

Transcript: Plant Breeding Stories Podcast
S3E1.3 African Seed Systems - Daniel Wanjama



[Theme music plays]

Hannah Senior: Welcome to season three of the Plant Breeding Stories podcast, where I talk to leading likes about plant breeding, asking what they do, what makes them tick, and what fascinates them about the world of plants. I'm your host, Hannah Senior of PBS International, world leaders in pollination control. We design and produce specialist pollination bags and tents that are used by plant breeders and seed producers all around the world. And through this, I've been privileged to get a unique perspective on how plant breeding globally affects our diets, our farming systems, and the environment. I'm excited to share a little of this with you, as we meet some of the amazing people who make plant breeding their life's work.

Hannah Senior: To kick off this season, we have a special edition, a three-part episode about seed systems in East Africa. Why this topic? Well, because for a new variety to be released and go into cultivation, it needs to be multiplied up and distributed. And so the seed industry has an important role in ensuring that plant breeder's work translates into real-world impact. So I'll be speaking to a seed producer, a seed saver, and a seed systems expert, all of whom have been working on the changing and sometimes challenging frontline of the seed industry in East Africa for many years. Their insights are thought provoking and relevant to plant breeders across all parts of the world. You can listen to them in any order and all three represent different and valuable perspectives on how improved varieties influence or fail to influence what farmers grow and how they do it. We touch on collaborations with international research organizations to get varieties out into the market. The role of maize and how this affects the growing of smaller crops, critical for nutritional and agronomic diversity. And how gender dynamics affect how seeds are bought and what species are cultivated. We'll also touch on the unintended consequences and impacts of aid and development efforts and how a seemingly somewhat dry topic like intellectual property rights translates into very real impact on people's lives.

Hannah Senior: In this, the third part of our triple bill episode to start season three, I'm speaking to Daniel Wanjama, the founder and coordinator of Seed Savers Network, Kenya. After starting his career as an agricultural extension expert for the Kenyan government, Daniel recognized that many traditional crop species and varieties were being lost, and this would have an impact on food security. In this conversation, we discuss how the Seed Savers Network got started, operates and collaborates with other organizations. The implications of seed trading and intellectual property regulation on small holder farmers. And how the focus most breeding programs have on the larger seed markets - primarily in cereal crops - can have considerable implications for access to a nutritious diet. Transcripts of this episode and all our podcasts are available at [PBSInternational.com/podcast](https://www.pbsinternational.com/podcast). I hope you enjoy it.

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Hannah Senior: Welcome, Daniel. To get us started, can you introduce yourself and tell me a little about your background.

Daniel Wanjama: Thank you. Thank you, Hannah. And I'm very much honored to be in this podcast. I grew up in rural Kenya and in the rural Kenya Nakuru area, it is predominantly small-scale farmers who live there in the rurals. My parents had two acres of land and that is where we used to grow our food, that is where we use to work every time we come from school. So I grew up there and we used to do some gardening work every day, and growing food, eating it to ourself. Not really growing plants for market.

Hannah Senior: And you studied agricultural extension, so you could combine your knowledge of agriculture with teaching. Was it always going to be agriculture or did you consider any other career?

Daniel Wanjama: Yeah, my father was like, "Why don't you do something else like law?" And I was also not very sure what law is all about. I had not seen a lawyer all my life, and I had never interacted with one. [They both laugh] But I had seen people who are working for the minister of agriculture, also coming in the villages to advise farmers

and how to do soil conservation and all that. There was a lot of emphasis on “People should plant trees on their farms.” “You should conserve soil”. You could actually be punished by the government if you don't, for instance, dig trenches to stop soil from running down the hill. So you could be punished for that. You could also be punished for not planting trees at all in your garden.

Daniel Wanjama: So the emphasis was more on that, which is something that I used to find sensible because I also would participate in that because I used to believe that is what would probably help stopping the hunger that we could experience every now and then. For me, plants was also very intimate in the sense that whenever we had drought we really didn't have enough food. We used to think then what else should we do? What else should we grow? How should we grow it? Because there was, there were times when production would be so bad that people would go very far, people from my village, even ourselves, we could go very far up the mountain. And we do some work so that we are given some foods or some plants, some produce to consume further down the hills, because up the hills, it used to rain.

Daniel Wanjama: And this was quite a walk to go and look for food there, it was like 45 kilometers of people walking.

Hannah Senior: Oh wow!

