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Performance of summer sesame as influenced by irrigation and nitrogen levels in Gangetic alluvial zone

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A field experiment was conducted at the Instructional Farm of Bidhan Chandra Krishi Viswavidyalaya, West Bengal during summer season in new alluvial zone, with typical alluvial sandy loam soil to study the effect of irrigation and nitrogen levels on oil content, oil and seed yield of summer sesame. The experiment was laid out with four levels of irrigation and three levels of nitrogen in split plot design having three replications. The experiment with sesame (Sesamum indicum L.) cv. Improved Selection 5 (Rama) was laid out in a split plot design in Three replication with two factors .Four levels of irrigation were given in the main plots, namely, I_0 = Without irrigation, I_1= One irrigation at flower initiation i.e., 45 DAS, I_2=Two irrigation at flower initiation and capsule formation stage i.e., at 45 DAS and 60 DAS, I_3= Three irrigation at branching, flower initiation and capsule formation stage i.e., 30 DAS, 45 DAS and 60 DAS, Three different doses of nitrogen were given in sub-plots, namely, N_0 = 0 kg N/ha, N_1 = 40 kg N/ha,N_2 = 80 kg N/ha . The forms of N, P_2O_5 and K_2O were urea (46% N), DAP (18% N and 46% P_2O_5) and MOP (60% K_2O) respectively.The results of the experiment showed that branching, flower initiation and capsule formation stages of the crop were the most critical for application of irrigation followed by flower initiation and capsule formation. The experimental result indicated that application of 80 kg N ha^{-1} produced maximum seed yield (729.72 kg ha^{-1}) and oil yield (319.78 kg). The increased seed yield by 17.06 % and 24.98 % with application of 40 kg N ha^{-1} and 80 kg N ha^{-1} respectively over control. On the other hand, three irrigations applied one each at branching, flower initiation and capsule formation stages recorded maximum seed yield (823.73 kg ha^{-1}) and oil yield (355.57 kg ha^{-1}). This treatment was found superior to other levels of irrigations. Irrigation did not influence the oil content of sesame. The maximum oil content (44.36%) was recorded at two irrigation stage. Minimum oil content (43.58%) was recorded at one irrigation. On the other hand Nitrogen not significantly influenced the oil content of sesame. Though oil content (%) was not influenced by levels of irrigation and different doses of nitrogen but oil yield significantly influenced the levels of irrigation and different doses of nitrogen. In case of interaction effect, maximum seed yield was obtained for the combination of three irrigations with 80 kg N/ha which was significantly superior to all other combinations. Among the different treatment combination three irrigation with 80 kg N/ha was recorded maximum in respect of seed yield and oil yield of sesame.

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