

# Pack 107, Item 1

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# Compost: A solution to impoverishment of the soil and the impact of overusing chemical fertilizers

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**Notes to broadcaster**

Statistics show that 83% of Malians are farmers and make a living from their own production. But the techniques people use have always been different, depending on crops and location. Farmers who produce dry crops have always relied on fertilizers such as manure, compost, and poultry waste, while most farmers in irrigated areas usually use only chemical fertilizers. Some agronomists and farmers maintain that using these chemical fertilizers results in the soil becoming dependent on them. Despite difficulties relating to how to make compost, some farmers have decided to use only compost and to make it themselves from their livestock’s manure. They feel that this is the safest fertilizer, and one which helps them to regularly get good yields.

In this script, we meet Mr. Bilalay Tamboura from Bandjougou, in the Mopti Region of northeastern Mali. Mr. Tamboura makes his compost and uses it on his crops. He explains how he makes the compost and why it is important. We also speak with Mr. Oumar Diallo, an agronomy engineer who verifies the information provided by Mr. Tamboura.

You might choose to present this script as part of your regular farming program by using voice actors to represents the speakers. If this is the case, make sure you inform your listeners at the beginning of the program that these are the voices of these actors and not those of people with whom the original interviews were made.

You could also us this script as a research material or inspiration for creating your own programming on compost production or similar topics.

Talk to farmers and experts who make compost. You may ask them the following questions:

• What is the difference between compost and chemical fertilizer?

• What are the benefits of compost? What are the potential drawbacks?

Estimated running time: 25 minutes, with intro and extro music

**SFX:** Sound of female traders chatting, animals, and engines. host starts speaking in the noise of the market, which then fades under his or her voice.

**HOST:** Hello, dear listeners. This morning, we’ll see how farmers from the Mopti region, and specifically those from Bandjougou village, manage without using chemical fertilizers in their fields.

, Bandjougou is a village in northeastern Mali about 45 kilometres from Bandiagara. Farmers in this area consume their own harvests from both rainy season and off-season crops. Everybody in the village is convinced that making compost is one of the safest ways of getting good harvests without too much cost and without negative effects.

 We are in Bandjougou’s weekly market, right in the centre of the village. There are about 20 straw sheds in the market, under which traders spread out their goods. Men, women, and children all conduct their own businesses. We are going to meet with Bilalay Tamboura, a farmer and compost maker.

**HOST:** Hello, brother.

**TAMBOURA:** Hello, brother.

**HOST:** Please introduce yourself to our listeners. What is your family name and first name, and what is your occupation?

**TAMBOURA:** My name is Bilalay Tamboura, and I am from Bandjougou, in the Pignari-Bana Commune, Bandiagara Cercle, Mopti region. We’re here today to make our weekly purchases at the Goundaga fair, which is held on Saturdays.

My work is market gardening: I grow onions, tomatoes, potatoes, eggplants, sweet peppers, and many other things. I grow these products during the dry season. Market gardening starts in October and continues until March.

I come to the market every Saturday to buy onions and resell them. I also weigh merchandise for other traders, and they pay me for it.

**HOST:** Today’s show is about compost, that is, fertilizer made by farmers themselves from local resources. Please tell us how you make compost and how important it is to you.

**TAMBOURA:** Okay. First of all, I must say that making compost is not easy. You have to be patient and courageous to do it. You also need to be motivated—otherwise, it’s going to be a bit difficult.

To make compost, you need to choose your composting site wisely—preferably in the shade, near a water spring, and if possible near the place where you will use the compost.

 There are three composting methods: in piles, in a closed pit, and in a covered pit. The method you use depends on what you need the compost for, the condition of the soil, and the availability of ingredients and equipment.

 But the purpose is always to produce compost, which is a well-decayed organic fertilizer.

 Ingredients for making compost include domestic waste, ash, clay, animal dung, bird droppings, plant residues, grass, straw, less woody branches, and other by-products which decay easily.

 Note that it’s important to remove all glass, metal, plastic, hardwood, and stones. You should use one-third green vegetation and two-thirds dry matter.

**HOST:** You mentioned that there are three composting methods. Which one do you generally use?

**TAMBOURA:** I used a covered pit, even though it is labour-intensive and you need to find all the ingredients in a short period of time.

**HOST:** How large is the pit?

**TAMBOURA:** The standard depth of the pit is one metre. The length and width depend on how much compost you need.

 You must ensure that the bottom part of the pit is waterproof. If not, spread a layer of clay 10 centimetres thick. This could be red earth from a termite mound.

 Then spray the bottom part of the pit with water until it is soaked.

 Begin by spreading three fingers’ width or five centimetres of manure, then water until it is soaked.

