EFFECT OF DIFFERENT IRRIGATION REGIMES ON YIELD OF SOME SUGARCANE VARIETIES:

By

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ABSTRACT

Effect of four irrigation regimes were studied on the yield of six cane varieties viz; BL4, BF 162, CPF 147, Co1148 and CP43-33. The irrigation regimes comprised the irrigation coefficients of 1.0, 0.8, 0.6 and 0.4 based on pan evaporation. The highest yields were obtained under normal irrigation equivalent to pan based coefficient of 1.0. Varieties showed different response to various irrigation stresses. The variety CP43-33 showed lowest yield reduction under irrigation stress, while BL4 suffered heavy yield losses. The variety BF 162also showed some tolerance to various moisture stress. Plant characters like higher tillering, smaller leaf area with erect leaves were found directly associated with drought resistance in CP43-33. BF162 depicted rolling of leaves to avoid moisture stress.

INTRODUCTION

Sugarcane is a plant of tropical origin, but in Pakistan cane crop is grown in regions of low precipitation. The crop does not receive ample irrigation water to produce optimum yields and is most often subject to moisture stress during peak growth periods resulting into low yields (8).

Sugarcane varieties differ markedly in their yield potential under moisture stress conditions (1, 14). Effect of one, two, four and six application of water was studied on six sugarcane varieties during dry season. It resistant varieties had reduced size of leaves resulting in a reduction of total exposed area of plant to escape the effect of periodic drought (7,11,12). A drought tolerant variety CoL61 was reported to have reduced leaf area with erect and curling habit of its leaves (9). It was further observed that some cane varieties could check the excessive loss of water from surface by rolling their leaves (2,3,5).

Irrigation is the main constraint that affects our cane yields. Studies were conducted to find the optimum water requirements of cane varieties suitable for cultivation in different levels of irrigation regimes.

MATERIALS AND METHODS

The studies were conducted at the Sugarcane Research Institute, Faisalabad for three years during 1987-90. The experiment comprised six cane varieties viz; BL4, BF 166, CPF 147, CO 1148 and CP 43-33 and four irrigation regimes comprising of the coefficients of 1.0, 0.8, 0.6 and 0.4 of pan-evaporation recorded daily at the research station. The irrigation coefficient of 1.0 was equivalent to pan-evaporation reading, while low coefficients indicated stress conditions. The irrigation was applied at cumulative pan-evaporation of around 100 mm for each coefficient. This factor automatically timed the interval of irrigation of each regime. Irrigation were the same upto germination, while irrigation regimes were given after