



and in having a sub-median attachment constriction (Fig. 2). At meiosis these extra

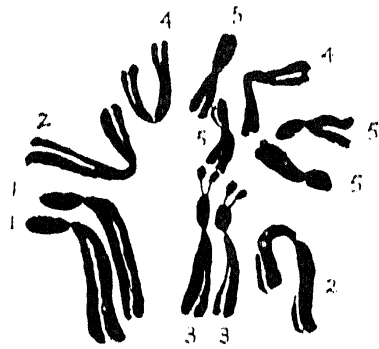


FIG. 2

Mitotic metaphase in *S. purpureo-sericeum*

$2n = 10 + 2 \quad \times 2700$

chromosomes may be seen as univalents or they may pair amongst themselves or with the fifth chromosome to form bivalents, trivalents or tetravalents.

The plants in which these extra chromosomes occur are found to be in no way different from those in which they are absent. It is highly probable that these supernumerary chromosomes like those first observed in Maize (Longley, 1927) and in *Paspalum* (Avdulov and Titova, 1933) are impoverished of genes. They, however, differ from the "B" chromosomes of maize in having a well-defined attachment constriction and in being homologous with one of the chromosomes of the normal haploid set.

Ten has been commonly reported as the basic number in the Andropogoneae and the discovery of the five-chromosome species *S. versicolor* (Karper, 1930), has been considered as a direct evidence for this. However, multivalent associations are found in nearly all diploid species of *Sorghum*, and associations higher than quadrivalents reported in the tetraploid *S. halepense* by Huskins and Smith (1934). These workers have not found fewer than 7 units of association in the *Sorghum* material examined by them. This, and the frequency with which the chromosome number 7 and its multiples occur in Graminae, raise the possibilities of this number rather than 5 being the basic number in *Sorghum*. The discovery of types amongst *S. purpureo-sericeum* with chromosomes ranging from  $2n = 10$  to  $2n = 14$  seems

to indicate that this species of *Sorghum* probably represents one of the stages in the process whereby chromosomes are gradually eliminated in the evolutionary fall in the basic chromosome number from 7 to 5.

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### How Mid-Rib Hardness affords Resistance to the Sugarcane Top-borer *Scirpophaga nivella* F., in India

THE sugarcane top-borer, *Scirpophaga nivella* F., is found almost all over India where at present about 4,500,000 acres are under sugarcane owing to the recent rapid development of the sugar industry.

In some of the sugarcane tracts about 70% of the sugarcanes at harvest time are found attacked by the top-borer. Attacked canes exhibit a drying shoot and become stunted and often have a bunched top owing to the upper side buds developing into branches. Besides this damage, the attack by this pest kills off many young shoots and prevents the growth of many shoots into millable canes. At harvest time millable canes bored by this pest show an average loss of 20% in weight. During some years the loss is much more.

It has been found as a result of field observations carried out during 1937 and 1938 that some varieties of sugarcanes are definitely more resistant to this pest than others. All these resistant varieties have in common very strong hard mid-ribs in their leaves. The varieties that are badly attacked have rather weak mid-ribs often with drooping leaves.