



## Effect of leaf temperature and air temperature on graded yield of potato V.A. APOTIKAR, A.V. SOLANKI, J.D. JADHAV AND R.R. HASURE

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Key Words : Leaf temperature, Air temperature, Graded yield, Potato SUMMARY: The field trial was conducted during both the seasons (2009-2010 and 2010-2011) on PGI Farm without changing randomization. The experiment was laid out in Rabi season .Results revealed that increase in temperature resulted in a decrease in rate of photosynthesis. Higher leaf temperature reduced efficiency. Leaf temperature exhibited difference between drought and irrigated treatments. Leaf temperature should be optimum for easy stomatal conductance, which were maintained during 56 to 84 DAP. Analysis of the relationship between stomatal conductance and leaf temperature at the various growth stages for the different treatments showed that 1.2 IW/CPE ratio and planting on 44th MW with mulching treatment proved to be superior to the other treatments. Tuber yield was significantly correlated with planting date and was probably a response to changing temperatures during the growing season. Planting date had a significant effect on yield. The planting on 44th MW (D<sub>2</sub>) produced more tuber yield which may be due to (D<sub>2</sub>) planting experienced a mean temperature and RH and escaped the disease. It was observed from the data that during both the years of experimentation, planting on 44th MW, the irrigation scheduled at 1.2 IW/CPE (I<sub>2</sub>D<sub>2</sub>) was comparable with 1.0 IW/CPE (I<sub>2</sub>D<sub>2</sub>) and exhibited and produced significantly higher mean values of the gradewise yield of tubers, total fresh tuber yield and haulm yield (q ha<sup>-1</sup>) than rest of the treatments. In potato, increased tuber production was more phenomenal with adequate irrigation, since the percentage of bigger tubers was more in irrigated plants than in un-irrigated plants. The maximum tuber yield was recorded in 44<sup>th</sup> MW, which was decreased as delayed in planting, this might due to the favourable climatic conditions during the crop growth period of early planting during 56 to 84 days, the minimum temperature was 8.7-9.7°C. The beneficial effect of early planting might be associated with the prevalence of low temperature during the tuber development stge.

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he area under potato in Maharashtra is 18.8 thousand ha (2 % of India) with a production of 197.90 thousand MT and extremely low productivity of 10.52 t ha<sup>-1</sup> (Anonymous, 2011). The part of North Satara and Pune districts are major potato growing areas of 80 per cent of area is under this crop in the state (Ahire, 1999). Due to increasing industrialization and job market created demand for processed and ready to eat convenience food, particularly in urban areas. The climatic parameters such as the rise in temperature have an adverse effect on potato production and productivity. The impact of climate change needs to be evaluated on potato production due to disease and insect pests. Therefore, the possible effect of different

parameters of microclimate on potato crop growth and production during growing condition is to be critically investigated Among the main factors which affect the rapid establishment of the crop canopy are genotypes, planting date, planting density, temperature and the availability of water and nutrients in the soil. Potato is a weather sensitive crop influenced by environmental conditions. Being a temperate crop, growth of potato and yield are adversely affected due to higher temperature, especially mean temperature of above 17°C. Hence, proper planting time must be framed to produce maximum yield by efficient utilization of natural resources. Exposure of crop to excellent growth period is only possible by proper planting dates and escaping the crop from