

# Pack 104, Item 12

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# Why insects might be the ideal feed for chickens and fish, part I

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**Notes to broadcaster**

The major ingredients in animal and fish feed, including soya beans, fish oil, and seed cakes are becoming expensive because of lack of land for production, while the availability of fish as an ingredient in fishmeal is decreasing because of overfishing.

In contrast, insects are a readily available and cost-effective protein substitute in feed. Research on sustainable methods of multiplying insect species has identified a number of easy-to-adapt and cost-effective methods for raising and harvesting insects, as well as post-harvest techniques to provide feed for small-scale poultry and fish farmers in East Africa.

Insects have more protein than the plants commonly used to make feed. Insect protein is also superior to protein obtained from plants which are used to formulate feed.

In this script, we interview Ugandan farmers involved in raising insects for feed. The interviews show the benefits of using insects for feed and some of the challenges farmers face in capturing and raising insects for animal feed.

You could use this script as inspiration to research and write a script on the best ways to capture and raise insects for poultry and fish feed.

Or you might choose to produce this script on your station, using voice actors to represent the speakers. If so, please make sure to tell your audience at the beginning of the program that the voices are those of actors, not the original people involved in the interviews.

Talk to farmers and other experts who use insects to feed farm animals, including fish. You might ask them:

What methods do you use to capture and raise insects? What insects do you raise? What are the most important things to remember in raising particular insects for feed?

Is raising insects for animal feed a profitable enterprise? What are the most important things to remember to make a profit? What are the major challenges, and how can they be successfully addressed?

Estimated running time: 20 minutes, with intro and outro music.

**Host:** Hello listener, I welcome you to our most-listened-to farming program, broadcast every (day of the week) from \_\_\_ to \_\_\_. I am your presenter, (name of presenter).

In today’s program, we are going to talk about the different ways farmers can raise insects for chicken and fish feed. A good number of farmers in Uganda are already doing this. We will have another program next week on the same theme.

(PAUSE) With Uganda’s population growing, there will be a steady rise in consumption of animal and fish products as the years go by.

The cost of animal and chicken feed has doubled from 70,000 shillings to 140,000 shillings [$20-40 US] per 100 kg. This is the price for good feed from products such as soy meal and maize.

But, because of changing weather patterns, we can’t guarantee the availability of these feeds in a sufficient quantity and quality in the future.

So we need to think about alternative sources of feed. Raising insects could be part of the solution.

Insect protein is much superior to protein from the plants used to make feeds. Insects have a higher amount of protein than soy meal, fish oil, and seed cakes—which are, by the way, becoming too expensive for the ordinary farmer.

Are you interested in learning what farmers who are raising insects for chicken and fish feed are doing? Let me introduce you to one farmer who is raising insects for animal feed.

Let’s listen now to Edward Ssebbombo. Mr. Ssebbombo is the Managing Director and co-director of Bobo Eco-farm, a 10-acre farm in Lulagala village in Mityana district, in central Uganda.

**Host:** Edward, what takes place at this farm?

**EDWARD SSEBBOMBO:** Bobo Eco-farm conducts a number of projects, including domestic water harvesting, that improve food production, especially during the dry season. With mostly local community partners, we are also pioneering the raising of insects for fish and chicken feed in Uganda.

**Host:** Tell me more about this project.

**EDWARD SSEBBOMBO:** We are developing low-tech equipment to breed larvae of the black soldier fly. Black soldier flies convert organic waste into insect protein to feed poultry and pigs. We are developing this method for demonstration and training, so that small-scale farmers can adapt it for their own use.

**Host:** Why have you chosen the black soldier fly and not another

insect?

**EDWARD SSEBBOMBO:** If you want to feed your poultry with insects, black soldier fly larvae are probably the easiest and cheapest option. The adult black soldier fly lays its eggs in rotting fruits and vegetables and in composted manure. Within two weeks, the eggs have hatched and turned into mature larvae. The larvae crawl out of the fruit or vegetable and into the ground.

Farmers can then immediately harvest and feed these insects to chickens as a good source of protein. They can also dry and process them into feed for later use. In areas where black soldier flies are abundant, small composting operations can help farmers breed the flies and increase the population.

**Host:** What does the fly feed on?

**EDWARD SSEBBOMBO:** Black soldier fly larvae will eat nearly any kind of organic waste, from animal waste to food scraps. As the larvae mature, they grow into half-inch-long grubs, at which point they climb out of their food source.

