

# NOTES FROM AMARANTH LAND (I)

Julia Mensch, Buenos Aires, Argentina, January 2023



*Amaranthus mantegazzianus*, Santa Rosa, La Pampa Province, Argentina.

1.

What is amaranth whispering in our ear?

*A question like a soft breeze on your face.*<sup>1</sup>

Buenos Aires. The city feels like an abrupt whirlwind, to which I am no longer accustomed. I go through the Constitución station and am overwhelmed by the human tide. My Buenos Aires, my Constitución overwhelms me, amazes me, leaves me breathless. I begin to visualize or to accept my condition as a migrant. I am moved by every bit of help, every caress of solidarity and the

affection shown by the people awaiting me here. I am a migrant who falls into a nest inhabited by beings willing to shelter me for as long as I am here. I am like the shoot of a plant that does not yet know which plant it is, growing from the beginning all over again every time it moves. Getting off the plane, I feel as if my growth is beginning again in this fertile, mistreated, powerful land. That growth is transformed or halted when I leave.

I enjoy unfurling my language in the wind of the city that made me who I am. What does distance do to the connection a person has with their place of origin? I recognize myself in streets, in sounds, but at the same time, their noisy intensity makes me dizzy, and I feel my way along my own cement-filled land with uncertain steps after having left the nest for far-off lands. Lands far away with different languages, codes, gazes and temperatures. Lands far away with fewer hugs, less cumbia and tango and no *folclore* at all.

The first time I saw amaranth was on the same block as my house in Berlin. I saw it slowly grow over the course of the months between spring and autumn in Germany. This plant, which looks so exotic and exuberant, accompanied me during the year before this project began. With my daughter Lina, we began to greet it and caress it every time we went by. *Un cultivo de nuestra tierra* (a crop from our land) I would tell her, and we would stroke it together. Was that amaranth—I do not know the species name—a migrant, like me? What effect does being far from the continent where it was born have on it?

In Argentina, I had never seen amaranth plants. But I came here to this land, to my land, to find it, in order to observe it closely, embrace it, caress it, to see myself in its plant being, to learn from it, from its resistance over the centuries, its history and its present. I came to Argentina to find out what it has to tell us humans, this crop native to the continent re-named America, remembered as Abya Yala. It is cultivated quite little in this country, but it is very widely dispersed as a weed—or to be more precise, spontaneous vegetation—in transgenic crop plantations.

## 2.

Amaranth is a crop that survived the colonization by Spain thanks to indigenous peoples who conserved its seeds. After 1492, the colonizers prohibited it because it was one of the mainstays of the indigenous peoples' diet, and, due to its utilization in religious ceremonies, the Spanish considered it a diabolical crop. Over five centuries later, amaranth was the first spontaneous vegetation to develop resistance to agrottoxins used in the large-scale monocultures of transgenic crops that increasingly dominate the Argentinean agricultural landscape. The stark polarization with regard to eco-critical perspectives in agriculture crystallizes in the choice of words: "agrottoxins", "agrochemicals" or "phytosanitary products". They are used synonymously but have strongly divergent connotations, clearly marking a speaker's self-positioning in relation to the dominant agricultural model that relies on the technological package of GM (genetically modified) or hybrid seeds, agrochemicals and mechanized production. I use "agrottoxins" in order to emphasize the negative ecological and health effects of chemicals used in industrial agriculture.

In 1996, Argentina was the first country to open the door for transgenics, when the first GM (genetically modified) crop was released for commercialisation in Latin America: the 40-3-2 Roundup Ready soybean from Monsanto (today Bayer), genetically modified to be resistant to the herbicide glyphosate. Like other agricultural chemicals, the industry defines glyphosate as a phytosanitary product, which when used correctly generates no environmental impact whatsoever. But Argentina's recent history and the extremely negative environmental impact on the health of human and non-human beings living in fumigated towns across the country are evidence to the contrary.

Back in 1996, the agro business promised that no weeds would survive the application of glyphosate, transgenic agriculture's star herbicide and phytosanitary product. But in that same year, **amaranthus hybridus**, commonly referred to as *yuyo colorado* (red-colored weed), had already developed resistance to glyphosate and was beginning to grow in GM soy fields. Today, it grows, undisciplined, in 25 million hectares of transgenic crops. It may well be, as Dr. Carrasco called it, "America's revenge".

