

# Pack 104, Item 13

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# Why insects might be the ideal feed for chickens and fish, part 2

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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: 15 minutes, with intro and outro music.

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

 Last week, in part one of this program, we learnt from farmers in the Wakiso district of central Uganda how breeding earthworms has improved the quality and quantity of their poultry, eggs, and milk and reduced the cost of chicken feed. We also heard from a farmer in Mityana District who is raising lack soldier flies as feed for poultry and even pigs!

 Now, let’s meet a farmer who breeds maggots for similar purposes. Yes, maggots—the wriggly, creatures associated with rot and stench. Oh my gosh! But listen on and learn what wonders can come out of rot.

What is your name and what do you do?

**MAWERERE Paul:** My name is Mawerere Paul. I am a fish farmer in Kyebbe Sub-county in Rakai district. I started fish farming 11 years ago. Just like any other farmer, I wanted to make a profit. But things didn’t work out for me because of the high cost of fish feed. I tried breeding earthworms as an alternative, but this too failed.

**Host:** What did you do then?

**MAWERERE PAUL:** I went into what most people may not believe in, that is, breeding maggots.

**Host:** Maggots! Why did you go for maggots and not crickets or other insects?

**MAWERERE PAUL:** I used to visit our local abattoir almost daily to collect slaughterhouse waste which is always thrown away by butchers. I would always see maggots wriggle out of the digester. I read a little about maggots and discovered that they are not as bad as we might think. Then I realized that maggots were the solution to the high cost of fish feed.

**Host:** So what did you do?

**MAWERERE PAUL:** I continued collecting the slaughterhouse waste. But with my new knowledge, I started to mix it with blood that I collected from the abattoir inside a polythene bag, and I left the mixture to attract flies and start rotting. Within four hours after the flies had laid their eggs, I started seeing tiny maggots coming to life. I was impressed, but my wife was very negative about it all and even stopped eating fish harvested from our pond.

What even encouraged me more was the rate at which the maggots were multiplying. Within just one day, I could produce about three or four kilograms of maggots, something I never expected.

**Host:** How far have you progressed now?

**MAWERERE PAUL:** I have gone far and have also learnt a lot from a few challenges. For example, I noticed that, after hatching, many maggots would crawl out of the polythene bag I was using as a breeder. So I built a concrete breeding tank with two layers. I place the slaughterhouse waste in the first layer, and I put water in the second one. The water helps regulate the temperature and provides the right atmosphere for the maggots to breed.

**Host:** Has it worked for you?

**MAWERERE PAUL:** Very well indeed. But I have already realized that the new method needs to be improved because when it rains, I usually find the tanks full of water and the maggots dead. So I am looking at designing a new method that would stop water from entering the tanks.

**HOST:** What is your production cost?

**MAWERERE PAUL:** Breeding maggots is easy and cheap since I don’t need to buy any raw materials. I have only spent money on building the concrete tank, though once I just used bricks and sand that I already had at home. I only bought the cement. The slaughterhouse waste and clotted blood are free of charge from the abattoir. When the maggots have multiplied to a reasonable amount, I collect them and feed my fish and chickens.

**HOST:** Have you shared this knowledge with fellow members of your Sango Bay Fish Farmers’ Group?

**MAWERERE PAUL:** I can’t do this because I am afraid my customers would stop buying my products if they learned that I feed my fish and chicken on maggots—just like my wife, as I told you earlier. But I am willing to impart all my knowledge to them if I could find a way to change this negative attitude about maggots.

**Host:** What benefits have you realized so far?

**MAWERERE PAUL:** The benefits are great. My fish have doubled in size. It takes just four months now for a fish to mature and be ready for sale compared to a whole year in the past. And I don’t suffer from buying adulterated feeds on the open market. I make my own feeds and they are high quality.

**HOST:** What will you do to change the negative attitude people have towards maggots?

**MAWERERE PAUL:** I will set up a demonstration pond where farmers can compare the benefits of using other fish feeds to using locally-produced high protein feeds like grasshoppers, earthworms, and maggots. It will be up to them to decide what suits them best. As for my family members, now that they see the quality and quantity of our fish and eggs and the good responses from our customers, they are very positive.