**Host:** What message do you have for our listeners about black soldier flies?

**EDWARD SSEBBOMBO:** These insects are beneficial in several ways. The adults are not attracted to human habitation, and therefore pose a significantly lower risk of transmitting disease than other types of flies. They also prevent houseflies and other insects from laying eggs in the materials they inhabit.

Their short life cycle makes them a quick and reliable source of food for chickens, and potentially for other farm animals.

Black soldier flies are harmless insects with the potential to provide a solution to two of modern agriculture’s growing problems: the high cost of animal feed, and the disposal of large amounts of animal waste.

**Host:** Is it difficult to breed this insect?

**EDWARD SSEBBOMBO:** Black soldier flies like to lay their eggs in cracks and crevices that are some distance away from their food source. You can provide an ideal place for females to lay their eggs in common corrugated cardboard.

Cut small strips of the cardboard and attach them to the bucket you use as a brooder or incubator. Make sure the creases in the cardboard are exposed so that the female has a place to lay her eggs.

It takes an average of two weeks to establish a colony with this method. But it depends on the density of black soldier flies in the area. At the moment, we are feeding our chickens with this insect and we are seeing great results.

**Host:** Listener, we will also learn how breeding earthworms has changed the lives of some farmers in Uganda.

Many farmers—including you—can become millionaires if properly trained on how to breed earthworms. Next week, we will hear about farmers who are being successful by breeding maggots!

Are you interested in the experience of these Ugandan farmers? Then stay tuned as I introduce you to Isaac Ssekandi, the chairperson of Tukoledewamu youth group in Gayaza, in the Wakiso district of central Uganda.

**Host:** What is your name and what do you do for a living?

**Ssekandi:** My name is Ssekandi Isaac. I am an artist. I make signposts and I design school badges. Apart from that, I am also engaged in commercial poultry farming and I breed earthworms.

**Host:** Earthworm farming? That’s interesting. What prompted you to take on such a venture?

**Ssekandi:** I occupy a very small piece of land here in Gayaza, and I have no land to spare for cultivation. As you know, in Uganda today, you need to do something on the side to supplement your income. So in 2004, I decided to go into poultry because it doesn’t need a lot of space.

**Host:** What about the earthworms?

**Ssekandi:** The high cost of feed for my chickens meant I hardly had any profits. Imagine! A kilo of feed costs 3200 Uganda shillings (about $1 US) and I had to feed my 300 chicken 100 kilograms every two weeks. I was earning just 360,000 shillings from selling eggs, leaving me with almost no profit. That’s when I started thinking of alternative and cheaper feeds.

**Host:** But why earthworms? How did you zero in on them?

**Ssekandi:** I used to see our local chicken pecking the soil looking for earthworms, and it dawned on me that earthworms are actually nutritious for chickens. The biggest challenge was that the traditional way chickens search for earthworms doesn’t give them enough to eat. So I started searching for earthworms myself since I am rearing the chickens in a confined area.

**Host:** What did you do?

**Ssekandi:** I started looking for earthworms by the river banks. I use to collect as much as half a kilogram every day. But I didn’t go far with the search because there were a lot of challenges.

**Host:** What were the challenges?

**Ssekandi:** Hunting for earthworms was taking up most of my time. I was neglecting my other occupation of making signposts and school badges, but this was where I was getting the financial support for my poultry business.

Another big challenge was that I had intruded into the territory of another predator of the earthworms locally known as *ebinusu.* This insect is a bloodsucker which also feeds on earthworms. Whenever I waded through the murky waters in search of earthworms, I end with stinging bites from these bloodsuckers. They were swollen and painful for at least a month.

**Host:** That was bad. What happened then?

**Ssekandi:** I was determined and kept praying for something good. Then one day Makerere University held a farmers’ show here in Kabanyolo, which is less than a kilometre from my home. A professor I came to know only as Kabi taught farmers how to rear earthworms to supplement their chicken, fish, and animal feeds. I was overjoyed because this was what I was praying for.

**Host:** Was that the end of your hunt for worms by the river banks?

**Ssekandi:** Yes, I realized that I wasn’t harvesting enough from the river banks for commercial poultry breeding.

**Host:** So where did you get the earthworms for multiplication?

**Ssekandi:** Because I showed interest in keeping the earthworms, Professor Kabi offered to sell to me some of the improved earthworm variety from the university’s labs.

**Host:** What did you need to start the rearing process?

**Ssekandi:** Professor Kabi taught us the caging method that involved constructing a wooden box of about half a square metre as a breeding station for the worms. It served well but after five months, it was worn out and became infested with rats and termites which ate the worms.