### 3.

I speak with different people, and set out in search of those who seek to eliminate amaranth as a weed in fields of genetically modified crops on the one hand, and on the other, those who cultivate it agroecologically today. I run into the first difficulties: telephone numbers that no longer work, a retired woman scholar who no longer investigates, people who have passed away recently, producers who are not cultivating it this year and others who have left the country. My plan of action is turned on end and I try to remember the problems I ran into on previous investigations in order to avert despair. Meanwhile, amaranth grows profusely without anyone cultivating it on GM plantations, and weed experts fight against its growth with more and more agrotoxins; I can find almost no one in this enormous country who is cultivating it. The more I ask, the more paths open up and more names for it accumulate: it is called *amaranthus*, *yuyo colorado*, black and whitish amaranth, *coime* and *keivicha*.

I ask more and more people, more cooperativists, more agroecologists. As if turned into a Swiss academic, I propose encounters via zoom, but before every trip, am answered with audios via WhatsApp that are informal, amiable and informative; people send photos of articles, with varying degrees of legibility. Audio messages reach me from different regions of the country, in voices whose accents map out the ample, melodious sorority of an immense territory. An agenda for travel to diverse regions very gradually begins to emerge.

**Nilda Reinaudi**, a nice woman accompanied by a beautiful little cat in her profile photo, is a scientific researcher from the Universidad de La Pampa who retired six years ago. I had been writing to her for months with no reply until I called her at a land line I found on the internet; she answers kindly, gives me her e-mail address and personal cell phone number, and we begin an endless conversation. She unfurls her research long-distance, first through informal messages and photographs from her archive, and then by way of academic papers and press articles about amaranth. She began to work with the crop in the late 1980s, first locally and later as part of an

international project<sup>2</sup> that analyzed 19 genotypes of amaranth in order to position it as a food product in Nicaragua. In parallel and also after that project had finished, she and her team worked on community outreach in an attempt to bring the crop to local producers. She speaks about the two main species she worked with over the years: **mantegazzianus** and **cruentus**. The former is utilized for leaf production and the latter, as grain. She describes amaranth as a crop similar to spinach and chard, but containing twice the amount of amino acids, in other words, twice as much protein. With her working team, they improve the species to be better adapted to La Pampa, with *amaranthus mantegazzianus* being the most apt for that region; she still sows it in the garden at her house in Santa Rosa, a small town in the province of La Pampa.

She mentions *yuyo colorado* amaranth as one of the weeds most resistant to “phytosanitary” products. I ask her about the weed’s properties, and about the similarities or differences between it and cultivated species of amaranth. She says that it hasn’t been studied, but in situations of extreme poverty, it can be consumed just like *verdolaga* (or edible green plants, spontaneous vegetation defined as weeds that grows wild, even on the sidewalks of Buenos Aires).

She speaks about phytosanitary products, not about agrochemicals or agrottoxins. She mentions that in large-scale production, glyphosate needs to be used, first to clean the terrain before planting and later, to speed up the maturing process of the *panoja* (blossom of sorts where the seed is found). She explains that when the glyphosate is applied the plant dies, so that the flow of nutrients no longer exists and the seeds are forced to mature. I cautiously ask whether or not glyphosate residue remains in the seeds, and she gives an open-ended answer, saying that it isn’t clear, but after 15 days the glyphosate residue is supposedly minimal, but this isn’t known with certainty. In silence, I ask myself whether it wouldn’t be better to eat *verdolaga* from the sidewalk in Buenos Aires than amaranth with glyphosate.

Thanks to **Marcos Filardi**, Director of the Museo del Hambre, I make contact with Pachamama Products, an Argentinean company with a half-English, half-Spanish name. I meet with **Santiago Boffi**, the company’s owner. He is an industrial engineer from my generation, who did his thesis on the production of organic quinoa in Argentina. After graduating, he began his career path in agriculture in the position titled “young professional” at Monsanto, with the intention of learning how large-scale crop cultivation works. In parallel, he began to work on his own with other crops such as quinoa and amaranth, and a few years later in 2008, he left the multinational to set up a company that produces, processes, commercializes and imports conventional and organic crops defined as agricultural specialties: quinoa, amaranth, chia, sesame and flax.

