high yields are produced from very high ridges, yet Dhlwayo and Chiunzi (2004) reiterate that, small to medium sized ridges that are easy to make may produce good yields as long as fertility is present. Ridges should also be high enough to prevent water logging (Gomes, 1999). On the planting angle, various authors have diverged. Dhlwayo and Chiunzi (2004) stipulate that, planting at an angle or horizontally produce more yields while Onwuene (1999) recommends vertical orientation. It was the purpose of this study to explore and examine these different lines of thoughts and get the most appropriate recommendation to farmers. This was achieved by determining vine length on different ridge heights under different planting angles and root diameter, length and yield on different planting angles under varying ridge heights. For this study, Brondal variety which takes about 135 days to mature was used. The variety was developed in South Africa and is now popular in Zimbabwean rural areas. Vine cuttings were used as

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