Cliff Scholz: Joe, you shared something that I think may be less well known among growers, even organic growers, which is that, poultry manure in particular, even though it's a natural product and is used extensively in organic because it meets organic specs, that it can affect the soil negatively in many of the same ways as does the chemical fertilizers that you've been sharing about. Can you give us a quick little piece on why that is so?

Joe Scrimger: If you go into a poultry barn, the big barns, used to be 20,000 chickens on the floor and now there's usually 100,000 chickens per building, at least. Even in the organic buildings in Michigan, now. You always have some ammonia smell, coming off.

And the ammonia smell is not odd. If you go to the woods, pull back the leaves in the summer, take a handful of soil, part of the thing of the soil test, of smelling that, is the musty ammonia smell. The ammonia represents a conversion of nitrogen in the soil.

And so, ammonium nitrogen's hard to test for. But when ammonium nitrogen, which is slow release, and things get converted to that in the soil, and you can buy it, like, ammonium nitrate.

But, when it's converting to nitrate, it releases ammonia. So in our testing lab, back when I run one, we followed nitrogens, we didn't, test ammonium, which is more in reserve. But we tested the ammonia, which tells you if it's converting.

And when you get a soil that's got good nitrate and moderate ammonia, you know you're gonna have more nitrogen coming from the soil. A lotta soils have very little ammonia from the soil. They have it from anhydrous ammonia being applied to the soil, which speeds up that process.

And it definitely works. Makes the crops get big. But it's hard to control the release. And one of the things they do to stabilize that is to put a bacteriostat in it to keep the bacteria from converting it. Well, that's killing bacteria in the system.

But it doesn't kill 'em all. That's why they call it a bacteriostat. That's the wrong way when you're trying to build biology and you want those microbes

to work for you, specifically the bacteria and the nitrogen-producing ones.

But when they get low, there'll be a burst of them when you add that nitrogen, which most people at one time they called urea fertilizer organic 'cause it's, quote, "close to urine," but it's a white pellet that's 44% nitrogen.

And very quick release, quicker than release than anhydrous ammonia. Anhydrous ammonia has to be converted. But it does tend to give quite a boom. So feather meal is only one example. But most all manures, when they get put to the soil, if you don't use too high of a rate, some of that'll release and some of it will go into the reserve organic matter and the reserve ammonium nitrogen. And then release later on as nitrate. And it gives you more slow release throughout the year.

And that's the key. What we try to do in the conventional world is get those farmers to use at least three different sources of nitrogen that release at three different times.

Then we've got the ability to spread that nitrogen release out. And hopefully, then, the soil kicks in a little more when we do that. And we can get those type of releases even from the conventional, man-made chemical products. So that's a start.

Then in the organic world, the poultry manure, which we like to get in the system because it's not that it just has a lotta nutrients. And it does. It's one of the most concentrated manures.

But it has these aerobic bacteria that will go on and produce more nitrogen for you. And I haven't figured all the negative out, but near as I can tell from guys overusing the poultry, is that you start to get a reserve and you're puttin' on more.

So you put on that first application, and it works. So the guys do that again. But there's always residual. And they don't allow for the residual from the previous year's application. Well, then they start gettin' too much. And if nitrogen leaches, it doesn't make any difference whether it's an organic source or not, it makes the soil get harder.

And it takes other needed minerals with it. The soil will try to tame the

acidity of that nitrogen leaching by taking other, quote, "soil cations" with it, which could be potassium, magnesium, could be calcium, with it. And so you're losing nutrients. You're makin' the soil more acid, and you're oxidizing organic matter.

Cliff Scholz: You mentioned the residual. Is that the residual of the nitrogen itself? Or is that the residual of the microorganisms in the soil from the poultry manure application? Or is it both?

Joe Scrimger: It's a measure of both. And on the start, you need a certain amount of upfront nitrogen. So we want some of that quick release from poultry. But as we start to charge the slower release and the, quote, "organic matter," then we gotta slow it down.

And most farmers, after they see how poultry works, they don't wanna slow it down. They wanna put on more. And it's too bad. I was taught early on that you have to monitor the nitrogen and make sure you don't get it too high. Because if you get it too high, it'll leach.

Now, there's two or three really big things here. But the one thing is it interferes with other mineral uptake by the plant, consequently putting too much nitrogen on it. Which creates the situation of nitrate poisoning. But you're not feeding the plant at the early stage so you don't notice that. But that plant doesn't have good cell structure. That means it'll be more exposed to pest. Consequently, using more pesticides. And that's a downhill slide.

But what happens in the soil when it leaches, in order to get a situation to leach, you have to be supersaturated. And if you're supersaturated, that plant's overfed. It's mathematical impossibility for it not to be overfed.

And so farmers know they're leachin'. I'm sayin', "But do you know you were supersaturated?" And they're really havin' a hard time understanding that.

So there's a lotta other things that are problems. But I see the main problem starting with overuse of nitrogen. And part of that was because of the economics on the farm. They just felt they had to get more yield. And yeah, we have a little different situation with pricing right now.

Corn price is up. But they're still goin' for more yield 'cause they know they gotta put money in the bank. 'Cause they know it won't be long and that graph'll go the other way and corn price will be down twice as long as it was up. That's the way that commodity graph works.

So I hope I'm gettin' at it. So poultry is an asset, it's a good product. It just needs to be controlled. And so some of the guys that were sellin' it, tell me, "Wait, you mean I gotta tell these guys to shut it off?" And I'm sayin', "Yeah, tell 'em to slow it down."

And if their neighbors see that they're not usin' as much and their crops are gettin' better, they'll want some too. You won't lose customers. There's still a whole lotta fields out there that haven't seen poultry in close to 50 years.

And for the products that they've used that were negative to the soil, the odds that they have nitrogen-fixing bacteria still there are very, very low. So this poultry needs to be spread out. It’s a very nice resource. And this Dr. Reams that we schooled under, one of our initial schoolings, was really keen on that, early on.

And he didn't talk much about organic. He was biological, somewheres in between. And he didn't worry about using a pesticide. But he didn't wanna have to repeatedly use it. But he knew the answer was focusing on crop nutrition, makin' plants healthy, makin' animals healthy, and makin' people healthy.

* * *END OF TRANSCRIPT* * *