

### **IFPRI *Research Talks* Podcast Series**

#### **Episode 11- Poop from the Coop: Livestock Contamination and Nutrition in Burkina Faso**

**Note:** In this interview, references to “SELEVER” refer to the SELEVER impact assessment conducted by IFPRI, not the poultry value chain project itself, which is designed and implemented by our partners at Tanager.

**Sivan:** Hi and welcome to “Research Talks”, a podcast series that explores how research is making an impact on people and policies (with a focus on the ‘how’), brought to you by the International Food Policy Research Institute, IFPRI. I am your host, Sivan Yosef. In this episode, we’re talking about, wait for it, chicken poop. During the past 10 years, researchers have been making amazing progress in improving our understanding of how livestock contamination can actually hinder children’s physical growth.

**Derek:** And we found in two of the three countries that that measure of, you know, livestock, feces around the household, was also a significant predictor of stunting.

**Sivan:** That is IFPRI’s Derek Headey, a senior research fellow who is now based in Myanmar.

**Derek:** So, I mostly work on agriculture-nutrition linkages, and that’s mostly about trying to understand how the agricultural sector or the agrifood economy can have more impact on nutrition, particularly maternal and child nutrition.

**Sivan:** A few years ago, Derek was living in Ethiopia, and his research wasn’t focused on nutrition at all.

**Derek:** We were doing interviews with households in different parts of Ethiopia to understand land constraints; it had nothing to do with nutrition, nothing really to do with livestock. But we were sitting in a hut sort of small team being hosted by a farming household, and we were asking them, you know, just various questions about problems with accessing land, and I just heard this “hee-haw”, and I was like, What’s that sound? I turned around and we were sitting on a little bench inside this dark hut and it was a bamboo shutter behind me. I looked behind and I literally saw a donkey’s rear end there just behind the shutter. So, they had divided their house into, you know, the part where the humans slept and lived and did these things. And the other half of the house was for livestock for donkeys, goats, some chickens in there as well. And so, I didn’t think much of it at the time. I was just sort of slightly bemused, that like literally six inches away from me was a donkey, but it really struck me how close people lived in proximity to livestock.

**Sivan:** Does it seem that people only bring their livestock in, in cold climates like the highlands of Ethiopia, or is it in all different types of settings?

**Derek:** No, it's definitely not just cold climates. In addition to the cold, I mean, that's probably not even the main reason; it's really about theft and predation by you know, wild animals, hyenas, etc., wild dogs, etc. But people are also just concerned about theft, you know, livestock are, you know, fairly high value, chickens are very vulnerable, of course. So, it's really about just keeping, you know, this valuable asset as close as they can to where they're staying.

**Sivan:** Derek moved on to other work after that. It wasn't until around 2013 that a project called SHINE started publishing work they had been doing on livestock and children in Zimbabwe. The results got his attention.

**Derek:** They were looking at very closely monitoring how kids, very young children, really infants, were taken care of, in sort of rural Zimbabwean villages. And one of the things they observed unexpectedly was that children were often, actually young children sort of left alone on, you know, usually just outside the homestead on a sort of homestead garden floor, let's say. You know, basically just sitting in the dirt, and they were picking up chicken feces, and also eating dirt. As it turns out that, you know, no surprise, but dirt and especially chicken feces are sort of a super concentrated pellet of bacteria. And, you know, that could obviously cause damage, and the thinking at that time was that it causes damage.

**Sivan:** What Derek is talking about is called environmental enteropathy, or environmental enteric dysfunction. It basically means chronic gut damage—where the gut is slowly damaged over time and not able to absorb or utilize nutrients properly.

**Derek:** And so it's thought that this process actually slows down healthy growth, and maybe cognitive development as well; because kids aren't absorbing micronutrients, and they're also having chronic inflammation, which might divert the body's resources away from growth towards sort of fighting this ongoing inflammation. And so, you know, I was really struck by that. And I was wondering whether there is actually any evidence that, you know, children's exposure to livestock or livestock feces could explain some of their growth outcomes, particularly stunting. And so, you know, I thought about this for a little while, and then I was chatting with a close colleague of mine, Kalle Hirvonen, and he is also based in Ethiopia. And I was talking about this new thing, "You know, I've got a survey going to the field next month, why don't we just put in a few questions about where livestock are kept." And so, he put in questions about, you know, *"Are chickens kept in the house overnight? Are goats kept in the house overnight?"*

**Sivan:** Derek's hunch was right. When the data came back, it showed that keeping poultry inside the house was a statistically significant predictor of child stunting. He and his colleagues did a follow up study in a few more countries.

