



Decolonizing Community Health, Nutrition, and Culture through Secondary Crops



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Foreword

Smallholder Data Services (SDS), supported by a grant from The Rockefeller Foundation, is working to ensure that smallholders who are directly involved in defining, implementing, verifying and scaling regenerative agriculture have a stakeholder voice as each of these aspects are being shaped at a global level.

In support of this goal, SDS and one of its founding partners, Terra Genesis, are generating a series of reports, recommendations, best practices and guidelines that draw from early-stage regenerative farming by smallholders in various parts of the world.

In this report, we explore the impact that secondary crops can have on community health and culture, specifically among smallholder farmers.

In the course of undertaking this Rockefeller Foundation-supported initiative, SDS has also been drawing on an additional partner, the Smallholder Farmers Alliance in Haiti.

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Smallholder Data Services (SDS) is a consulting and research firm exploring how big data and technology innovations are enabling a revolution in both sustainable supply chains and regenerative agriculture. We reimagine data as a new sustainability product that financially rewards farmers and others involved in sustainable production, including smallholders in the global south. We focus on how the combination of data products and emerging technology unlock solutions for those concerned with the environmental and social impact of the products and services they market and purchase.

More at
smallholderdataservices.com



Terra Genesis is an international regenerative design firm that convenes brands, farmers, developers, communities, investors, and NGOs to work at the intersection of agriculture, ecology and economy. Our work is to evolve the role of agriculture and business as drivers of social and ecological health. We work from the ground up to evolve stakeholder capacity and capability and to identify solutions, create processes and curate interventions for systemic regeneration.

More at
terra-genesis.com



The Smallholder Farmers Alliance (SFA) is social business non-profit working to feed and reforest a renewed Haiti using a new agroforestry model in which smallholders plant trees to earn credits they exchange for seed, tools, training and other agricultural and community services. The SFA's 6,000 farmer members use organic methodologies, and are now in the process of transitioning to become regenerative.

More at
<http://www.haitifarmers.org/>

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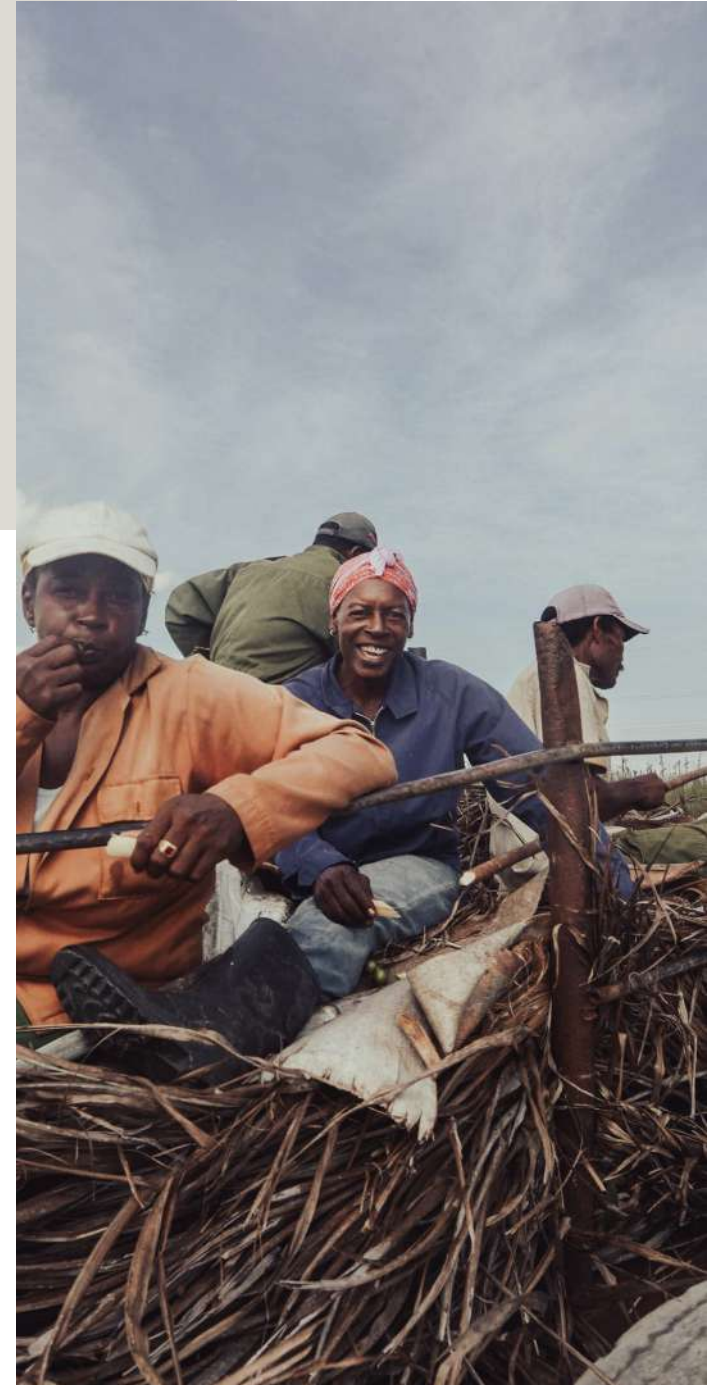
Executive Summary

