

CURRENT RESEARCH ON CONTROLLED ATMOSPHERES IN CROATIA

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Several research projects using carbon dioxide (CO₂) as a potential insect control method in grain have been conducted in Croatia from 1986 to the present time. The efficacy of CO₂ on insects was studied both in the laboratory and in the field in silos. The results have shown that a concentration of 60 to 70% CO₂ effectively controlled *Sitophilus*, *Tribolium* and *Rhyzopertha* during exposures of 10 days. Shorter exposures at this concentration were less effective, especially when tested against the moths *Corcyra* and *Sitotroga*. A CO₂ concentration of from 40 to 60% was found to be less effective against a natural population of *Sitophilus* spp. in infested wheat than on a laboratory population of these species.

The field studies in silos were not satisfactory even though more than 5 kg of CO₂ was used per tonne of wheat in some instances. There were heavy losses of CO₂ even though some conventional sealing had been done on the silos. In field studies with maize it was found that the CO₂ effectively controlled *Psocoptera* and either reduced or prevented the growth of *Aspergillus* and *Penicillium*.

Seeds of different species were stored in CO₂ for varying periods and germination studies were conducted on them. Some species completely lost their germination quality during storage while in other species germination quality was maintained through the storage tests.