 Then spread a layer of green vegetation—grass, fresh crop or kitchen residues. This should be twice the width of a hand, or 30-40 centimetres. Water this layer until it is soaked.

 Then add a layer of farm manure about the width of a hand, or 15-20 centimetres.

 Next, spread a thin layer of ash. This will act as a catalyst to the compost, keep termites away, and also stop the pit from smelling bad.

 Continue to add layers of green vegetation, farm manure, and ash until the pit is filled to half a metre above the level of the soil. If you can’t fill the pit in one session, make sure you fill it within one week.

 After filling the pit, cover it with a layer of earth which is twice the width of your hand. This will help maintain the heat of the pit while the composting process is working, and will help maintain the moisture in the pit.

 Finally, cover everything with straw, old mats, and branches to minimize evaporation and protect the pit from animals.

Insert a stick about one-and-a-half metres long into the pile.

**HOST:** What is the purpose of the stick?

**TAMBOURA:** The stick serves as a chimney, to make sure that the pit receives enough oxygen.

Three days later, remove the stick but leave the hole, which will serve as an air hole or chimney.

Within 15 days, the temperature of the compost will be high enough to start decomposition. During the rest of the composting process, the temperature will vary between 50 and 70oC.

After seven days, check the temperature in the pit by introducing an iron bar or a wet stick. This should become warm.

If it does not heat up or if there is a bad smell, remove everything from the pit, take it apart, and let it dry for a few days. Then remake the compost pit.

**HOST:** How moist should the pile be?

**TAMBOURA:** The right moisture level is when water droplets appear between your fingers when you squeeze the compost, but it keeps its form when you open your hand.

The composting process should take two to three months, depending on the consistency and nature of the ingredients you use.

When you want to use the compost, remove it one layer at a time, and make sure that you thoroughly mix the various layers. Well-rotted compost is lukewarm, smells like wet earth, and has no negative impact on crops.

**HOST:**  How much compost do you need for a given number of hectares, and how do you get the required ingredients?

**TAMBOURA:** Any fertilizer should be applied after a soil test, and the mount you used depend on the needs of the crops. But, in the absence of a soil test, here are some doses that gave good results in our area.

We use 15 to 20 tonnes of compost per hectare for cereals and 20 to 40 tonnes per hectare for vegetables.

 If you add compost to furrows, you can add six to 10 tonnes per hectare. If you add it to planting holes, use four to five tonnes per hectare.

 When possible, sift the compost before using it.

 You can use the compost immediately after harvesting it. Or you can keep it in the shade, protected with old mats, empty bags, etc., against the wind and sun.

The compost contains lots of good micro-organisms, and enzymes, hormones, and trace elements which are good for the soil. It improves the structure of the soil, ensures a good food supply for plants, and increases their resistance to disease.

Crops grown with compost also store better.

**HOST:** Let’s talk about chemical fertilizers for a few minutes. What are the risks of chemical fertilizers?

**TAMBOURA:** Many producers are increasingly turning to chemical fertilizers to restore or improve soil fertility. But the excessive use of chemical fertilizers has many downsides, including: high cost, modification of soil pH, damage to soil micro-organisms, and possibly modification of the flavour and reduction of the storage life of crops.

**HOST:** Tell us a bit about the other two approaches to making compost.

**TAMBOURA:** To make compost in a covered pile, you first dig a pit 20 centimetres deep and one metre wide, and spread 10 centimetres of clay at the bottom of the pit. Then you add a 20 centimetre layer of plant residues such as straw, dry or green leaves, and non-woody branches, with dried residues making up 2/3 of the material.

Then you add 20 centimetres of humus, agricultural or domestic waste, mud or guano, and then 30 or 40 centimetres of animal manure.

You plant stakes around the pile to maintain and protect it.

You must water this pile twice a week. The first time is simple watering. But the second time, you should turn the pile over before watering it. After each watering period, cover the pile to conserve heat and moisture.

This process takes 60-75 days for finished compost. The frequent watering and turning are very important!

**hOST:**  And what about using a covered pit?

**TAMBOURA:** You fill the pit with well-mixed ingredients, then cover it with a plastic tarpaulin. You mix the ingredients in the pit three times: during the second, sixth, and ninth week. You must water after each turning to make sure the ingredients are moist.

This method produces finished compost in 12 weeks.

**hOST:** Please tell us about the benefits of compost.

**TAMBOURA:** Compost improves the structure of the soil, and helps retain soil moisture and protects soil from erosion. It improves yields and reduces production costs.