Adding secondary crops to agricultural production systems provides not only ecological benefits in the sense of increased crop biodiversity; it also provides significant social value to communities.

‘Secondary crops’ refers to any crop other than a primary commodity crop in a farm system, whether grown for commodities markets, for farmers’ own food security, or as a companion crop.

This includes, but is not limited to, the benefits associated with increased food sovereignty, food security, and nutrition. Furthermore, the addition of secondary crops supports the revitalization of culture, strengthens economic and ecological resilience, and builds additional opportunities for social cohesion amongst community members.

Importantly, these outcomes support the process of decolonization by working in-part to weaken the present neocolonial power dynamics that exist within the global food system and that place inequitable pressures upon smallholder producer communities. The production of secondary crops presents one significant way in which farming communities can take back power over foodways, culture, livelihoods, and community-level sovereignty. ■



PREFACE: DEFINING TERMS AND SCOPE

What do we consider when looking at the terms “health”, “nutrition”, and “culture”?

While “health” is often primarily assessed through physical well-being, health can also be experienced through mental, economic, and social dimensions. Similarly, “nutrition” is typically viewed as the essential dietary building blocks that support a healthy body, but individuals can also be “nourished” through community, spirituality, emotions, and experiences. Among the various definitions of “culture,” one of the simplest describes it complexly as the “language, ideas, beliefs, customs, codes, institutions, tools, techniques, works of art, rituals, and ceremonies, among other elements” within a community (Britannica, 2023a). It would be a disservice to this inquiry not to acknowledge the depth and richness of these terms. However, addressing them in their entirety would require a much more comprehensive investigation than this single report can provide. Therefore, this report primarily focuses on the physical health benefits of a diversified, nutritious, and culturally relevant diet as well as the components of culture that are most directly related to the production and consumption of food.

Decolonizing health, nutrition, and culture refers to the process of dismantling the inequitable structures generated by colonialism, including addressing the ongoing impacts of colonization on Indigenous peoples and their lands, cultures, and languages. While many countries may no longer experience direct imperial control from another country, colonization in the modern world is experienced when powerful countries or multinational corporations use economic, political, and

cultural means to control and exploit weaker nations. In this case, we’re speaking of neocolonialism, which can refer “a form of global power in which transnational corporations and global and multilateral institutions combine to perpetuate colonial forms of exploitation of developing countries. Neocolonialism has been broadly understood as a further development of capitalism that enables capitalist powers (both nations and corporations) to dominate subject nations through the operations of international capitalism rather than by means of direct rule.” (Britannica, 2023b)

In the process of decolonizing, communities experience increased power, agency, and capacity to make decisions that center their culture, wellbeing, health, and nutrition, among other things. This report examines the role of secondary crops that are grown in their agricultural production system in reclaiming culture, health, and food sovereignty, as well as in restoring relationships with members of a community and the land through the practices used to produce, harvest, and distribute these foods.

In reference to **regenerative agriculture**, we are working with the definition introduced in the first report in this series: Regenerative agriculture is a system of farming principles and practices that is rooted in indigenous and ancestral agroecological traditions, but also draws from decades of scientific and applied research by the global communities of organic farming, agroecology, holistic grazing, and agroforestry. It is farming in ways that replenish soil nutrients, help to clean waterways and air, capture carbon, and create multi-functional, multi-



layered, biodiverse farming systems that function holistically and support the well-being of all forms of life within its fold and beyond. Regenerative agricultural systems include ecological, social and cultural systems, and as such they encompass the well-being of the farmers, their communities, and those they impact, as well as the landscapes they are a part of, the ecosystems in which they are nested, and the ecosystems they impact.