Daniel Wanjama: So walking would take almost 12 hours before you get there. So you work, you sleep somewhere and then work and then the following day, you have to travel back. So this idea of “How do you grow food better?” was also a concern for me. Is there a better way of growing food? Why don't we find out whether there is? And this is what was also driving me towards agriculture training.

Hannah Senior: I suppose that puts it in a very personal context for many people and I'm sure many of our listeners, their experience of agriculture is very different and much more arms length. Whereas for you, it was a very immediate concern in your day-to-day life. So when you left university, you got a job working with the department of agriculture, doing extension work with farmers, but you started to recognize some

problems or started to see some issues that made you think the approach taken wasn't the best. Can you tell me more about that?

Daniel Wanjama: To me, it wasn't looking sustainable. Our focus in the government was never diverse. It was always maize and fertilizer for maize. Supply of some inputs like fertilizer was creating dependency... A lot of farmers could not afford, fertilizer was too expensive for them. And after giving them for a couple of seasons, we had to stop and give others so that the ones who have land could continue to buy, so I thought this was not enough. There was also drought. I could see still farmer were struggling, they don't have other food. And I was wondering why shouldn't we have a program to supply all the seeds and all the planting materials that farmers require.

Daniel Wanjama: In this case, what we were delivering were commercial seeds. It is not all seeds again, it was only maize and the maize seeds were hybrids. And because of my experience, raised in their farm and working to support farmers, I could see farmers really needed more than that. They needed more than hybrid seeds and fertilizer, because what could rescue us from hunger most of the time when there was a failure of maize are other crops like sweet potatoes. We could eat sweet potatoes, and we could also get cassava, sometimes beans would mature before the maize and we could have at least beans.

Hannah Senior: So how did you come to identify the need for seed saving?

Daniel Wanjama: I also got an opportunity to travel and attend some workshop. And I remember in one of the conference in Nairobi, Vandana Shiva came to the meeting and she talked about seed saving and all this conservational diversity. And that to me, was also an indication that thinking in a different way is really important. And I started thinking, this supply of seeds that we cannot get from the breeders... Even today, they don't find it profitable to breed these varieties of these crops. They don't find it profitable. They don't find it useful. No one looks at the local vegetables because there isn't enough market for seed. So breeding program is not existing, no one is looking at cassava to supply as seeds because they are also perishable seeds and they are so cumbersome to do in big volumes. So I realized the only way for this kind of seeds to be

supplied to the farmers was farmers themselves to save them and be able to supply to other farmers who need them.

Hannah Senior: So tell me about the organization. How does it work? What communities do you work with? Paint a bit of a picture for me.

Daniel Wanjama: So a lot of time, the people who are attracted by our seed saving conversation are women. So when we go to the village, we look for an organized group of women and we asked them whether they could or they would want to join our network. The members of the group is about 20 people or 15. They agreed together to look into the diversity of the seeds they have and each one of them should specialize with one crop. For instance, there is somebody who is saving a certain variety of maize, there is someone who is growing a certain variety of sweet potatoes, another person is growing cassava. So that as you grow the food, you grow also the seed. And you make sure that you also maintain a certain quantity of materials for seeds, so that they can be accessed by other people.

Hannah Senior: And do you provide training too?

Daniel Wanjama: Yeah, we conduct training in the sense that the community members or the group members are able to do selection, they are able to identify diseases which are seed transmitted, and they're able to maintain the seed to some purity. For instance, the farmer who is supposed to supply a certain variety has to make sure that the purity is maintained by selecting against any other, any off type and removing it.

Hannah Senior: So within the groups each species has an expert or a specialist, but everybody in the group can grow any of those varieties, or any of those species they want to?

Daniel Wanjama: That is very much correct. Everybody is like a community seed bank.

Hannah Senior: And you mentioned cassava and beans, but this also covers some indigenous vegetables, local vegetables. Tell me a little bit about those, because those are the things that I won't have heard of and I'm curious about.

Daniel Wanjama: We specialize a lot on local vegetables. You'll be surprised that a local vegetables are so many, so many types in Kenya. Some of them are consumed by only one community, one tribe, and others are consumed by several. So they are so diverse.

Hannah Senior: Oh! So it's really specialist.

Daniel Wanjama: Yes, specialist. Many companies won't take them up to do as a business, and there is very little work done on vegetables. And because of that, today in Kenya we are importing 95% of the seeds that are in the commercial arena.

