

satellite segment of chromosome 6. Only darkly stained chromatin, sometimes divided by a clear region, was found in this segment.

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Effect of streptomycin on chloroplast structure and pollen fertility —The attempt to induce cytoplasmic male sterility in maize using streptomycin has been continued from last year. C103N seed was treated in 50 ml solutions of streptomycin (Petrov, Fokina and Zheleznova, U.S. Patent #3,594,152) for 24 hours at room temperature with dosages ranging from .0005 micrograms/milliliter to 10,000 micrograms/milliliter. At the same time, control seeds were soaked in distilled water.

At a dose of 50 ug/ml, bleaching of the leaves was noticed, and none of the plants which had been treated with at least 500 ug/ml survived past the seedling stage. However, the most profound effect on the surviving plants occurred at .001 ug/ml, with one of these plants exhibiting altered morphological characteristics. This plant was much shorter than the control plants, and it produced only one central spike.

The unshed pollen of all the plants was checked, using the conventional acetocarmine staining, in order to ascertain if there had been any effect on pollen fertility. All the control and treated plants with the exception of the one abnormal plant had fertile pollen. When the unshed pollen from this plant was checked it was found that the anthers from the top two-thirds of the spike contained mostly fertile pollen; the anthers from the lower one-third of the spike contained all sterile pollen. Thus, this plant was sectorially sterile.

Chloroplasts of the treated plants were studied in leaf sections prepared for electron microscope observation. This was done in an attempt to correlate pollen sterility with a change in the chloroplasts. The leaf sections from the sectorially sterile plant showed normal sized chloroplasts with a much higher number of osmiophilic granules. As the dose of streptomycin was increased to 50 ug/ml, the chloroplasts appeared shrunken and no longer had the characteristic grana. At a dose of 500 ug/ml the whole lamellar structure had disintegrated, and the chloroplasts were greatly reduced in size.

It is encouraging that at least partial sterility can be induced by streptomycin. Further studies are being done using this drug, and more examinations of chloroplast structure in both maintainer and cytoplasmic male sterile plants are being conducted. Hopefully, these studies will yield new information on the possibility of involvement of the chloroplasts and the other organelles in the phenomenon of cytoplasmic male sterility.

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