In regenerative agriculture, diversification is a key principle which many producers achieve through the planting of secondary crops. **Secondary crops** within this report refers to any crop other than a primary commodity crop in a farm system. Secondary crops can be agricultural crops that usually are not included on lists of the world's top agricultural commodities.

But the term can also refer to crops that do count as major commodities and potential exports (e.g. cacao, coffee, cassava) but that are grown as a companion crop for other crops that the farmer in question considers equal or more significant to their farming enterprise. ■

Secondary Crops Contribute to Food Sovereignty

The globalization of the food system has reduced the diversity of foods consumed in an average household. Over the past century, up to 75% of the crop-plant genetic diversity has been lost and a third of today's diversity could disappear by 2050 (Jayaram, 2014). While more than 6,000 plant species have been cultivated for food, fewer than 200 make substantial contributions to global food output, with only nine (sugar cane, maize, rice, wheat, potatoes, soybeans, oil-palm fruit, sugar beet and cassava) accounting for 66 percent of total crop production in 2014 (Food and Agriculture Organization of the United Nations, 2019). Additional estimates show that 75 percent of the world's food is generated from only 12 plants and five animal species (Food and Agriculture Organization of the United Nations, 2004). What this means is that of all of the foods that exist (and have existed) in the world, communities consume less of them than ever before.

The impact on food sovereignty on communities across the globe has been devastating. It is not necessarily that people don't have enough to eat, but

Food sovereignty is a community's ability to produce, procure, and/or consume foods based on their own interests and decision-making

they can only easily access the same handful of food ingredients that are part of a globalized convenience diets, driven by large-scale commodity production and efficiencies of scale. Again, a loss of food sovereignty refers to a community's decreased ability to choose to procure and consume a diet containing diverse foods of cultural significance.

Thousands of varieties of fruit and vegetables have disappeared because of the loss of agricultural biodiversity, driven in part by the industrial food system's preference for uniformity and ease of transporting and processing. At the core of these



developments is the loss of a connection between people and landscape. When traditional harvesting practices of a crop or the culinary uses of an ingredient are forgotten, local knowledge regarding that food erodes. The loss of a native language or immigrant dialect from a community can mean the loss of the language to describe a specific variety of a vegetable.

This is where the re-introduction of “forgotten foods” — reintroducing heirloom and heritage foods, saving indigenous seed varieties, and preserving traditional recipes and cooking methods — comes in. It is a form of activism. It is a form of re-creating a sense of belonging, a sense of connection to place and to people.

The diversification of farms via secondary crops offers one pathway to increasing communities’ access to diverse and culturally significant diets. This diversification can address cultural oppression as long as it expands access to traditional foods and growing practices of BIPOC (black, indigenous, peoples of color) communities (Salerno, 2021).

Various movements and initiatives have emerged to try to revive distinct, regional food traditions. With organizations cataloging distinctive foods facing extinction, such as the Slow Food movement’s Ark of Taste and the RAFT (Renewing America’s Food Traditions) collaborative, we are witnessing a renewed interest in the origin of food.

Through the ability to diversify production systems, communities may experience increased sovereignty with regard to the foods that are available for their consumption. By growing subsistence crops, farmers have more agency to grow crops that are culturally relevant and preferable within their household. ■





Movement towards food sovereignty and food security:

Many initiatives are prioritizing the benefits of food sovereignty, food access, and food security of seed saving. For example, in India, Navdanya, an organization founded by Vandana Shiva, has been conserving biodiversity through a network of seed keepers and organic producers, helping to set up community centered, decentralized indigenous seed banks across India, Nepal, and Bhutan. This work frees farmers from dependence on costly commercial seeds. Navdanya has collected more than 4000 varieties of rice, as well as forgotten food crops such as millets, pseudo-cereals and pulses, which were pushed out by the green revolution and expanding monocultures (Navdanya International, 2018). Other seed saving movements and seed libraries have sprung up around the world to ensure the preservation of the richness of indigenous and heirloom crop varieties. In Peru, Camino Verde has established reforestation centers and tree nurseries to form a seed bank that includes 663 plant species, to safeguard the diversity of native trees, including endangered keystone species in the Amazonian forests (Camino Verde, 2014). La Via Campesina has launched a Global Campaign for Peasant Seeds to preserve agrobiodiversity and farmer food sovereignty (La Via Campesina, 2022). Similar work is carried out by a number of other peasant and agroecology organizations, including FIAN International (Fian International, 2022). These efforts all demonstrate an intention to preserve the genetic diversity of culturally appropriate foods and provide communities with greater access to food sovereignty.

