

1. Cold room studies.

Advantage was taken of the newly installed controlled temperature room to study the effect of dosage of the *Su* gene on cold hardiness. Keeping embryo genotype constant by use of reciprocal crosses between different inbred sweet corns and an inbred dent, it was evident that at 50°F for 10 days seeds of endosperm constitution *Su/Su/su* were more tolerant than *su/su/Su* seeds. This might be in part due to an interaction between embryos and endosperms of different genetical constitution. There was also strong evidence that heterotic effects are important, as hybrid seeds were more cold tolerant than their inbred parents.

As cold tolerance is partly due to resistance to soil pathogens at low temperatures, a test was made to see if an antibiotic, penicillin, could be used to promote germination. Genetically uniform inbred lines of sweet and dent corn, treated with units of penicillin for 12 hours, were subjected to 50°F for days but showed lower germination than untreated seed.