

Anethumgraveolensas a Fumigant for Control of Rhyzoperthadominica

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Abstract: Grains are very common in Indian food system. They are an important source of carbohydrates, proteins, fibre, vitamins, and minerals. Traditionally small scale / domestic level grain storage system had been successfully managed with natural biopesticides like neem (*Azadirachta indica*) leafy biomass. But due to the use of High Yielding Varieties (HYV) and shrinking biodiversity of seeds, climate change, pest resurgence etc., these traditional methods have now become inadequate for protecting grains from storage pests. Hence chemical fumigants like Aluminium phosphide are widely used in metallic storage bins. Phosphine gas released from Aluminium phosphide is reported to be very harmful for human health. Also, it may affect the quality of grains due to its absorption in the storage structure. Food safety and health concerns are gaining attention worldwide. Therefore, botanical fumigants are being explored which would eliminate the chances of contamination of grains. In the present paper, fumigant activity of essential oil of Dill seed (*Anethum graveolens*) against *R. dominica*, a hazardous pest, is presented. Preliminary investigation reveals that ~60 % mortality of *R. dominica* can be achieved in fumigant assay for adults; LC_{50} of 0.12 $\mu\text{l/L}$, 0.1 $\mu\text{l/L}$ and 0.07 $\mu\text{l/L}$ are obtained in 24h, 48 h and 72h respectively. The bioefficacy can be further enhanced by controlled release formulation. The insecticidal activity of Dill seed essential oil reveals the feasibility of getting an effective and economic substitute for toxic chemical insecticides being used in grain storage system.