Secondary Crops for Food Access and Food Security

Through the commoditization and globalization of the food system, many communities have experienced changes to their foodways that also risk food security in the face of international conflicts and changing weather patterns. For one, countries import and export more food than ever before, thus investing relatively less in the production of foods for local markets. The export-focused commercial production of agricultural commodities often contributes little to food security at the local or national level (Food and Agriculture Organization of the United Nations, 2019). Developing countries struggle to cultivate healthy food systems, in part because they export too much of their high-quality food crops. Promoting export markets without sensitivity to local food needs may lead to negative effects for food security (Marrero and Mattei, 2022).

The benefit of incorporating secondary crops into agricultural cropping systems is that producers can grow crops alongside export crops that may be more suitable for subsistence and domestic consumption. This can increase local food access and long-term food security when communities are less reliant on imports.

Secondly, as noted above, the food system is much less diverse than it once was, both in terms of the number of species grown and the genetic diversity within the species that are produced. There is considerable consensus that, overall, the shift from traditional production systems utilizing farmers' varieties/landraces

Food access is the availability and accessibility of sufficient and nutritious food.

Food security is the long-term resilience of a community's access to food.

to "modern" production systems promoted by the green revolution is leading to genetic erosion (Food and Agriculture Organization of the United Nations, 2019). The risk in this reduced genetic diversity is a compromised ability for crops to withstand environmental risks such as increased pest pressure, extreme temperatures, and rainfall patterns etc. For example, studies assessing the quinoa boom in the early 2010s show that export demand of quinoa from Peru focused on very few of the 3,000 or so different varieties of quinoa, prompting farmers to abandon many of those varieties. Stefano Padulosi, a specialist in underused crops at Bioversity International, speaks to the harm of this loss, as "those varieties, created by Andean farmers, are the future of quinoa, to adapt to things like climate change" (Cherfas, 2016). In order for farmers to weather environmental challenges, their crops must be regionally adapted and ecologically suitable. The production of large-export

commodities often does not prioritize these characteristics, but producers may be able to use the production of secondary crops to incorporate diverse and resilient species and varieties into their agronomic systems.

The benefits of this kind of diversification is multifaceted with regard to security and resilience. For one, diversified systems are generally less susceptible to pest pressure or large-scale crop loss, to which monocultures are much more vulnerable (Lin, 2011). Further, diversification inherently reduces risk because farmers are less reliant on the sole success of one specific crop. Lastly, with regard to food access, communities with diversified production are better positioned to feed themselves. When socio-political conflict arises, these communities may be less reliant on external sources to supply them with adequate food. Growing subsistence crops may increase the resilience of communities to global disturbances and market instability (Marrero and Mattei, 2022).

When a community is able to become self-reliant in terms of food access, they become less reliant on external entities, thus regaining a greater degree of sovereignty and autonomy. ■



Secondary Crops for Nutritious Diets

A food industry that is based primarily around exports not only contributes to reduced food security and food sovereignty, but can also reduce diet quality and nutrition, exacerbating health crises (Marrero and Mattei, 2022). As the production of commodity crops came to dominate the agricultural sector, many communities stopped producing (and consuming) culturally relevant foods which are also often deemed to be more nutritious and healthy. Indigenous communities now face high rates of diabetes due to the availability of highly processed commodity crops and a loss of food sovereignty (Burnette & Blue, 2023).

Through secondary crops, communities can increase the ratio of fresh nutritious foods in their diets, and reduce their reliance on commercialized exports. Perishable foods are often expensive for communities to import. Therefore, communities may increase food nutrition by growing their own perishable crops (Johnson,

2023). In general, local food production — bolstered by local and Indigenous agroecological knowledge, cultural preservation, and collective agency — can aid in reclaiming healthy food systems (Marrero and Mattei, 2022).