Prior to our conversation, I fantasized about visiting immense plantations of amaranth run by his company and observing the plants swaying in the breeze. But photographs are all I see of them, and for the past 9 years their production is only sporadic. The reason why is the difficulty of its commercialization. Santiago explains that India dominates the international amaranth market. In our region, Bolivia and Peru are the largest producers of the crop, thanks to the structure of their agrarian systems, characterized by small and family producers, as opposed to Argentina’s agriculture, featuring a large degree of concentration in land ownership and large-scale production. Small parcels are more favorable for amaranth crop production because it requires

manual handling. Amaranth was conventionally produced—that is, with agrochemicals—from 2008 to 2014, in cooperation with producers from the San Luis, Salta, Córdoba and Santiago del Estero provinces in Argentina. They would dry the plant using glyphosate, as Nilda Reinaudi had also explained, in order to evenly mature the crop. In contrast to Nilda, who was not sure, he affirms that the “glypho” does indeed remain in the seeds. He calls it glypho, as I had heard agricultural producers call the herbicide so many times before. Between one thing and another I let the word agrototoxin slip out and he says that he would not call them toxins, but rather agrochemicals, because they are an agricultural tool when used correctly. In response to my question, he says that yes, applying glyphosate in the production of a super healthy food is indeed a contradiction. A very simple and obvious question occurs to me, one that has plagued me for years: at what moment did we incorporate using poison to produce food as a normal, natural thing? When did they convince us that it was the only viable way it could be done, when agriculture had done without it for centuries?

He confirms that today, conditions exist that would enable amaranth to be produced organically, thanks to experience with new harvesting methods that have been used for other crops. As I understand it, the company is looking to develop organic management strategies, based more on a business and commercial perspective than on a holistic, cooperative view or solidarity, believing it to be the best path forward.

#### 4.

Just a few days after arriving in Buenos Aires, I see amaranth seeds for the first time. It is Lalo, an agroecologist I have known for years by way of my previous investigations, who hands them to me. For some time now, his cooperative, Iriarte Verde,<sup>3</sup> created small bags of these seeds to be distributed as a call for resistance against the advance of transgenic agriculture. The seeds are extremely small, mostly white with a few black ones mixed in. My daughter and I plant some in a pot at the house we are staying at for the next few months in Barracas, formerly an industrial, working-class neighborhood.

Soon afterward, Nilda explains that the white amaranth seeds segregate, which means that some change color, turning black. This results in a perception in the market that they are of low quality, and in turn, difficulty in commercializing them. Santiago clarifies the issue differently, saying that the white amaranth seeds correspond to cultivated amaranth and the black seeds, to weed amaranth, which not only grows in GM plantations as a resistant weed, but also grows as a simple weed (or, as I would say, spontaneous vegetation) in crops everywhere throughout the country. He says the black amaranth weed grain was consumed by indigenous peoples. I ask him if he considers *yuyo colorado* edible, and if it might have the same properties as cultivated amaranth varieties. He believes that it surely does, and that we do not consume it for cultural reasons.

When I speak with them about our project,<sup>4</sup> both Nilda and Santiago are interested in thinking about plant intelligence. Nilda sustains that when I first spoke to her about the project, she thought that intelligent plants are the ones able to overcome determined obstacles. For example, weed amaranthus, because it has a genetic structure that allows it to resist phytosanitary products

and it is more adherent in the face of climactic conditions. In other words, the plants are very resistant to the adversities they find themselves up against. Santiago proposed to approach plant intelligence from Darwin's theory, and the standpoint of species' adaptation and the survival of the fittest. He clarifies that a living organism, whether plant, animal or human being, adapts to the different conditions of its surroundings. In the case of plants, the ones that are most apt for particular environmental conditions survive. So he proposes thinking about a population of amaranthus that receives a dose of poison. The amaranthus that doesn't die emerges stronger and reproduces, because in addition they are autogamous, or self-fertilizing plants, meaning that the plant has both male and female features. This resistant plant reproduces, and regenerates from one generation to the next, becoming stronger and stronger. In other words, the next time that it receives glyphosate, for example, it will already have developed resistance to it. He holds that this could be called intelligence, adaptability or survival.