**Derek:** And we found in two of the three countries that that measure of, you know, livestock feces around the household was also a significant predictor of stunting. And then one or two other studies independent of ours found something similar. So that's sort of how I got involved in this research.

**Sivan:** Does there seem to be knowledge among people that keeping livestock within the house might pose a health problem, or no?

**Derek:** No, I don't think so. I think that is a real knowledge barrier. And in a way, it's not surprising, because if the main impact is this environmental enteric disorder; this chronic gut damage, then they wouldn't observe that anyway. So, it's, you know, it's not a clinical condition. And so it could be affecting a child's growth, and they would never even know it. So, I think this is largely an invisible problem.

**Sivan:** Around this time, another IFPRI researcher, Aulo Gelli, was launching a project called SELEVER in Burkina Faso, with funding from the Gates Foundation. The focus of SELEVER is broader than livestock contamination. The project is looking at poultry value chains, helping female farmers to produce more chicken and provide eggs, which are a great source of nutrition for their households. It also wants to improve farmers' access to markets, so that they can make more income to buy more diverse, healthier foods.

**Derek:** These people are producing poultry in what are called backyard systems where the chickens essentially just roam around during the day picking up scraps of food. And that's, you know, nice for poor people, because it's very low entry and low cost, you know, there's not much labor costs of, sort of, taking care of the poultry. You don't have to buy feed for them, they're just eating scraps. But it's also low output. And so these poultry die a lot, they're very vulnerable, especially to Newcastle's disease. And when you have that situation, actually, one sort of interesting finding from the study was, because there's a high probability that an animal could die any month, they tend to sell them for meat. So, they're not really producing eggs. And one of the main reasons the nutrition sector is so interested in poultry is actually for egg production, not meat production. But we tended to find that lots of people in Burkina Faso, about 90% of rural people in Burkina Faso own poultry, and yet, almost no children eat eggs on a regular basis. And that's essentially because they're in a meat business, not an egg business.

So we sort of hope that you know that one of the goals of the project is to try and get these folks to make a transition from backyard poultry to a more commercial, slightly higher input higher output production system, and that would include the poultry being penned in during the day, and then usually you'll have to provide them feed. So, it's not just the cost of housing, it's the cost of feed, the cost of water and a little bit more labor, as well as vaccinations. So, it's really a sort of package of inputs that would get them to shift out of the traditional poultry system into something, hopefully more profitable, but also hopefully more hygienic for children.

**Sivan:** Derek and his colleagues saw SELEVER as an opportunity to further investigate the question of livestock feces.

**Derek:** When we talked about this issue, you know, we did some sort of formative research in Burkina Faso. And we talked a little bit with local policymakers, and they tended to say, "Ah, you might have found that problem in other countries, but here, you know, we're very, we're hygienic. This sort of issue of animal contamination; I don't think it's an issue here." And, of course, we found completely the opposite result that, you know, almost nobody thought that livestock feces were a major problem that very few households made much of an effort, you know, they tended to... maybe some households tended to sweep and clean up a bit more than others. But it actually wasn't just poultry feces. There's issues with other animals as well. And there was very little separation between children and animals. So a typical scene, actually, we saw was, during the day, a mother is taking care of her young kids, sometimes taking care of other household or family members' young kids, and she's typically doing some sort of food processing. And in this case, we saw a woman who is like shelling peanuts. And she's sitting with, you know, four or five kids on a mat. And these poultry are all around her because they're scavenging. So, they were like, very interested in the peanuts interested in the peanut shells,

and they were just mingling in and among the kids. And, you know, nobody was shooing away or anything. It was just clearly a very normal thing.

**Sivan:** Derek, Aulo Gelli, and their colleagues set about designing a treatment arm for SELEVER that would focus only on livestock contamination.

