

Public Abstract

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Title:INVESTIGATIONS INTO THE CAUSE OF POLLEN ABORTION IN MAIZE CMS-C

Cytoplasmic male sterility (CMS) is a naturally occurring mitochondrial mutation that causes pollen abortion in plants. CMS has been used extensively in plant breeding in order to produce hybrid seed for farmers. In the early 1960s a majority of corn grown in the US was produced from CMS-T (a type of CMS in corn). The mechanism of pollen abortion in CMS-T was unknown at the time and during one wet year over 60% of the corn in the US died due to a fungal toxin. Later it was discovered that CMS-T infers a susceptibility to the fungal toxin and was the cause of the problem.

Currently CMS type C (CMS-C) is being used for seed production, even though the mechanism of CMS-C pollen abortion is yet unknown. In an attempt to identify the cause of pollen abortion the CMS-C genome was analyzed for changes in its DNA content, RNA expression and protein expression. A change in protein levels for components necessary for energy synthesis in mitochondria was identified in CMS-C. This indicates that pollen aborts in CMS-C plants occurs due to a reduction in energy during pollen development.