BiOWiSH® Crop Liquid: Pilot Scale Fertilizer Coating

Introduction

This technical bulletin provides a step-by-step protocol for pilot scale (less than one metric ton) coating of BiOWiSH® Crop Liquid onto solid fertilizer.* For coating fertilizer batches of one metric ton or greater, please refer to the user guide BiOWiSH® Crop Liquid Large-Scale Fertilizer Coating.

Equipment

- Mixer (rotary, paddle, ribbon)
- Sprayer (hand pump or air driven) with a flat fan and fine mist spray pattern. No other tools such as eye dropper, pipet, etc. should be used
- Scale or balance for weighing
- Buckets and weigh boats or cups for weighing material

Materials

- BiOWiSH® Crop Liquid

Solid Fertilizer Materials, Compound Fertilizers, or Fertilizer Blends Procedure

1. Make sure all equipment is thoroughly clean and dry before and after coating.
2. Due to the heterogeneous nature of BiOWiSH® Crop Liquid, a minimum of 50 kg of fertilizer should be used for small scale coating trials. If smaller amounts of BiOWiSH® coated fertilizer are required for subsequent testing, it is recommended that these be sub-sampled from the 50 kg batch. Please contact your BiOWiSH Representative for BiOWiSH® application rates.
    - For weight-based delivery, use a bucket to weigh out the amount of solid fertilizer to be coated. For this example, we will use 50 kg of solid fertilizer. Calculations for 50 kg of solid fertilizer:
        - The percent of BiOWiSH® is based on the recommended application rate × 50 kg = X Kg of BiOWiSH® per 50 kg of fertilizer
    - For volume-based delivery, measure out the volume of solid fertilizer to be coated. Calculations for volumetric dosing:
        - For 50 kg of fertilizer, apply the recommended amount of BiOWiSH® Crop Liquid
3. Collect 2 kg sample of the uncoated solid fertilizer and set aside. If multiple different types of fertilizers will be coated, collect 2 kg samples from each of the uncoated fertilizers. Please contact your BiOWiSH representative for our Fertilizer Sampling Protocol (SOP).
4. Place the solid fertilizer into the mixer. Before dispensing, mix the container of BiOWiSH® Crop Liquid.
    - For 1 L bottles, follow label directions for mixing
    - For 2.5 gal (9.46 L) jugs, refer to the technical bulletin, *BiOWiSH® Crop Liquid 9.46 L (2.5 gal) Jug Mixing Instructions*
    - For 190 L drums, refer to the technical bulletin *BiOWiSH® Crop Liquid 190 L (50.2 gal) Drum Mixing Instructions*
    - For 1,000 L totes, refer to the technical bulletin *BiOWiSH® Crop Liquid 1,000 L (264 gal) Totes Mixing Instructions*
5. Collect one 200 mL subsample of the mixed BiOWiSH® Crop Liquid used in the coating trial.
6. Add the recommended amount of BiOWiSH® to the sprayer. Use a sprayer with a fine, flat fan mist spray, never droplets. Fully assemble the sprayer and prime it. If using weight-based dosing, weigh and record the weight of the sprayer. If using volume-based dosing, note the starting volume and define where the final volume should be after delivery.
7. Turn on the mixer.

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8. Begin spraying the BiOWiSH® onto the rotating solid fertilizer bed. Avoid spraying onto the mixer blades or sides of the mixer. To avoid settling in the spray tank, continuously shake the handheld sprayer while applying BiOWiSH®.
    - For weight-based dosing, frequently stop spraying and re-weigh the sprayer unit. Subtract the weight from the initial weight recorded in Step #6. The goal is to deliver the recommended amount of BiOWiSH® per every 50 kg of solid fertilizer
    - For volume-based dosing, spray until the volume in the sprayer has dropped to the final level. Goal is to deliver the recommended amount of BiOWiSH® per every 50 kg of solid fertilizer
9. Once the required amount of BiOWiSH® has been added, stop spraying and allow the mixer to run for two minutes.*
10. Coating is now complete.**
11. As you are emptying the coated solid fertilizer into buckets or other holding containers, obtain 2 kg of a representative, composite sample. If multiple different types of fertilizers were coated, collect 2 kg representative composite samples from each of the coated fertilizers. Please contact your BiOWiSH representative for our Fertilizer Sampling Protocol (SOP).
12. Place the remainder of treated fertilizer in sealed containers until ready for use. Store the coated fertilizers in sealed containers in a cool, dry location out of direct sunlight.
13. Be sure to clean all equipment according the technical bulletins mentioned in number 1 above.
14. Send these samples, along with the appropriate sample submission form, to the BiOWiSH approved laboratory supporting your region. Contact agronomy@biowishtech.com for the laboratory nearest you.
15. Submit an R&D Request Form specifying the appropriate “Request Type” for the coated/uncoated fertilizer sample(s) and attach a copy of the “Laboratory Submission Form.”

Storage

BiOWiSH® Crop Liquid should be covered and stored in a cool, dry location out of direct sunlight. Once opened, keep in an airtight container to maintain the integrity of the product. Prevent spillage and separate from strong oxidizers. The storage shelf-life of BiOWiSH® Crop Liquid is 3 years when stored as recommended.

Store fertilizer as recommended by the manufacturer. Solid fertilizers coated with BiOWiSH® Crop Liquid have a shelf life of up to two years when packaged in a suitable bag and stored as directed, provided that the uncoated fertilizer’s physical integrity specifications allow. The stability of BiOWiSH® coated fertilizers stored and handled in unpackaged bulk volumes varies by climate and operational practices.***

Technical Support

Refer to the technical bulletins at biowishtech.com/resources for application instructions for coating solid fertilizers or mixing with liquid fertilizers. For additional information, please contact a BiOWiSH distributor near you, email agronomy@biowishtech.com, or visit our website biowishtech.com.

* For full scale production, the rotational speed of your production mixer may allow reduction in the required retention time for coating

** The addition of BiOWiSH® Crop Liquid does not require a drying agent nor does it replace a drying agent if one is currently being used in production. If a drying agent is currently in use, apply BiOWiSH® to the solid fertilizer and allow to mix for two minutes before adding the drying agent.

*** Please see product labels and compatibility technical bulletin documents in the resource section of our web page for more information