

SCREENING OF DIFFERENT SUGARCANE GENOTYPES AGAINST SUGARCANE WHITE FLY

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ABSTRACT

Nine sugarcane genotypes were screened against sugarcane whitefly at National Agricultural Research Centre, Islamabad. Highest infestation was observed in sugarcane genotype CSSG-239 followed by HSF-240 and US-240. Minimum infestation was recorded in sugarcane genotypes US-272 and CSSG-212. None of the sugarcane genotypes was free from white fly infestation.

Keywords: Screening, sugarcane, genotypes, whitefly

INTRODUCTION

Sugarcane (*Saccharum officinarum* L.) is an important cash crop of Pakistan and grown throughout the tropical and subtropical parts of the world (Khaliq, 2002). Its share in value addition to agriculture and GDP is 3.2 and 0.7 percent, respectively. Sugarcane crop was cultivated on an area of 1124 thousand hectares, 6.2 percent more than last year's area of 1058 thousand hectares. The production of sugarcane for the year 2012-13 is reported at 62.5 million tonnes, against the target 59 millions tonnes set for 2012-13 shows a healthy performance of 5.9 percent and to compare last year which was 58.4 million tonnes, depicts an increase of 7.0 percent (Anonymous, 2013). In

Pakistan, average yield of sugarcane is much lower than that of world average, which is 75.89tha⁻¹ (FAOSTAT, 2012). Sugarcane plant during their different growth stages are attacked by a number of insect which are major constraints in getting low yield (Iqbal *et al.*, 2012). Due to heavy infestation of the pests, serious decline (86.00% reduction in cane yield; 1.4-1.8% reduction in sugar recovery) has been reported. Among various sugarcane pests, the whitefly is considered one of the most dreaded pests responsible of sucking cell sap from leaves and sometimes it became an endemic to the sugarcane crop. The population of this specie flare-up very fastly and reaches up to economic threshold level

(10 per leaves) enormously under water logged condition and nitrogen deficient areas (Ahmed *et al.*, 2004; Mann *et al.* 2006; Arain *et al.*, 2011). The adults of whitefly are small pale yellow about 3 mm long, ovate in outline with black and grey coating on the body. Only the nymphs are found on the underneath of the leaves and cause the damage by sucking the cell sap and it became pale and dry afterword. Ultimately, the leaves turn black in lieu of the development of fungus and render the crop unfit as fodder (Parsana *et al.*, 1995; Mann and Singh, 2003; Ansari *et al.*, 2007). The whitefly as economic pests seems to expanding continuously and insect damage crop by extracting large quantities of phloem sap which can

reduce yield up to 50%. The honey dew excreted by this insect serves as a medium for sooty mold and fungi growth and few species of whitefly serves as vectors of several economically important viral plant pathogens (Byrne and Bellows, 1991). Due to high reproduction as well as damage potential, sucking cell sap and acquired resistance to most commonly used insecticide, the control of whitefly has become increasingly difficult with insecticide. Moreover, the indiscriminate use of these insecticides since past few decades has led to many serious problems like resurgence of minor pests, destruction of beneficial fauna and environmental pollution. There is a need to explore alternative methods to reduce the use of pesticides and their adverse effects on environment and human health. The researchers are trying to explore the techniques which must be proficient, eco-friendly, clean and affordable to reduce pest infestation on crops. Varietal resistance is an important component

of IPM as it is environment friendly, harmless and cost effective methods of pest control therefore, a study was planned to evaluate different sugarcane genotypes against white fly whitefly.

MATERIAL AND METHODS

Experiment was conducted at National Agricultural Research Centre, Islamabad. Nine sugarcane genotypes were planted with RCBD during month of September, 2011 with three replications. All standard agronomic practices were followed. Data on pest infestation (nymphs/cm²) was recorded during October, 2012. Three plants were randomly selected from each plot and numbers of insects were counted from an area of one cm² from upper, middle and lower portion of three leaves of each plant. The data were analyzed statistically by using M-STAT software with the help of an IBM Compatible computer. The means were compared by DMR Test at P = 0.05.

RESULTS

Results presented in Fig. 1 shows that incidence of white fly differed considerably in various varieties. Highest infestation was recorded in sugarcane genotype CSSG-239 (6.11 nymph cm⁻²) followed by HSF-240 (5.34 nymph cm⁻²) and US-54 (4.59 nymph cm⁻²). The genotypes US-272 and CSSG-212 had minimum infestation as 1.30 and 1.44 nymphs cm⁻² respectively. Other genotypes showed intermediate degree of infestation. None of genotypes tested were free from white fly infestation. Mann and Singh (2003) also conducted an experiment to screen 32 sugarcane genotypes for their reaction to whitefly (*Aleurolobus barodensis*). A total of 9 genotypes were found highly susceptible. Co 1148 followed by Sel 917/98 and CoPt 84212 rated as least susceptible, while CoS 96258 and Sel 126/92 were most susceptible. None of the genotypes were free from whitefly attack.

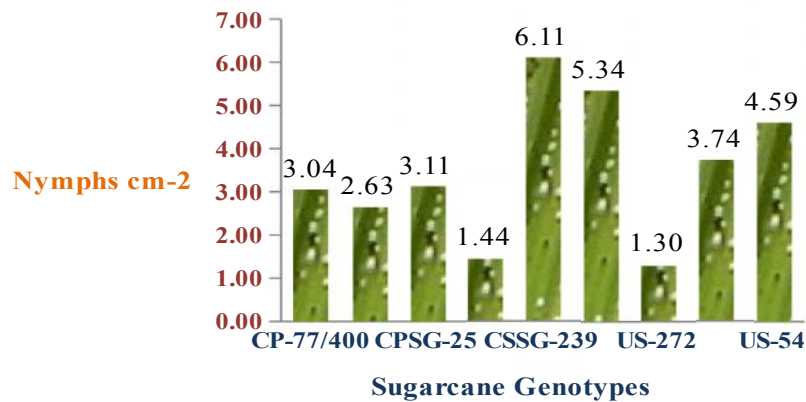


Fig. 1: Whitefly infestation cm⁻² on different sugarcane genotypes.

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