**Derek:** And so we just had a little chat about, well, you know, if we're going to be doing some sort of behavioral change communications [**Sivan:** that basically means educating people] around nutrition and hygiene, etc., maybe we can try and do something specific around livestock. And so that's how we sort of came up with, this idea to do livestock sensitive WASH, meaning, you know, water, sanitation, and hygiene—interventions that are focused on the child and the child's vulnerabilities. In this case vulnerability to you know, being exposed to livestock, feces, etc. And so we adapted a very popular approach called Community Led Total Sanitation.

**Sivan:** Community Led Total Sanitation was pioneered 20 years ago in Bangladesh to end open defecation. It brings the whole community together, and then it uses shame and disgust to educate people about the health risks of being exposed to feces.

**Derek:** They do sort of demonstrations, like say, "Well, you know, if your water source is being contaminated by human or animal feces, well let me just take a glass of water, plain and simple, and I'm going to pick up a piece of chicken poop or whatever, I'm going to mix it in the water, and you give it to someone and then say, here you go, you drink it." Now, of course, in these demonstrations, no one drinks it, they laugh, they shake their head, etc. But the whole idea is to sort of say, well, that's kind of what you're doing now. You just don't know it. So if you're not treating your water, if you're accepting the fact that people in the village are not going to use toilets, or you're going to let livestock defecate in the water source or nearby, then that's essentially what you're doing; you're adding feces to your water. So that sort of shaming goes on. And then in some communities in some of these interventions, they sometimes even enroll schoolchildren to actually stop people from defecating in the open. But this sort of public shaming is thought to be quite effective in changing behaviors.

**Sivan:** The researchers working on the SELEVER project applied the Community Led Total Sanitation approach to stop community members from allowing livestock inside their homes. But ultimately, it is up to the community to figure out *how* to do it.

**Sivan:** So, what kind of solutions did the communities in Burkina Faso come up with in order to solve this problem?

**Derek:** We're still assessing that. I think some of the solutions are a little bit easier and cheaper to adopt, like, you know, just sweeping more often, you know, trying to keep kids separate, and so on. But, you know, those are challenging. And then some households definitely are building poultry houses, you know, or pens to sort of separate the poultry from the household. And, you know, that requires a little bit of investment. But I guess some of the other aspects of the value chain intervention sort of make that attractive. What we don't know yet is whether that program is also going to be beneficial for sort of overall hygiene as well as for nutrition.

**Sivan:** In other words, if the other treatment arms of SELEVER are able to help female farmers develop higher-value chicken businesses and get more money, the participating farmers could use that extra income to build closures for poultry, instead of letting chickens roam around the house.

**Sivan:** Do you have high hopes that you will be able to change people's behaviors?

**Derek:** Yes. I think some hopes, because we're also doing interventions that hopefully encourage them to adopt better poultry production practices too. This is a case where even adopting fairly simple technologies, and that's basically fairly rustic chicken pens, etc. could have a big benefit, both in terms of benefits for productivity, and some benefits for hygiene and child health.

And one of the most striking things about all of this is really the scale of the potential problem because poultry is the most widely owned livestock in Africa and even Asia by far. Because they're so cheap, you know, it's a very low entry economic activity. So, they're just huge numbers of people who own poultry in Africa.

And so, I think that the scope for sort of livestock-oriented WASH programs to really be adopted at a much larger scale. It's, of course, it's always really challenging to prove impacts on nutrition, because so many different things affect child nutrition. And, you know, even standard sort of WASH programs have actually had a lot of challenges in proving impact on nutrition. That aspect is challenging, but I'm hopeful in the long run that we can have an influence on WASH programs, especially.

**Sivan:** Thanks so much to Derek Headey for his time. To learn more about the SELEVER project, you can go to the IFPRI homepage [I-F-P-R-I.org](http://I-F-P-R-I.org) and type in S-E-L-E-V-E-R in the search box. You can also search for poultry and nutrition. Either way, you'll get to a bunch of great reading on all of IFPRI's work on the links between agriculture, nutrition, and health. And don't forget to subscribe to our podcasts so you don't miss a single episode of *Research Talks* from IFPRI. Till Next Time!