Hannah Senior: And when we spoke previously, you talked about how some of these seed varieties that people are growing locally, or traditionally have been growing, are being lost. Could you expand on that?

Daniel Wanjama: That is something that is happening and loss of local varieties is happening mostly because there is no specific policy to support that. Because for instance, we did a study in Nakuru county, collecting information from the farmers through focus group discussions. And we discovered that five varieties of local crops, lost permanently. And that's why, for instance, since then, before we enter the seed bank, or if we have visitors, we normally have a moment of silence because we have lost what we shall never get. We let everybody remember that extinction means forever, and if you don't do anything, we continue losing.

Hannah Senior: That's a really powerful, powerful gesture and a powerful thought, isn't it? That these varieties, once they're gone, they're gone, there's no getting them back. And it also makes me wonder, do you work with other organizations like Genebanks, for example, so that they're shared, they're saved, not just in the communities but also somewhere else, so there's a backup,

Daniel Wanjama: We work closely with our National Genebank, but what we do especially is getting seeds from them. If we discover anything lost, we write to the National Genebank and we're able to receive some seeds that we bring back to the community. A lot of time, that is a bit confusing. Because for instance, when we say we

have lost certain varieties of amaranth, the National Genebank would give us 40 cultivars or 40 different types. And then when we come to bring them back to the community is a challenge because communities, a lot of time, they don't have the breeder's skill to identify which one they lost which one they didn't. So it becomes a challenge also to bring them back.

Hannah Senior: Why is it that some of these varieties are being lost? Is it a change in practice or a change in preferences or something else? Why are these local varieties being lost in the first place?

Daniel Wanjama: Well, part of the reason for getting lost is lack of attention from anyone, or what is given attention are commercial varieties. They are forgotten by policymakers, and we have a commercial seed sector that advertise their varieties every day, especially during the planting season. Farmers love listening to the radio, but the first thing they hear is which variety is good. And this is happening in the morning, in the evening all the time. And it is like the varieties that they have is no longer good. The advertisement is in the sense that “you go buy this, you get better yield”, but a lot of time they don't even get the better yield because of the circumstances of the farming.

Daniel Wanjama: The farmers' varieties, especially the ones that are getting lost because they are not registered and they have no breeding program, they are illegal in this in some sense, because anything that is not properly registered cannot be sold as seed, and they cannot be sold through the normal system. Traditionally, they have been sold from farmer to farmer, or they have been sold in the market as seeds, but now it's illegal to do that. So when you engage in selling these kind of materials, you are committing a crime. So they continue reducing and reducing people. They have lost faith in their own varieties.

Hannah Senior: One of the things that I'm curious about is with, you talked about learning and training around how to preserve seeds, but seeds can spread diseases, so is that one of the things that you have to be very careful about? How do you make sure that in saving seeds and sharing them, you don't inadvertently share problems?

Daniel Wanjama: Yeah. Having been to agricultural college it is something that we understand. What we do, we train farmers on how to identify seed borne diseases. For instance, we did a seed fair. A seed fair is a day when farmers come with their varieties to show, just to show, to display. And for anybody who is interested, is like an open day. A lot of new farmers don't know how to retain purity of their seed. So this is something we focus on by training farmers to know which diseases really can be transmitted through the seeds. And we identify that and they select against such plants. And in some aspects, for instance, for maize lethal necrosis disease.

Daniel Wanjama: We somehow blame the seed certification authority in Kenya for letting the disease spread that fast. Because one company working to produce seeds for maize and they're able to sell a lot of seeds to so many regions, to so many farmers because they do it in large volumes. And when we have a prevalence of maize lethal necrosis disease on one bag, and it is spread to so many other regions, then it goes very far. But if farmers were to maintain seed purity within their farm, even if there is a problem with a certain disease, it might go very, very small distance because farmers are able to share the seeds, they're able to sell maybe from farmer to farmer, but their quantities are small. So if they are spreading a disease, it might not go beyond a village because the quantities they are doing is quite small.

Hannah Senior: It doesn't spread so far or so fast, if it's in a small scale?

Daniel Wanjama: Yes.

Hannah Senior: I want to turn the conversation over to intellectual property for a bit. Kenya has the seed and plant varieties act, which is loosely based on UPOV 91. Can you talk to me a bit about how the act works in Kenya?

