

Growth and yield attributes of summer pearl millet (*Pennisetum glaucum* L.) as influenced by irrigation, mulches and antitranspirant

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SUMMARY

An experiment was conducted during the *summer* season of the year 2007 and 2008 to study the “Effect of irrigation, mulches and antitranspirant on growths and yield of summer pearl millet (*Pennisetum glaucum* L.) under South Saurashtra conditions”. Among different irrigation scheduling treatments, treatment I_3 (1.0 IW : CPE ratio), being at par with treatment I_2 (0.8 IW : CPE ratio), recorded significantly higher values for yield attributes *viz.*, plant height, number of effective tillers plant⁻¹, leaf area index, length and girth of earhead, grain weight plant⁻¹, test weight and grain yield. While, significantly the lowest values of these attributes were observed under treatment I_1 (0.6 IW : CPE ratio). Treatment M_2 (groundnut shell mulch) recorded significantly higher values for growth and yield attributes and grain yield over treatment M_0 (control). However, treatment M_2 was remained at par with treatment M_1 (wheat cut straw mulch). Application of 6 % kaolin spray (AT_1) recorded significantly the highest values for growth and yield attributes and grain yield as compared to control treatment (AT_0) except number of effective and non effective tillers plant⁻¹ and harvest index.

Key words : Irrigations, Mulches, Antitranspirant, Pearl millet

Pearl millet (*Pennisetum glaucum* L.) is one of the major cereal crop grown in the arid and semi arid regions of the world. Among the major food grain crops of India, pearl millet ranks fourth in the acreages, next to rice, wheat and sorghum. In India, the total area under pearl millet cultivation is 6.79 million hectares with total production of 5.56 million tones and productivity of 972 kg ha⁻¹. Among the states, Gujarat ranked third in the area followed by Rajasthan and Maharashtra. Pearl millet being an important staple food crop grows during both kharif and summer seasons in Gujarat. The total area under pearl millet cultivation in Gujarat is 9.32 lakh hectares and production 10.97 lakh tones along with productivity of 1177 kg ha⁻¹ and area under summer pearl millet is 1.71 lakh hectares with productivity of 2145 kg ha⁻¹. Therefore, summer bajra cultivation plays an important role in food grain production.

Agricultural system being basically a photosynthetic one, availability of water is the major motive factor and hence it must be assessed for its efficiency in terms of both primary productivity and useful end products. Moreover, water plays a vital role in the metabolic processes of the plant and therefore, it has a great impact

on growth, development and productivity. Thus, water is considered as an elixir of plant life.

Summer cultivation of pearl millet particularly in the irrigated areas of Gujarat State has got importance because of the assurance of targeted crop yield. Irrigation in summer pearl millet is one of the major inputs of crop production. The research work on various agronomic aspects have been undertaken for pearl millet crop. But, the information regarding water requirement and irrigation scheduling as well as the use of mulches and antitranspirant for summer pearl millet crop is lacking for the Medium Black soils of South Saurashtra agroclimatic zone. Therefore, the present experiment was conducted during the summer seasons of the years 2007 to 2008 to study the “Effect of irrigation, mulches and antitranspirant on growth and yield of summer pearl millet (*Pennisetum glaucum* L.) under South Saurashtra conditions”.

MATERIALS AND METHODS

A field experiment was conducted during *summer* seasons of 2007 and 2008 at the Instructional Farm, College of Agriculture, Junagadh Agricultural University, Junagadh. The texture of the experimental soil was silty clay with bulk density 1.33 mg/m, field capacity 47 %, wilting point 20 %, pH 7.7, electrical conductivity 0.56 dS m⁻¹ and organic carbon content 0.69 %. The experiment was laid out in split-split plot design with four replications. Treatments comprised of 3 Irrigation levels [0.6 IW: CPE ratio (I_1), 0.8 IW: CPE ratio (I_2), 1.0 IW: CPE ratio (I_3)] in main plots, 3 mulching levels [control (M_1), wheat cut

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