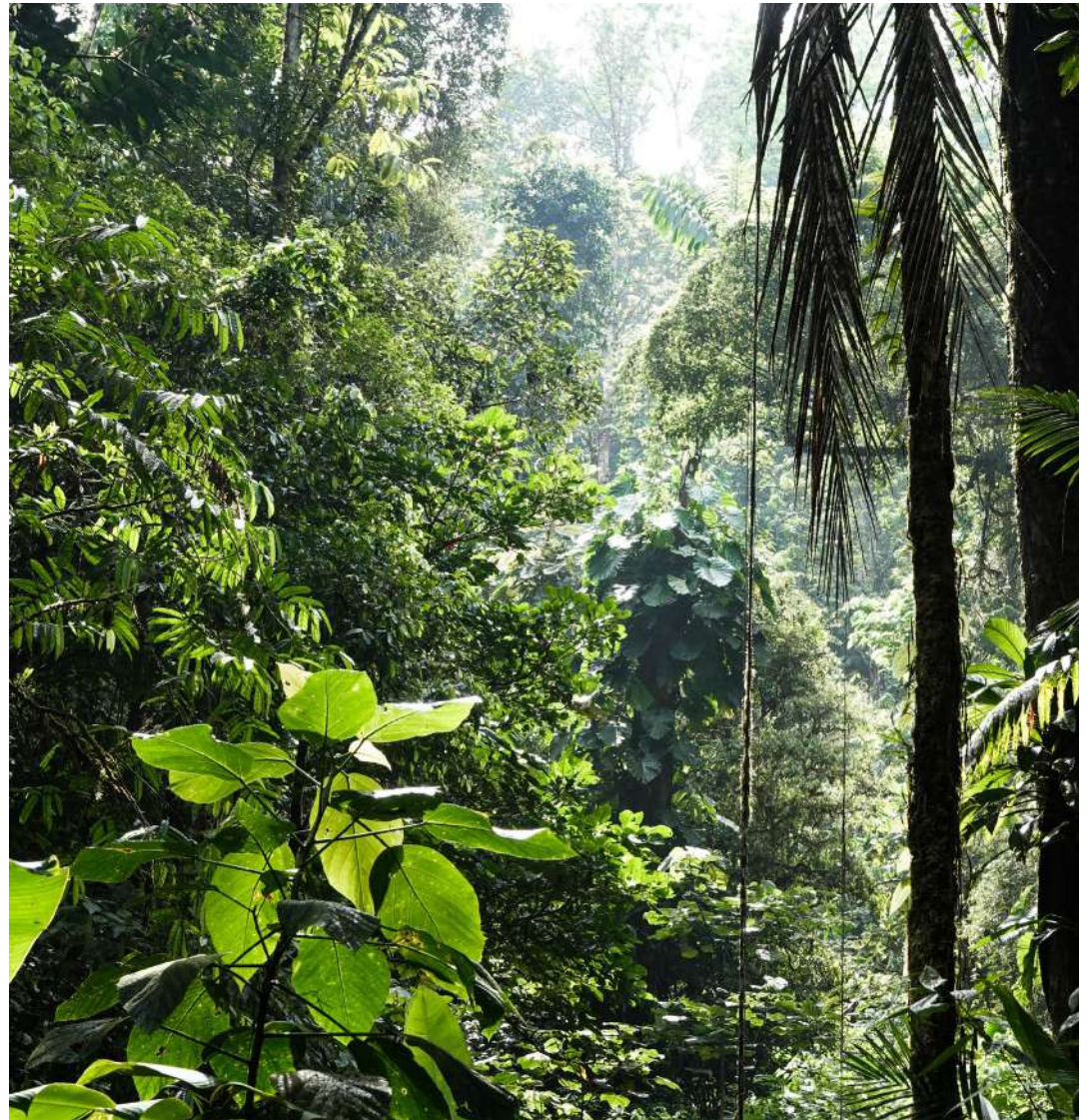
Beyond questions of access and availability of nutritious foods, regenerative agriculture can also present the opportunity to increase the nutrient density of the foods that are grown. Ecologically diverse mixtures of plant species can generate soils that are richer in essential plant nutrients (Hector, 2021), and research suggests that crops grown with practices that improve soil health also result in increased nutritional density as



compared to the same crops grown in neighboring plots with conventional agriculture practices (Montgomery et al., 2022).

