

Creating resilience through agroforestry



Aster Gebrekirstos is a senior scientist at the Center for International Forestry Research and World Agroforestry (CIFOR-ICRAF). Her multidisciplinary work in agroforestry, dendrochronology and forest ecology examines how trees respond to climate change. Aster talks to *Nature Plants* about the importance of putting people at the heart of her research.

Please describe your research. What are the main problems that you're trying to solve and why are they important?

My research sits at the intersection of trees, ecosystems, policy and people. I study the impacts of climate change on trees and forests – and how they in turn are helping us to adapt to climate change and mitigate its effects. I love my work because it bridges two worlds – the precision of lab-based science and the invaluable insights gained from engaging directly with farmers on the ground. Working in the lab allows me to understand the resilience and risks plants face under changing climates, whereas collaborating with farmers ensures that this knowledge is practical and actionable. The aspect of my work that allows me to work with farmers directly is what excites me most. Together, we co-create solutions that restore degraded lands, empower communities, especially women and the youth, to build sustainable livelihoods. They describe their challenges and together we make decisions about which species and varieties to plant and which intercropping systems to use, and we generate data together. In this way, farmers shape the research agenda.

What have you learned about how to make collaborations with farmers most effective?

The key to successful collaborations is taking the time to build trust with the people that you're working with. When we first arrive, farmers are often very sceptical. They question our motives, whether we are there to take their land, and we have to convince them that we really are there to



hear their challenges and support them. We must listen to the farmers. Often in agroforestry projects, we're trying to optimize which farming systems work best from an ecological standpoint. We might ask farmers to plant a particular tree species because it sequesters more carbon. But for most people, that is a meaningless concept. Farmers will never be on board unless it makes social and economic sense to them and addresses the challenges that they face on a day-to-day basis. Once we understand that and take the time to build those relationships, farmers can be innovative and begin to take risks.

It's also important to remember that these collaborations are a two-way street in terms of knowledge exchange. For centuries, farmers have lived and survived off the land – they see how it is changing, how the climate is changing and how markets are changing. Farmers have deep traditional knowledge of the landscape that we shouldn't underestimate. It's this blend of science and community **partnership** that makes our work truly meaningful. It is a living lab. Because ultimately, agroforestry is about people. It's about building systems that are rooted in science and in community; systems that respect the wisdom of indigenous landscapes while preparing us for the uncertainties of climate change.

Your work sits closely at the interface between science and policy – how do you go about affecting change with your research?

To effectively translate research into policy, it's critical to bring all stakeholders together and understand what part each actor needs to play. Recently, with a project funded by the UK Department for Environment, Food and Rural Affairs (DEFRA) and the Global Centre on Biodiversity for Climate, we've established a **multistakeholder platform** where we invite government officials and investors along with smallholder farmers, village leaders, women and youth groups and we ask them, "What did your lands look like 50 years ago? What do you think they'll look like in the coming years? What are the most pressing challenges?" It's not often all of these people are in the same room, and it gives local people the opportunity to tell policymakers, "We believe in development, but we have to be involved in the decision-making" – so we immediately realized we had created an important platform here.

As researchers, we also develop new technologies and approaches to address agricultural and ecological challenges, but governments have a critical role in scaling the solutions. They can reach more farmers and provide more resources, and they have that mandate to bring about change at scale. Bringing the right people together is just as important as selecting the right trees. So, government policies, investment and coordination are essential to scale and ensure they reach the communities that need them most.

What inspired you to take up this line of research?

I joined the field of forestry and agroforestry at university by chance. I had no idea such a field even existed. But growing up in Tigray, I was unknowingly surrounded by its principles. My parents were innovative, and we had a green, thriving homestead in a city. At the same time, I witnessed the harsh realities of drought and famine during the 1984 famine in Tigray. One memory in particular, of a mother who lost four of her kids in one day, has left a deep impression on me.

It's once I began studying forestry that I started to truly connect the dots. Trees can

save lives. They offer food, shade, income and resilience. I came to understand just how vital agroforestry is, not only as a science, but also as a lifeline for communities.

I have seen this reality repeated during later conflicts and droughts in my homeland. I have seen young children climb indigenous trees to survive, relying on their bark and leaves when all else had failed. These moments were heart-breaking but they also deepened my commitment. I want to be part of the solution – not just through science, but through action. I want to inspire others to study agroforestry and to connect scientific research with the daily realities of those most affected, especially across Africa, where the need is urgent and the potential is vast. That's why I have worked to establish scientific labs in Ethiopia and Kenya. It's also why I launched the African Tree Ring Network and served as a founding board member of the the International Union for Agroforestry. These networks do more than support tree planting – they nurture minds and cultivate local expertise. They advocate for indigenous trees and connect

cutting-edge research with the lived realities of farmers and herders facing drought, displacement and ecological degradation. All with the aim of building more resilient landscapes. But none of my work would have been possible without the unwavering support of my family, the commitment of my organization, the dedication of partners, and the generosity of donors who believe in the power of science to transform lives. I am deeply grateful to all who have walked alongside me on this journey – and the journey continues.

Where do you see your field going in the next 5–10 years?

I think the future of agroforestry is bright. The tradition has been strong in the Global South for a long time, but countries in the north are now becoming more aware of the part it can play in sustainable agriculture. We face so many challenges now – desertification, climate change, food security and the biodiversity crisis. These are connected problems that require connected solutions; agroforestry is a great example of that. Trees sequester

carbon, they can prevent soil erosion, they provide food, fuel and promote biodiversity. The future of trees isn't only on farms, it's also in our cities. Urban agroforestry – planting and integrating trees into cityscapes – can cool overheating neighbourhoods, reduce energy costs, absorb carbon, filter air pollution, and improve mental and physical health. In rapidly urbanizing regions across Africa and the Global South, tree planting is no longer a luxury – it's a necessity. We must reimagine agroforestry not just as a rural solution but as a cross-cutting climate resilience strategy that spans rural and urban landscapes alike.

It's not a silver bullet solution but it is an important tool. For many years, agroforestry hasn't been seen as a particularly enticing discipline – but this is changing, and young people are starting to see its value. As a scientific and community-based movement, I don't think there's a better time for people to get involved.

Interviewed by Catherine Walker

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