**Host:** Now, I will speak with Butebona Joyce, a farmer from Katega village, in Mukono district near Kampala. Mrs. Butebona is participating in a training which taught her how to raise crickets. Please tell us about the training.

**BUTEBONA JOYCE:** The Makerere University Department of Food Science is training us how to raise crickets for chicken and fish feed. They chose 15 poultry farmers from our village, and my home is the demonstration centre for the training. We did the first training on January 4, 2016.

**Host:** What did they train you to do?

**BUTEBONA JOYCE:** We learned how to breed crickets. We collect as many of them as possible. Then we place them in a bucket, and soak cotton wool with water for them to drink. There are small containers inside the bucket with fresh pumpkin and bean leaves for them to eat. We cover the bucket with a transparent cloth and leave them to lay eggs.

We learned that, to maintain the breeding colony, we need to refill the food containers and the water, and keep the nesting material damp. One litre of water lasts four or five weeks.

Every two months or so, we need to move the entire colony to a second container, and clean the first container of cricket waste and dead crickets.

**Host:** What did the trainers emphasize?

**BUTEBONA JOYCE:** They told us that feeding the crickets the right diet is important for two reasons. Firstly, the crickets need adequate nutrition to survive and breed. Secondly, the nutrients from the crickets will be passed on to your chicken and fish, so it’s important to keep the crickets healthy. Crickets need a high-protein diet. Without such a diet, and often with the diet, crickets will prey on each other.

**HOST:** Finally, we will speak with an expert on capturing and raising insects for animal feed.

What is your name and what do you do?

**Dorothy Nakimbugwe:** My name is Dr. Dorothy Nakimbugwe, and I am a Senior Lecturer at the Department of Food Technology & Nutrition in the School of Food Technology, Nutrition & Bio-Engineering at Makerere University. I am also the Principal Investigator for the Insect Feed for Fish and Poultry project in Uganda.

**HOST:** What types of insects and worms would you recommend that farmers rear for bird and fish feed?

**D. Nakimbugwe:** We recommend that farmers rear insects that meet the following criteria: they are safe for the people and environment, for example, they don’t bite or sting; they do not carry diseases for humans, crops, or livestock; and they don’t harm the environment in any way. House crickets ​and black soldier flies fit that criteria and are widely reared.

**HOST:** What of cockroaches? Is it profitable to rear cockroaches as well?

​​ **D. Nakimbugwe:** Insects such as cockroaches and locusts are also being explored in countries such as China. But you have to take a lot of care to ensure that they do not escape into the environment and damage crops—as locusts do—or infest buildings, like cockroaches. Some farmers talk about rearing termites by putting dry grass out overnight, but they are not actually rearing them, just harvesting the termites which gather to eat the grass.

**HOST:** What are some of the dangers farmers need to be watchful of when rearing insects and worms?

**D. Nakimbugwe:** Like every other kind of animal feed, farmers need to follow Good Agricultural Practices and Good Manufacturing Practices when producing insects for feed, such as observing good hygiene and controlling vermin such as rats. This ensures that they avoid passing on germs or harmful chemicals to the animals and possibly even to humans.

When farmers use waste materials such as household garbage or farm wastes to feed insects, the insects must be processed appropriately to kill any germs, for example, by boiling, steaming, and then drying. Then they must store the processed insects safely to maintain quality and ensure that the insects do not decompose or collect mould.

**HOST:** Dear farmer, there is a saying in Uganda: “Never give up. Today may be hard, tomorrow worse, but remember the day after tomorrow will be a raining one.” The world is surely full of struggles, but there is always hope for those who never give up.

 This brings us to the end of our program. In today’s program and in part one of our series on capturing and raising insects for chicken and fish feed, we learnt that breeding insects for feed is not as difficult as we might think. We might worry that we can’t manage it or that we don’t have funding to do it. But we have learned that it does not take a huge sum of money to raise insects. Instead, the Ugandan farmers used existing materials like buckets and bean leaves and rotting organic waste to raise and feed insects.

There is a saying: “Good, better, best. Never let it rest till your good is better and your better best.”

 We will stop here for today. Goodbye.

## Acknowledgements

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**Sources of information**

Interviews:

Mrs. Butebona Joyce, farmer, Katega village, Mukono district, February 6, 2016

Mawerere Paul, fish farmer, Kyotera village, Rakai district, May 14, 2016

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