One of the negative impacts of the green revolution is that many producers were convinced that recent agricultural innovations — as an alternative to traditional production methods — would advance the success of their agribusiness and the food system as a whole. As Roger Leakey from the International Tree Foundation points out, a step “back” towards more traditional agronomic practices and plant genetics does not actually have to be a step backwards at all: “A stronger focus on traditional food species is not a retrograde step when trying to solve the problems of global food production. Recent evidence gathered from an agricultural intensification transect in southern Cameroon has indicated that land clearance for conventional agricultural intensification has had negative impacts on nutritional security and health due to the reduction of indigenous fruits in the diet.” (Leakey, 2020)

Given the correlation between colonization and the loss of nutritious foodways, the planting of secondary crops via more diverse regenerative agriculture systems (and the use of regenerative agriculture practices to increase soil and crop fertility) can support communities in regaining health, security, and sovereignty, thus loosening the harmful effects of colonization. ■



“Regeneration” via Secondary Crops can mean “Decolonization” with the right intentions

Promoting the diversification of agricultural systems through secondary crops is one of many practices that can aid in the regeneration of food systems. Thus, it is useful to look at the relationship between “regenerative agriculture” and community outcomes more broadly.

There are many different lineages of “regenerative agriculture”. Some modern approaches to promote regenerative agriculture focus on ecological restoration as their primary motive, while other discourses see regenerative agriculture as a way to change dynamics of culture, power, and ways of relating to one another (Gordon et al., 2023). This latter framing acknowledges the socio/political harms of colonialism and the green revolution and seeks to restore power and holistic wellbeing to communities through the decolonization of foodways. This latter approach does not disregard the ecological element, but instead centers the wellbeing of people as the primary motive and measure of regeneration, trusting that ecological restoration will follow. After all, the deforestation and soil degradation that has concerned many environmentally conscious movements have been a direct result of the social exploitation embedded in colonization (Salerno, 2021).

In this report, we acknowledge the importance of centering people and the social outcomes that become possible through regeneration. With regard to secondary crops specifically, as highlighted in this report thus far, this can include the production of locally-relevant secondary crops through traditional wisdom.

The sections in the first half of this report begin to explore ways in which the production of secondary crops can support smallholders in actively breaking away from the oppression of neocolonialist dynamics. Beyond the functional benefits of food security, food sovereignty, and nutrition, there is a paradigmatic shift that can be experienced by communities through the incorporation of secondary crops in agronomic systems. In the current conventional paradigm of agriculture, where industrial powers promoted monocultures through the green revolution, agriculture became a tool for extracting value from the land and from communities for the benefit of colonizers. Put simply, monocultures have served as an instrument of colonization and neocolonialism, primarily benefiting a few key stakeholders while resulting in land use change and eco-social exploitation. Through this paradigm, agriculture has been viewed as a machine to be optimized for increased outputs. In this “machine”, individuals within agricultural communities become replaceable cogs, caught in the status quo.



While not adequate in itself, incorporating secondary crops can be an important strategy for challenging this extractive monoculture paradigm. When paired with additional processes that increase the capacity of farming communities, the production of secondary crops can contribute to shifting dynamics of power and control such that producers become less reliant on — and less in service to — external stakeholders.

Secondary Crops and Culture

As mentioned in the first half of the report, there has been a significant loss of the diversity of foods grown. With this comes a loss of diverse cultures. Many cultural aspects, including ritual, celebration, knowledge sharing, storytelling, and so on relate to the foods grown and consumed by a community. Countries have reported that the retention of traditional knowledge related to the biodiversity of food and agriculture has been negatively affected by the loss of traditional lifestyles, in part as a result of the industrialization of agriculture and food processing, and by overexploitation and overharvesting (Food and Agriculture Organization of the United Nations, 2019). Much of this traditional knowledge may be lost forever. Through the diversification of production systems, and through the intentional and ethical sharing of what traditional knowledge remains, communities may experience a reemergence of culture and revitalization of knowing how to relate to and be regenerated by diverse production systems.



Secondary Crops and Resilience

As mentioned above, secondary crops increase the diversification of agronomic systems, which generally increases their resilience within the ecosystem. The relationship between diversification and resilience can be extended beyond this example. From a financial perspective, crop diversification increases diversification of income sources, which can support financial resilience of farmers

Secondary Crops and Social Cohesion

The social fabric of rural communities is an element often left out of the discussions around how to adopt models of more sustainable and regenerative agriculture, but a focus on social connections may illuminate additional benefits of diversification (Siegfried, 2020). While this subject is fairly understudied, it can be argued that diversification of crops grown may help communities to diversify and complexify the relationships amongst community members.