Daniel Wanjama: This seed and plant varieties act is to protect breeders' rights, breeders innovation. To make sure that breeders are entitled to their own innovation and their own varieties. By doing that this seed and plant varieties act stop farmers from sharing seeds, stop farmers from saving seeds and stop farmers from even reusing seeds that have plant breeders' rights. And a lot of time you don't know even the

difference between the ones that have breeders rights and the one that they don't, is a challenge. Now this procedure does not have anything to stop farmers varieties from being privatized. So if you discover anything, it can become yours if you register.

Daniel Wanjama: And then this discovering to the interpretation of the law, is that this discovering is finding something it has not been registered before. And this act also set very high standard for registration of varieties. So that it's only breeders who are well educated, or they have enough money, like multi nationals who are able to go through that procedure. And even we have seen some cases where someone has done that and went ahead to stop farmers from saving the seeds of the crop that they had picked from them, because now they need, they want royalty after... They claimed to have bred, but nothing, no work they can't prove any work done.

Hannah Senior: And I can see how this gives, creates real difficulties. And I can also see the other side of the story, which is if somebody has put a lot of work into breeding something and they want to recoup their investment. So the additional question or the other side of the story is if there is a variety, which somebody has put time and effort into breeding and registering, how do you account for that in the seed saving program?

Daniel Wanjama: Because we understand the law, we know it's against the law to save the seeds for varieties that have plant breeders' rights. And therefore we avoid such varieties. We have a committee that helps in identifying which varieties really belong to their farmers and which ones don't. And this committee includes, agriculture research organization, National Genebank, farmers, some other civil society organization that we come together and see, once we have documented a certain variety, because you want to secure them as open source, they don't belong to anybody. We also have this idea that we should not have exclusive rights even to the breeders for plants, especially plants that are important for food security.

Daniel Wanjama: Because it means if I don't have money to buy, then I could die of hunger, I cannot produce my own food. And there is a difference between small scale farmers who are producing food for their families and the commercial farmers who are growing food for profit. So those who are growing for profit is okay, they could buy, but

having a law that does not discriminate, does not say who should buy or who should have rights even for saving, is not very good because if there was a skillset for who should pay royalty, for instance, if they save seeds, that would be better. Because if you save seeds and you are growing one acre or two acres, then that should not be a problem. Some of these laws don't really fit our circumstances because a lot of them are cut and paste from I think Europe [he laughs] through UPOV-

Hannah Senior: Possibly.... [they both laugh]

Daniel Wanjama: So they really don't fit our circumstances, but because our law made by our parliament it's difficult to change, it is difficult to implement all of them as they are.

Hannah Senior: So that leads on to an interesting question, this podcast is called Plant Breeding Stories, and so a lot of the people who are listening are plant breeders. Do you have any messages for them that you would like to communicate?

Daniel Wanjama: Yeah. We have this program that we want to create awareness in Kenya. And some of the people we want to target are breeders, especially the breeders in the university. We have breeders in public universities. We have breeders in agricultural research organization, KALRO, in Kenya. And a lot of them are funded using public money because they are government decisions. But we would like to tell them that it is a very important work, but it should be done mostly not for profit, it should be done for common good. Seed should be accessible to all people.

Daniel Wanjama: Sometimes implication of breeder's rights, patenting, or having exclusive rights, it's making seeds inaccessible to small farmers. For instance, for tomatoes, hybrid tomatoes to be grown in a greenhouse in Kenya, the cost of the seed might be more than half the whole cost of producing tomatoes. Some cost is actually higher than the price of gold. And you see the person who is supposed to access these seeds to have small income for their family is a small scale farmer. Therefore, it is important to have a position that also looks at the other side of it.

Hannah Senior: It's been such a pleasure talking to you. Thank you very much, Daniel Wanjama, from Seed Savers Network.

Daniel Wanjama: Thank you very much, Hannah. It has been an honor and I'm always happy to come back.

[Theme music plays]

Hannah Senior: You've been listening to Plant Breeding Stories by PBS International, and I'm your host, Hannah Senior. This was part three of a three part special edition episode. Next week, we'll be back to the usual format and I hope you'll join me then. Plant breeding is a pretty specialist podcast topic, which can make it difficult for people who share our interest in this kind of thing to find it. So if you've enjoyed the podcast, please recommend it to your friends and colleagues and help others in the plant science community to find it. I'd love to hear from you, if you want to suggest people you'd like me to interview. And you can contact me on Twitter at PBSInt, or on Instagram at PBS_Int. Until next time, stay well.

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