



Plant based powders form the contents of the bio-rodenticide

INTRODUCING BIO-RODENTICIDES

WHY BIO-RODENTICIDES?

Worldwide there are many concerns on the long-term effects of chemical rodenticides. This is captured for instance in new EU legislation on the use of biocides. Many traditional chemical rodenticides, especially anti-coagulants, carry too high a risk for the environment. They are categorised as persistent, bio-accumulative and toxic (PBT). In other words, they remain in the ecosystem where they are applied. Therefore, chemical rodenticides pose an increasing risk to people and non-target species such as pets, birds and mammals. In addition, many rodent species develop resistance to long-used chemical rodenticides and learn to avoid them more and more. Hence the need for alternative, environmentally friendly rodenticides is warranted.

ADVANTAGES OF BIO-RODENTICIDE OVER CHEMICAL RODENTICIDES

- Made from botanical material
- Non-persistent: quick biodegradability and decomposition; the toxins do not build up in the environment
- Developed so as not to harm non-target population: environmentally friendly and safe to apply
- No instant kill, but effect within three to five days, thus avoiding bait shyness and long-term resistance

OUR APPROACHES IN DEVELOPING BIO-RODENTICIDES

- Select potential plants with toxic, deterrent or repellent properties
- Use proven protocols for laboratory and field testing
- Test acceptance/palatability, efficacy/lethal dose, shelf-life, non-target and environmental harm
- Training and ensure the integration of bio-rodenticides in clients' rodent management strategies



i. Acceptance (palatability) test

Bait acceptance of bio-rodenticides is assessed in the lab where proven test procedures are standardized, and reproducible results are obtained. Testing requires singly caged 'experimental' and 'control' rodents fed with a fixed amount of a choice between a bio-rodenticide formulation and a standard diet (e.g., pelleted food). Results are usually expressed as the percentage of total bait consumption with respect to control diet.

ii. Efficacy test

The efficacy of a bio-rodenticide is tested both in the lab and field using proven protocols. In efficacy tests different concentrations and mixes of the plant materials are tested to come up with the most effective lethal dose. The bio-rodenticide product is considered satisfactory if a minimum mortality of 90% of test animals is obtained during the bait-exposure and post-exposure observation periods; if at least 33% of the bio-rodenticide is consumed by test-group; and if no more than 10% of control group die during the study.

iii. Shelf-life determination

The shelf-life of the bio-rodenticide product is tested by storing portions of the bio-rodenticide in air-tight containers at room temperature. The jars are labelled and used to test the product for efficacy at fixed time intervals using the same efficacy protocol.

iv. Non-target species and environmental harm test

Possible lethal or morbid effect on non-target population needs to be established: one needs to ensure that the bio-rodenticide does not cause unacceptable collateral damage. Determination of non-target harm is done on domestic animals such as chicken, rabbits and guinea pigs under strict controlled condition and ethical approval. The test procedure is the same as that of the rats except that the experimental and control diets provided daily depend on the average body weight of the animals.



A caged rat for lab testing



Camera trap set in the field to monitor bio-rodenticide intake



Camera trap captured rats during field monitoring of bio-rodenticide intake

Lab setup of rat cages and camera traps to monitor intake and efficacy of bio-rodenticide

