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EFFECT OF SOURCE, TIME AND METHOD OF NITROGEN APPLICATION ON GROWTH AND YIELD COMPONENTS OF POTATO IN KENYA

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ABSTRACT

The effect of different sources of Nitrogen (N), time and method of application on growth and development of potato was investigated over two seasons using the cultivar Dutch Robjyn. The three sources of nitrogen (Calcium Ammonium Nitrate (CAN, 26% N); Urea (46% N) and Ammonium Sulphate Nitrate (ASN, 27%N)] constituted the main plot treatments, and time [early application, split application (half of the fertiliser at planting and half applied 5 weeks after emergence), and late application (5 weeks after emergence)] and method of application (placement and broadcast within the furrow) constituted the subplots treatments. Early application of N followed by split applied fertiliser led to a fast early growth (shoot, tuber, root and total dry matter, Leaf Area Index (LAI) development, and plant height) particularly where CAN or ASN was applied. Late N application enhanced growth of the shoots (leaves and plant height) later in the growth season particularly with Urea. Broadcast or placement of N in the furrow had no significant effect ($P \leq 0.05$) on growth and development. There was significant difference ($P \leq 0.05$) between the times of application of N. Early application of N followed by split applied fertiliser showed the greatest tuber yield. Late application of fertiliser had the lowest tuber yield but the highest total N accumulation in both leaves and tubers. Broadcasting and placement of N in furrows had no significant effect on nitrogen content, tuber numbers and yield/plant. CAN followed by ASN promoted tuber growth and yield more than Urea. CAN, should thus be applied early in the growth season either as a broadcast or placement in the furrow and application of Urea is less beneficial since it is amenable to leaching and volatilisation.

Key Words: Ammonium sulphate nitrate, broadcast, Calcium Ammonium nitrate, early application, late application, placement and furrow, Solanum tuberosum, split application, Urea