ADVANTAGES OF NATURAL GLUE BASED INSECT TRAP

Unlike synthetic glue, the natural resin (lac) based glue is gentle in odour, harmless to handle even with bare hands and nontoxic in nature. This natural glue formulation finds end use and application in agriculture sector particularly as a potential replacement to pungent smelling, flammable and hazardous synthetic glue, mostly based on chemicals such as polybutene, polybutylene and poly-iso-propylene resin, acrylic emulsions, etc.

PATENT (Granted on 10.01.2024)

Thombare N, Srivastava S, Mohanasundaram A. and Sharma KK. (2021). Natural resin based novel nondrying adhesive: Preparation and application in insect trap. Indian Patent Office No. 202031019392.

ECONOMICS

Preparing cost of glue formulation: Rs. 900/ Kg (Approx.) including raw materials and labour

Market Price of commercial glue: Rs. 1200 – 2500 / Kg

Profit per Kg: Rs. 300 - 1600 (Approx.)

Potential users: Farmers, Nursery Growers, Kitchen Gardeners, Polyhouses, Household Applications.

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NATURAL GLUE-BASED STICKY INSECT TRAP

Lac resin modified as a non-drying adhesive

भाकृअनुप
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SUCKING PEST MENACE IN AGRICULTURE

Sucking pests are a major concern in agriculture as they feed on plant sap, weakening crops and transmitting viral diseases. These pests use specialized mouthparts (proboscis or stylets) to pierce plant tissues and extract nutrients, leading to stunted growth, reduced yields, and secondary infections.

MANAGEMENT STRATEGIES FOR SUCKING PESTS

Cultural: Resistant crop varieties, Crop rotation, trap cropping

Mechanical: sticky traps, light traps

Biological: Natural predators, parasitoids, entomopathogenic fungi

Chemical: Use systemic and botanical insecticides

LIMITATIONS OF PESTICIDE USE

- Health risks from residues in food
- Pest resistance
- Environmental pollution
- Harms beneficial insects & disrupts ecosystems

WHAT ARE STICKY TRAPS?

Sticky traps are effective means of small sized-flying pest control, especially, in vegetable crops where frequent use of pesticides is not advisable.

COMMERCIAL ADHESIVES

Examples

- Grease
- Polybutene resin
- Polybutylene and polyisopropylene resin
- Water based acrylic emulsions.

Limitations

- Pungent odour,
- Drying out
- Difficulty in spreading,
- Melting/thinning with tropical temperature,
- Not resistant to water

CHEMICAL MODIFICATION OF LAC

A natural resin, lac, was chemically modified through hydrolysis, to develop non-drying base. An in-situ bleaching process using suitable bleaching agent was developed to remove its inherent dark-brown color, resulting in a light yellow shade of the product. through this process variety of the colour combinations can be prepared from any kind of lac such as sticklac, seedlac, shellac, buttonlac, etc.

NON-DRYING ADHESIVE FORMULATION

A glue formulation was developed using the light yellow colored, chemically modified lac resin as a major ingredient. Suitable vegetable oils were also added as fillers along with apt diluents, and insect attractants as per requirement. the average strength of the formulation was about 0.3 Kg/cm².

FIELD EVALUATIONS

Field trials were conducted for comparative evaluation of insect trapping efficiency of lac-based glue and commercial glue using cylindrical yellow-colored traps in red gram, brinjal, okra, semialata, and mustard crops. The best performing formulation was identified based on maximum insect trapping efficiency.

All lac glue formulations showed fairly good attraction efficiency against sucking pests. The lac-based sticky traps were found to stick up to 400 insect pests per trap. Overall, the efficiency of the lac formulations was observed as 80% compared to the commercial formulation.