**Host:** What happened then?

**Ssekandi:** I invented a new method of housing the earthworms. I built a breeding tank out of concrete mortar which is permanent. I covered the top with papyrus mats and sometimes with iron sheets to prevent rats and termites from getting into the tank.

**Host:** Dear listener, if you have just tuned in, this is your favorite program, that is broadcast every \_\_\_, from \_\_ to \_\_. In today’s program, we are looking at breeding black soldier flies and earthworms as feed for chicken and fish. Farmers in Wakiso experimented with breeding earthworms and realized its profitability, compared with buying feeds on the open market. For them, the sky is the limit as they are planning for higher returns and a better quality of life. In today’s program, I am with Isaac Ssekandi, the chairman of the earthworm breeding group in Wakiso.

**Host:** Can you take us through the breeding process?

**Ssekandi:** You fill the bottom of the tank with about four inches of soil or more, depending on how many earthworms you want to breed. The soil acts as their bed and also their feeding area. Then you introduce some food for them and allow the natural process to begin since you have already provided them with a natural habitat for breeding.

**Host:** What kind of food do you give them and how much does it cost?

**Ssekandi:** Earthworms can feed on leftover jackfruit, and peelings of papaya, cassava, and mangoes, and can also feed on tomatoes. You really don’t need to worry about the cost since these are readily available in the rubbish dumps within your neighbourhood.

**Host:** How often do you feed them?

**Ssekandi:** In a half-metre square cage, you need about two kilos of all the feeds mentioned mixed. This can last for three or four days before you need to replenish it.

**Host:** How much of the worms do you produce in a month?

**Ssekandi:** Earthworms reproduce rapidly. In only one month, my big tank is full, with about 15 kgs. But I don’t wait for the tank to completely fill up, because feeding them would be a challenge then. Because I have 20 tanks, I transfer some earthworms to the next empty tank to help speed up the multiplication process. And because I am now into mass production, I intend to build up to 100 more tanks. But to answer your question, I produce about 10 kg of worms per week, or about 40 kg per month.

**Host:** How have you benefited from this project?

**Ssekandi:** I have noticed a remarkable improvement in the quality and quantity of eggs my chickens lay. Previously, I would collect 180 eggs daily from the 300 chickens but now I collect about 270 eggs every day. And I don’t spend a lot of money on feeds. I used to spend 360,000 Uganda shillings (about $10 US) on feed every two weeks, but this has come down to less than 100,000 shillings. Even the quality of the poultry I am breeding for eggs is much better.

**Host:** Wao! That is really impressive. Any other benefits?

**Ssekandi:** We have experimented with feeding dairy cows on these worms, and we are noticing a big difference in the volume of milk the cows are producing. We have also noticed that the soil on which the earthworms live and breed is one of the best in terms of fertility. We plan to sell this soil to farmers for backyard gardening. I have tried it here in front of my house and the result is unbelievable.

**Host:** Ssekandi, even roses that look attractive to the eye have thorns that a harvester must guard against. What do beginners need to know if they want to experience the benefits you have talked about?

**Ssekandi:** You need to guard against vermin such as rats and lizards that can find their way into the breeding tank for easy food. If you notice worms crowded on top of the breeder, it means there is an intruder inside. Worms normally stay inside the soil, but not on top.

**Host:** What about diseases?

**Ssekandi:** I have not experienced diseases attacking the worms, but I am yet to find out from specialists at Makerere University**.**

**Host:** All this sounds very simple and affordable. So, why don’t we see many farmers venturing into it? Were you the only farmer who attended the Kabanyolo show?

**Ssekandi:** It’s unfortunate that most of our farmers want ready-made things. They are not ready to venture into research.

Companies that produce feeds are getting a lot of money from farmers, and we just accept it and ignore opportunities like this. Let me take advantage of this program to call upon farmers to wake up and start doing things differently. Why shouldn’t we take advantage of the vast knowledge of our home-grown institutions such as Makerere University to do agriculture better and cheaply!

**Host:** Thank you very much, Ssekandi, for your time and all the valuable information you have given my farmers.

That is our program for today. But next week we will be back with another program on the same theme. We will talk with farmers from Kyotera in Rakai district who feed their fish, chicken, and livestock on maggots. And we will talk a little about raising crickets. So don’t forget to tune in lest you miss an opportunity to become a millionaire.

Goodbye until next week.

## Acknowledgements

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**Sources of information**

Interviews:

Ssekandi Isaack, an artist and chairman of Tukoledewamu youth group in Nangabo sub-county, Wakiso district. May 14, 2016

Edward Ssebbombo, Managing Director, Bobo Eco-farm, Lulagala village, Mityana District, March 2016

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