As farmers incorporate additional crops into their production systems, they have additional reason to increase their exposure to one another through new planting and harvest practices, presence at additional marketplaces, and the sharing of knowledge and challenges with their peers. If one farmer's primary export crop is coconut and another's is coffee, both grown in monocultural systems, these farmers may never have reason to meet and exchange wisdom with one another despite living in the same community with shared

cultural, political, and climactic experiences. If both farmers diversify to incorporate shared secondary crops, their lives begin to overlap intellectually and spatially as they occupy shared spaces in the marketplace and the agricultural community. The production of secondary crops, then, can present the opportunity to bring members of a farming community together to increase their social cohesion, thus increasing knowledge and resource sharing. Further, as farmers are exposed to additional markets (especially local markets rather than aggregation centers for exports), they may further meet members of their communities that may not be producers themselves. If secondary crops are grown primarily for local use, farmers may also naturally end up bartering and trading produce amongst themselves (“I have an excess of tomatoes, you have an excess of squash, let’s trade”). This builds mutual trust and goodwill, and a sense of community, of interdependence.

It has been shown that social isolation is a significant challenge for producers, and these additional points of contact with the community may facilitate relationships that enliven a producer’s experience and alleviate challenges of isolation (Wheeler et al., 2021).

Secondary Crops and Emergent Outcomes

In alignment with the principles of emergence, we acknowledge that we can’t quite predict all of the potential outcomes that may emerge. Accommodating the principle of emergence, we note (and hope) that programs and communities that prioritize the incorporation of secondary crops may experience additional benefits not addressed in this report. As Roger Leakey notes, “in addition to diversifying diets, [crop diversification] aligns with the importance of prioritising interventions based on poverty prevalence, absolute numbers of the poor, and inequality measures. Furthermore, increasing perennial biomass and agrobiodiversity is central to climate change adaptation and mitigation and is relevant to existing African policy instruments on food and nutrition security and poverty reduction.” (Leakey et al., 2021). When designing interventions that support the incorporation of secondary crops, it is crucial to co-create programming with community members such that unique outcomes specific to their aspirations and place can be identified and prioritized. ■



**A CAUTIONARY NOTE:
REGENERATION CAN RESULT IN
COMMUNITY WELLBEING, BUT IT
CANNOT TAKE PLACE WITHOUT IT**

It is important to note that, while these effects all sound like positive outcomes for communities, self-interest alone is likely not enough to enable a community to adopt practices of diversification in their production systems. As highlighted in other reports in this series, significant investment in market pathways, farmer education, infrastructure, and more will be necessary to support farmers in adopting regenerative agriculture. To build on this argument, one must also acknowledge additional barriers that producers may face.

For example, in Northern Ghana where WhatIf Foods first began engaging farmers to grow bambara groundnut, they quickly learned that farmers had limited capacity for farming work because they were all suffering from diarrhea due to contaminated water. “Try farming regeneratively when you’re constantly sick,” says Scott Poynton, recalling the early days of the bambara nut partnership. (Poynton, 2023)

World Food Program’s Beyond Cotton initiative, which works to increase production,



local income and food and nutritional security for smallholder cotton farmers in Africa, also reports that often farmers face practical constraints in their daily lives such that they simply do not have energy or time left for farming work. In many rural villages in Benin, for example, the nearest well was often a mile or two away, and farming families would spend a big part of their day simply fetching water. Once Beyond Cotton established a new well closer to the village, it freed up more of the farmers’ time and energy for farming work. Joélcio Carvalho of Beyond Cotton also shares that a few simple tool upgrades made an enormous impact on the farmers’ daily life in terms of time and energy saved. Beyond Cotton provided the farmers with a rototiller and a precision garden seeder, which meant that they were able to prepare and plant a field in a few hours that normally would have

taken them several days. (Carvalho, 2023)

As Jeroen Douglas of the Solidaridad Network notes, “Sustainability seems to have lost its meaning. If the people who produce our goods are mired in poverty, there can be no such thing as sustainability.” (Solidaridad Network, 2023)

In these examples, we see that farmer education, financial incentives, and market pathways identified in previous reports are at times not enough to support farmers in accessing the benefits of regenerative farming. Basic needs and other holistic aspects of community wellbeing are often overlooked, and needed, before communities have the capacity to reap the benefits outlined in this report. ■

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