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Performance of Maize (*Zea mays* L.) and light interception in altered crop geometry in black soils of Karnataka

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Crop biomass and yield is a product of conversion of radiant flux into energy through photosynthesis. Extent of utilization of this energy by the crop plants in the form of photosynthetically active radiation (PAR) reflect on the yield. The success of component crops in crop mixture mainly depends on use of radiant energy available at lower layers of the crop canopy. The study was hypothesized that altered crop geometry could enhance the space for component crop to harness more solar radiation. A field trial was conducted at Main Agricultural Research Station, Raichur, Karnataka, India in 2012 rainy season. Treatments consist of different planting geometries and fertilizer application rates laid out in RCBD with three replications. Geometries were altered intra row spacing by putting 2, 3 and 4 number seeds/hill to adjust changed spacing and uniform inter row spacing compared with recommended spacing and paired rows. Light interception was measured at different intervals using ceptometer. Results of the study indicated that fertilizer applied at 225-112.5- 56.25 kg N-P-K/ha in three splits was better than blanket application. A graded fertilizer application rate was required for clumped plants due to increased competition between plants. When fertilizes applied in three splits have the advantages of available nutrients during later part of the crop growth. Maize plants are grown in clumps at 60 x 40 cm spacing with 2 seeds/hill found effective in achieving higher grain and stover yield than equidistant plant. Reduced biomass production indicated by lower LAI in clumps during vegetative stage may helpful in conserving soil moisture and utilize for later part of the season. Clump planting will be a useful strategy in maize production for achieving maximum utilization of solar radiation in crop combinations.

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