

523 Cow Patty Critters (Book Review June 2023)

#RealisticRegenAg | Usually, I try to avoid cow patties when walking in a pasture. This time, however, the rancher was stopped in his tracks because there were holes in the top, and he thought he saw something scurry back into it. If we had the new book "Cow Patty Critters," we may have been able to figure out exactly what was going on. Stay tuned for the rest of this episode as I review this new resource published specifically for Western Canada.

Welcome to Plants Dig Soil. My name is Scott Gillespie and I work with farmers and agribusiness on climate smart agriculture. This kind of agriculture has to be scientifically proven to be good for the planet now and in the future. Just as importantly, it also must make economic sense for the farmer, both now and in the future. I invite you to check out my website www.plantsdigsoil.com for resources and to learn about the services I offer.

Transcript is available:

<https://www.plantsdigsoil.com/podcast/523-cow-patty-critters>

Cow Patty Critters free e-book download:

<https://publications.gc.ca/site/eng/9.913866/publication.html>

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I first heard about this book at the University of Lethbridge's first annual Sustainable Agriculture Showcase at the end of March this year. Dr. Kevin Floate gave a lecture on his work with ivermectin and its effect on cow patty critters. Ivermectin is one of the most commonly used medicines in animal agriculture for internal pests and parasites.

The effect of ivermectin on the community that lives off the cow patties is surprisingly understudied. It makes sense that it would still be effective once it exits the cow, but it wasn't a research priority until recently. The focus was on controlling pests, and the effect on those that come after wasn't considered. Studying this community is not a simple task, as it is complex and observing its effect can be challenging. This is where Dr. Floate's research comes in. He has been able to show the effect and what it means.

The simple answer is to eliminate the pesticide. However, this needs to be weighed against economics and your long-term goals. Just cutting it out could lead to disastrous consequences for herd health when the system has been dependent on a pesticide for pest control. I'm not an animal nutritionist or a veterinarian, so before making changes, you need to consult with those experts. One way to prepare for that discussion is to learn more about who is in the community and who may be affected the most. This book is a great starting point.

When you first download this book, you'll find it's quite a large file. At 228 pages, it can seem intimidating, but the bulk of the book contains detailed information about all the critters you may encounter out there. What's interesting to me is the community that gathers around these freshly deposited nutrient bundles.

First things first, what's the difference between dung and manure? I didn't know, but now I do. Dung is what comes out of the animal. Manure is dung plus bedding (like straw in a barn).

When dung is fresh, it's anaerobic, meaning it has low or no oxygen. It will be full of critters that can survive in the animal's intestine. This quickly changes as it hits the ground and is exposed to oxygen.

As an agronomist, one of the most fascinating things I learned is the fate of nitrogen in a cow patty. Most of it is tied up in bacteria when it is first deposited. These bacteria quickly die as the environment becomes aerobic. They may be eaten and excreted, and the nitrogen may be taken up again by something else. However, up to 80% of the nitrogen could just gas off into the atmosphere. Eighty percent. Think about that.

For ranchers, this is a significant loss. Of course, there are things you can do to limit this loss, but the fact remains that most of the nitrogen dissipates. Stepping back, you can see that ranchers don't really lose this nitrogen. If they have a pasture with legumes such as alfalfa, sainfoin, or clover, these plants bring the nitrogen back into the system. So, in the long run, it's not a net loss. In the short term, it's hard to know how much of that nitrogen goes back into the soil.

The next most interesting thing I learned was the process of dung degradation. I've never really thought about it. I just figured it slowly went down into the soil, and beetles and earthworms were the ones responsible. It turns out, it's really complicated. It's hard to generalize because so many factors are at play.

If it's cold out or the ground is frozen, the dung might just sit there. As the ground thaws, it will thaw, but the critters may not be alive yet to eat it. In the peak of summer, there are many critters ready to pounce on it as soon as it drops to the ground.

There are dung eaters and those that eat the dung eaters. Initially, the dung eaters and breeders show up. But other critters know that these creatures will be tasty snacks when they mature, so they show up just in time to catch them. As the patty dries out and gets smaller, earthworms may start bringing parts of it below ground. Later, when the cattle show up again, hoof action may break up the final bits and spread them around.

I'd like to finish by thinking about nutrient flows. If the animal is only eating what is on the pasture, then there are no net imports of nutrients. There is only flow. The dung is made of plant material that has been eaten, digested, and excreted. There will be a small export of nutrients in the form of meat or milk since the animal does not die and decompose.

To increase nutrients, you need to bring nutrients onto the land. Bale grazing will increase the nutrient supply to a field when the bales come from another source. Most of the nutrients go right out the back end of the animal and get deposited. Taking a wider view, you can see that in the system, there is no net gain. The plants that were baled came from a field that did not have its nutrients replaced. These nutrients ended up on the pasture where it was grazed.

In the very long term, more nutrients could be added to the system as microbes extract from the soil particles. In a grazing-based system, the newly acquired nutrients could match the exports from the land. However, when the land is used for annual production, the export rapidly overwhelms the import. I've discussed this in-depth in a previous episode. I encourage you to check out the episode "Three Pillars Propping Regen Ag" if you want to delve deeper.

That's all for this week. Check out the book. The download link will be in the show notes. It's a free book published by Agriculture and Agri-Food Canada as a resource for Canadian producers and agronomists. I'll talk to you next time.

