

MilkySpore

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Milky Spore

- What is Milky Spore ?
- How does it work ?
- Efficacy Testing – Fall 2005

What is Milky Spore ?

- **Milky Spore is a spore of the Bacillus Popillae bacterium.**
- **It was discovered as a natural occurring disease in Japanese beetle grubs in the 1940's by USDA researchers.**
- **The USDA established a technique for making a product and St Gabriel Laboratories uses this technique.**

How Does Milky Spore Work ?

- **Japanese Beetle grubs eat the spores by mistake.**
- **The spores turn into bacteria.**
- **The bacteria multiply.**
- **When the grub is about to die, the bacteria sense that there will be no food source and they turn back to spores.**
- **The grub dies and more than a billion new spores are released into the soil.**

MilkySpore – Efficacy Testing

Purpose:

- **Experiments were conducted to evaluate the efficacy and stability/viability of MilkySpore Powder**
- **Test Materials: From fall 2002. Lots were three years old.**
 - **Test Method: similar to Dutky 1940's experiments**

Milky Spore - Long term stability

- **Set #1 is 2 to 3 years older than set #2.**
- **Since Milkyspore is rarely, if ever, held in inventory for more than three months, the two to three years difference is an adequate amount of time difference.**

Milky Spore Stability results

Set #1

Percent of starting number infected:39%

**Percent of surviving number
infected:71%**

Set #2

Percent of starting number infected:39%

Percent of surviving number infected:73%

Milky Spore - Conclusion

Product stability:

- No significant difference between new product and product stored for two to three years.**

Milky Spore - Conclusion

Efficacy:

- **39% of the 8325 Japanese beetle grubs that were exposed to MilkySpore product became infected.**
- **72% of the 4506 Japanese beetle grubs that survived were infected.**

Milky Spore - Long Term Viability

“Spores remained viable in air dried soil for more than 10 years.” (White 1940a).

Milky Spore – 1945 Samples

Slides were made on May 19, 1945 and came from the Dutky collection.

1000 Japanese beetle grubs were injected with this material.

Milky Spore – 1945 Samples

- After 22 days incubation, 312 grubs survived, 161 were infected, and 151 were not infected.
- Percentages infected: 16% of grubs injected, 52% of grubs that survived.
- From this one can surmise that the *Bacillus popilliae* spores are stable for much longer than two to three years