**HOST:** What’s easiest for you—using compost or chemical fertilizers?

**TAMBOURA:** It’s true that using compost is a thousand times more difficult than using a chemical fertilizer. Using compost requires handling large quantities of materials.

 But the choice between compost or chemical fertilizer is a matter of preference and financial resources. Anyway, one thing is certain: compost is cheaper and is cost-effective and beneficial in many ways. It conserves moisture in the soil, protects the soil from erosion, and is a complete food which is suitable for all types of soils and crops.

**HOST:** Do other farmers make compost in the same way as you?

**TAMBOURA:** Many farmers make compost, but not in exactly the same way as me because of the reasons I mentioned earlier, including the nature of the soil, the availability of ingredients, the type of trainings the farmer has received, and how well the farmer has mastered the techniques.

Usually, market gardeners have small plots, and we almost always need manure. This is why we prefer to have multiple compost pits. This reduces the length of composting to 45 days and allows farmers to produce compost continuously.

 Grain producers who have large plots and use compost only once a year usually have just one pit.

**HOST:** Mr. Tamboura, our show is coming to an end. Do you have a message to other farmers?

**TAMBOURA:** What I can say to farmers is that they shouldn’t fool around when using compost. It requires close attention and hard work. But it’s a safe and sustainable solution in the context of climate change. Compost preserves the health of the soil, the producer, and the consumer.

**HOST:** Thank you very much, Mr. Tamboura. Dear listeners, that was an interview with Bilalay Tamboura from the Mopti Region about making compost. We will now turn our attention to Mr. Diallo, an agronomy engineer.

 Greetings with background noise.

 Please introduce yourself to our listeners.

**OUMAR DIALLO:** My name is Oumar Diallo, and I am an agronomy engineer. I studied at the Rural Polytechnical Institute for Training and Applied Research in Katibougou and in the Philippines. I am currently working for an international NGO that assists farmers in the Mopti region.

**HOST:** As an engineer, can you tell us what compost is?

**OUMAR DIALLO:** Compost is nothing more than a mix of organic materials transformed into a substance that gives back life to a soil impoverished by drought or overuse of chemical fertilizers. Overall, compost is considered a fertilizer of the highest quality.

**HOST:** Can compost sometimes cause damage to plants?

**OUMAR DIALLO:** Indeed, some composts can cause serious damage. It depends on the ingredients and on how mature the compost is. If you don’t follow the recommended preparation time, the compost will not be mature, and will be low-quality. Preparation time is very important because it allows the compost to fully finish the decomposition process. Unfinished compost could have a negative effect on crops.

Regarding the ingredients, some kinds of excrement must be handled with extra care, chicken feces, for instance. It’s very good but contains powerful substances that can destroy crops, if there’s just a slight error in handling. The best way to avoid the dangerous effects of compost is to respect the preparation time and allow all its ingredients to decompose completely.

**HOST:** Are there regulations or laws that authorize farmers to make compost?

**OUMAR DIALLO:** The manufacturing of compost for personal use isn’t something that must be regulated. All the ingredients are things that people produce, whether they are animal excrement, hay, grass, etc. All that people do is transform their own materials.

What really must be regulated and controlled, in my opinion, is compost made by NGOs and the small processing businesses that are slowly beginning in the region, because we don’t know much about the ingredients in their products.

**HOST:** Do you intend to develop a system for making compost in rural environments, so that it could take over from chemical fertilizers some day?

**OUMAR DIALLO:** It’s not among my NGO’s objectives for now, but these kinds of things unfold by themselves. When news of success spreads among farmers, everyone tries to do the same thing and see what the yield is.

**HOST:** Do you have a message for the farmers?

**OUMAR DIALLO:** My message to the farmers always remains the same, especially on this topic. Using chemical fertilizers makes farmers totally dependent on industries, and all research studies agree that using them on a permanent basis will eventually deplete a soil.

What many farmers don’t understand is that, in the soil, chemical fertilizers react more quickly than compost and can have positive effects on plants. But they can also have negative effects on both soil and plants. Good quality compost has a positive effect on the soil. So, all I wish for is that all farmers consider compost as a solution to the issue of soil fertility.

**HOST:** Thank you very much, Mr. Diallo.

Dear listeners, today we learnt how farmers in the Mopti region make compost, simply by using different ingredients found locally. This shows that each of us can make his or her own compost. We also learned that using compost allows farmers to fertilize their soil without using chemical fertilizers.

We thank you for tuning in for our show and invite you to join us for the next show, when we will discuss another very important topic.

 Thank you for your kind attention, and see you soon.

## Acknowledgements

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**Sources of information**

Interviews:

Mouhoumoun Karembé, Dec. 10, 2016

Oumar Diallo, January 14, 2017

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