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# Pack 108 Item 4

Type: Script

March 2018

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**The benefits of intercropping**

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### Notes to broadcaster

Intercropping is a traditional agricultural method in many parts of the world. And scientists are finding that, when carefully used with the right combination of crops, intercropping can have many benefits. Find out more in this script.

You might choose to present this script as part of your regular farming program, 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 in the script.

You could also use this script as inspiration to research and develop a radio program on training farm animals in your own country.

If you choose to use this script as inspiration for creating your own program, you could talk to farmers and agricultural experts, and ask the following questions:

* What kinds of crops do farmers typically intercrop in your area and what are the results and benefits?
* What are the challenges of intercropping and what solutions are available to address those challenges?
* Where can farmers to ask questions and find assistance with intercropping?

Apart from speaking directly to farmers and other important players in the local agriculture sector, you could use these questions as the basis for a phone-in or text-in program.

Estimated running time: 7 ½ minutes

**INTERVIEWER:** There are many good reasons for talking about intercropping on the radio. The first is that so many farmers practice intercropping.

Intercropping is a traditional farming practice that goes back many hundreds of years. Modern agricultural scientists are carefully studying traditional methods and then adapting them to modern conditions. By doing this they are, in many cases, greatly increasing food yields.

We will speak with one scientist who is studying intercropping. Here's what he says about the practice.

**AG SCIENTIST A:** The main reason to practice intercropping is that it gives farmers more "stability" over the years. For example, if the farmer is growing two crops and one is negatively affected by drought or by a pest or a disease, the remaining crop can compensate for the losses to the first crop. Over the years, this gives a farmer "stability." It eliminates those years when the farmer receives hardly any income, and ensures there is always some sort of return.

**interviewer:** That's certainly a very good reason to practice intercropping. After all, who can afford the risk of crop failure any more than is absolutely necessary?

But that's only one of the good reasons for intercropping, as opposed to what might be called "sole cropping." Dr. B told me about another good reason.

**AG SCIENTIST B:** Intercropping can give you a higher total yield than sole cropping. In intercropping, you sometimes get lower yields of each of the individual, complementary crops, but you get an overall higher combined yield.

**Interviewer:** I understand that one reason for this is that, while some crops need lots of sunshine, others prefer less light. Is that correct?

**AG SCIENTIST B:** Yes, it is. Because of this, in Sri Lanka and some other countries, it is ideal to grow mung beans with maize because the tall maize plants like the sunshine and they shade the low-growing, shade-tolerant bean plants.

**INTERVIEWER:** Dr. A tells us about another way that the different growing patterns of crops can be complementary in intercropped fields.

**AG SCIENTIST A:** A combination of crops that does very well in India is sorghum and pigeon pea. Sorghum has shallow roots and pigeon pea has a deeper root system.

When we grow these two together, we see, first of all, a full sorghum crop. We can yield just as much sorghum as if the sorghum was not intercropped with anything. So first you harvest a full sorghum crop, and the pigeon pea harvest comes well after that. You can get up to a 70% pigeon pea crop yield, and that`s on top of a full yield of sorghum. Once you've harvested the sorghum, you've got a well-established, three-month-old pigeon pea crop. It may be quite short because it's been in heavy competition with the other crop, but it's there. Its roots are well-established deep in the soil, and it will absorb the residual moisture in the soil.

**AG SCIENTIST C:** You can see one of the real problems with sole cropping here. If you grow a crop in the rainy season, the moisture in the upper 30 to 40 centimetres of soil is pretty well depleted by the end of the rains. Although there may be moisture deeper in the soil, there's no way that you can establish a new crop at that time of the year. But if there`s a crop with a root system already established and growing, it can continue to draw on the deep soil moisture.

**AG SCIENTIST A:** What this means is that the period during which crops can use the available light and moisture and nutrients is spread out over the season. This can be a major benefit for farmers.

**Interviewer:** Dr. A mentioned nutrients or plant food. As you might know, one kind of nutrient that's very important for plants is nitrogen. But did you know that bacteria on the roots of the pigeon pea can "fix" nitrogen? That means the bacteria take nitrogen out of the air and make it available to the plants—not only to the pigeon peas but to the other crop as well, in this case sorghum. This happens with all legume crops—like peas, beans and many others. So when you grow them, it can reduce the need to buy as much additional nitrogen fertilizer!

Dr. D showed me a fine field of sorghum and pigeon peas and the efficient way they're grown together and being used. The sorghum heads had already been harvested, and close to the ground I could see a great crop of pigeon peas. Here's Dr. D.

**AG SCIENTIST D:** When you have an intercrop system, you get not only stability but also increased yields. Because pigeon pea is a legume, you don't need as much nitrogen fertilizer. Nitrogen-fixing bacteria on the roots of this plant fix nitrogen, and this can be used by the sorghum.

**Interviewer:** So the sorghum is able to get nitrogen from the pigeon pea?

**AG SCIENTIST D:** Yes, because they are grown together.

**Interviewer:** After you harvest the sorghum, you still need to harvest the pigeon peas. The pigeon peas are quite a woody plant, so what do you do about that?

**AG SCIENTIST D:** The pigeon pea stalks are used as firewood, and as fuel for cooking.

**Interviewer:** And the sorghum stalks?

**AG SCIENTIST D:** They are used as animal feed.

**Interviewer:** So nothing is wasted.

There are a number of other combinations of crops that are intercropped—like sunflower and mung beans in the Philippines, maize and castor beans in Brazil, maize and groundnuts in Zambia, and cassava and groundnuts in the Democratic Republic of Congo. In many countries, farmers plant ground-covering vine crops with other crops. The ground-covering crops outcompete most weeds. This really cuts down on one of the farmer's biggest jobs, weeding. Dr. B told me that sweet potatoes and melons are very good ground-covering crops of this kind. Speaking of melons, he said this:

**AG SCIENTIST B:** We have found that some crops very often seem to do better grown together than when they are grown alone. Those crops that are grown together with melon, even though they may reduce the melon yield, seem to really benefit.

**interviewer:** If you're not intercropping now, maybe there's a farmer nearby who finds it profitable. You could get some ideas from neighbouring farmers. If you are intercropping, perhaps there's a better way of doing it. Why not take the trouble to find out.

*Note: This script is adapted from Package 3, script 6, distributed in 1979. The original participants were George Atkins, founder of Farm Radio International; Dr. R. N. Willey, Cropping Systems Agronomist, ICRISAT, India; Dr. Bede N. Okigbo, Deputy Director General, IITA, Nigeria; Dr. M. B. Russel, Soil Physicist, ICRISAT, India; and Dr. Vijay Alakshmi, Chief Scientist, Indian Council of Agriculture Dryland Project, Hyderabad,* *India. It was updated and then re-reviewed by John Fitzsimons, Associate Professor, School of Environmental Design and Rural Development, University of Guelph, Canada.*

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