



Bat Guano Harvesting and Processing

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Caves used as sources of bat guano are carefully vetted.

Requirements

Participants

- Caves must be located where seasonal rain has minimal impact with water entering the cave opening.
- Caves must be of sufficient size (in the millions) to produce enough guano and make harvesting commercially viable.
- Access to the caves must be controlled to prevent garbage dumping, fires and tourism.

- Land owners, cooperatives, religious leaders and government authorities agree to protect the roosts.
- Price and profit distribution must be reached.
- Without a solid understanding of the needs and requirements for sustainable harvesting the cave will not be used for a supply of bat guano.

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Raw bat guano is hand scooped from cave floors, sifted, and bagged.

Bags are marked to identify the collectors and the cave location.



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Individual bags of bat guano from caves are transported to a roadside. When a volume large enough for a truckload is gathered, the raw guano is transported by appointment to the factory's sorting yard for initial inspection.

Upon arrival, bags are weighed as they are unloaded from the truck and random bags are opened for visual inspection. Wet, rotten, or otherwise questionable raw guano is rejected. Visible debris is removed as the raw material is spread out to sun dry.

Bags are weighed and given a visual inspection.

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After sun drying the raw bat guano is bagged again and transported to the processing factory.

Bags are marked to identify the collectors and the cave location.

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The guano is poured onto a conveyor belt and lifted up into the opening of the rotating heating tube. Production runs are made for each individual cave, and tracked.



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Heating

The heating tube is slowly rotating on a downward slope towards a wood-fired heating box. Interior rudders toss the guano as it transits the tube.

Temperature of the rotating pipe is constantly monitored. At the end of the 40' (13m) steel tube are exit holes where the guano pours out of the tube onto a catch-pan.

The guano is tested with a moisture balance to ensure the moisture content is 12% or less.

Sieving

Wild bat guano in the catch-pan is shoveled onto a conveyor belt lifting upward into a 4-cylinder rotating sieve, that slopes downward. Each cylinder has a progressively larger mesh opening.

The sieved bat guano is now shoveled into bulk bags, still kept separate by cave origin.

Bags are marked to identify the collectors and the cave location.

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Blending/Mixing

Bags of wild guano from multiple caves are mixed in a paddle-wheel mixing machine to ensure the nitrogen content is a consistent 7% by weight.

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Bulk Storage

As the mixed/blended guano pours out of the blending machine the guano is shoveled into bulk bags and stored inside the factory ready to be packaged for export.

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Export Packaging

The cave-mixed bat guano is poured into 20 kg export sacks with a plastic inner liner and sewn closed. A registered NPK label with contact information and the individual bag number is sewn into the bag seam.

Fifty bags are stacked on a pallet and tightly wrapped. Each pallet is numbered and the individual bag numbers on each pallet are recorded.

NPK Label

Bag Number

Pallet Number

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Control and Inspection

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Each pallet weighs 1 metric ton (2,200 lb). Twenty pallets are loaded into a container for shipment. Before loading, a quality control manager from a quality control company employed by Ring Organic will ask for 6 to 8 bags be taken off pallets and the contents carefully inspected.

The QC inspector takes samples into the factory's lab room to confirm the moisture content is 12% or less. Physical inspection checks that the contents of each inspected bag are clean, fluffy, and free of debris. The inspector also takes a small sample from several bags.

The samples are mixed together and this mix becomes the archived sample for the factory, the inspection company, and a sample is sent by the inspection company to an accredited laboratory in Jakarta.

The sample is tested for macro-nutrients, pH, moisture content, heavy metals, and absence of pathogens. Each shipment has its own inspection, sample batch and test.

Documentation

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Each shipment's documentation must include a Health Certificate issued by the government of Indonesia certifying that there are no diseases associated with bats or bat guano in Indonesia at the time the documents were issued.

Health Certificate