SPEED OF GAS EXCHANGE WITH OXYGEN DURING TREATMENT OF COMPRESSED TOBACCO WITH NITROGEN OR CARBON DIOXIDE FOR PEST CONTROL

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Tobacco suffers from infestation by the tobacco beetle *Lasioderma serricorne* and the tobacco moth *Ephestia elutella*. Most of the control measures tend to leave chemical residues. Nitrogen and carbon dioxide are proposed for use as disinfestants. The exposure time required for total control depends on the time required for the gas to replace the oxygen and for big compressed bales the inert gases must diffuse into the centre of the bale where the insects may reside. In laboratory experiments under controlled climatic and fumigation conditions, the diffusion time was determined to achieve complete exchange of the air inside the tobacco bale. At room temperature, high concentrations of both gases were reached in the centre within about 6 hours with a corresponding decrease in the oxygen content.