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RESEARCH ARTICLE

Radiation interception and light use efficiency as influenced by sowing windows in potato

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SUMMARY: The field trial wazs conducted during both the seasons (2009-2010 and 2010-2011) on PGI Farm without changing randomization. The experiment was laid out in *Rabi* season. The various components of PAR *viz.,* incident radiation, transmitted radiation, reflected radiation, were measured at an interval of 28 days around local solar noon, with the help of line quantum sensor between 12.30 and 14.30 hours. To eliminate the effect of solar elevation, the measurements were made simultaneously at mid day .The highest PAR (80% of the PAR incident above the crop canopy) was found near the crop with mulching and five irrigations. A positive linear correlation existed between the intercepted radiation and the dry matter accumulation in the potato. Proportion of dry matter partitioned to tubers increased with plant weight. The data emphasizes the importance of the use of detailed studies on the relationship between absorbed radiation and dry matter production in the analysis of relative efficiencies of the different treatments. The approach has been recognized as a more rational means of growth than the traditional growth analysis techniques. In present studies, this point has been amply illustrated by the differences in the calculated production efficiencies of different treatments. Apart from measured growth indices such as LAI and final yields, a useful index of crop productivity can be obtained by computing the production efficiencies (LUE) as shown by this study. Analysis of the relationship between dry matter production and absorbed PAR at the various growth stages for the different treatments showed that 1.2 IW/CPE ratio and early planting with mulching treatment proved to be superior to the other treatments not only in absorption of PAR but also in conversion of absorbed PAR into dry matter due to its complimentary effect in better use of natural resources like light, soil moisture. Light use efficiency related with amount of dry matter produced by crop, as increasing the number of irrigation and early planting with mulching, as the amount of light intercepted by crop and converted into dry matter.

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Potato is one of the most important crops of the world, ranking next to rice and wheat. It assumes greater significance for its ability to provide food security to millions of people across the globe, as it provides more dry matter content, proteins and calories from per unit area of land and time. It is a wholesome food which is rich in carbohydrates, phosphorus, calcium, vitamin C and vitamin A, minerals and is high yielding short duration crops with high protein calorie ratio. Potato is one of the unique crop grown in our country having high productivity and supplementing food needs (Gupta, 2006). The non-adoption of improved agro-techniques in a climate change scenario as irrigation scheduling, variable planting dates and use of mulch are the limiting factors for low productivity and poor in creation of favourable microclimatic conditions. Globally this climate change should also be addressed in eco-friendly manner. With this back ground in view, the present investigation was undertaken to know the radiation interception and light use efficiency as Influenced by sowing windows in potato.