Adaptability and survival are concepts that my beloved research team<sup>5</sup> and I have discussed at length in relation to plant intelligence. During one of our meetings, Claire Pentecost<sup>6</sup> suggested that associating these concepts to plant intelligence might be problematic. This is because it would render the plants that do not survive as unintelligent. Among other analyses, my conclusions always lead me to move away from the neoliberal concept of individualist adaptability that was so insistently promoted in Argentina during the 1990s, the very same decade when the transgenic model began. In this case, it might be more correct to think about the adaptability and survival of resistant weeds as a collective act, and from the viewpoint of considering it a form of intelligence. Because it isn't that a single amaranth plant survives by developing resistance to an agrochemical, but rather that once amaranth collectively develops this resistance, it is transmitted in turn to the generations that follow. I would therefore venture to assert that said resistance can be seen as a common good, first created collectively by a population of plants, to then be passed on to the following generations.<sup>7</sup>

## 5.

A manager from REM, the network of pest management pertaining to the Asociación de Productores en Siembra Directa (AAPRESID), invites me to visit transgenic soy and corn fields in Videla, a small town in the northern part of the province of Santa Fe, where the primary resistant weed that grows is amaranthus hybridus, commonly called *yuyo colorado*. It will be an official event, sponsored by the multinationals Bayer and Syngenta, among others. A weed scientist specializing in this plant will give a talk and conduct a field visit, in order to show local producers strategies for its elimination. I buy the bus ticket, where I will sleep during the entire night, to arrive at a place that is unknown to me. Just in case, I erase the entries referring to projects dealing with agroecology or critiques of the transgenic model from my webpage. Thinking of them knowing who I am and what I think makes me somewhat nervous.

When I contacted them for the first time, I did so sending them the webpage for the project I am involved in: Plants\_Intelligence. Learning like a Plant. It would seem that the link being in English and German, and that it is found on the webpage of a legitimized Swiss academy of art serve as an alibi to dissuade them from googling me. It is the first time I have interacted with

AAPRESID, an institution that unites producers using no-till farming, central to fomenting and implementing the transgenic agriculture model across the country. My contact has always been with Elisa (I will call her that to avoid giving her real name), manager of weed and pest control. I have her personal telephone number and from the very start she has very generously answered my questions and sent me information. Every time I write to her, she responds with nice, lengthy explanatory audios. When we speak I am careful to say phytosanitary products and not agrottoxins and I ask myself once again how it is that they haven't investigated me in the slightest.

I learn from her definitions. She is part of a program to survey the weeds that are resistant to what they call phytosanitary products, whether glyphosate or other agrochemicals. For every species or variety of what they define as resistant weeds, for example *amaranthus hybridus*, there are different biotypes. The biotype is the particular form that a species takes in a given place, the adaptation that a weed develops to a region or to a herbicide in that zone. She explains that a species can be resistant to glyphosate in one area of the country, for example, but not in another. Keeping records of the quantity of resistant biotypes is done with the help of producers who detect when herbicides do not control the weeds when they fumigate. They contact REM, and they send an investigator to do the corresponding scientific work to determine whether the weed is resistant or not to the phytosanitary product used in that field. These investigators are informally called *malezólogos* (weedologists); they are agricultural engineers who specialize in pest management, and each one researches one in particular. There are currently 42 resistant biotypes in Argentina. The response on the part of AAPRESID is to develop what they call intelligent strategies in the field, including increasing the dose of agrochemicals—to which the weeds are resistant—that are applied. Their clear, concise explanations sound very sophisticated, but contrary to the corporate advertising by these entities and agro multinationals, amaranth and other resistant weeds continue to advance and grow in fields of GM crops. They respond to more agrottoxins with greater resistance, handing down from generation to generation the information needed for their survival, in order to continue growing collectively.

The event I will attend on January 25<sup>th</sup> is called “Integrating strategies to beat Amaranthus”. I am beginning to pack my small suitcase and my disguise of young Swiss Argentinean artist and researcher who will investigate what they consider intelligent.

<sup>1</sup> Caístulo, Un texto camino, Movimiento por la lengua, Territorio Wichí, 2022, p. 10.

<sup>2</sup> Amaranth: Future-Food, research project financed by the European, developed by 11 partners from Mexico, Nicaragua, Argentina, the Czech Republic, Spain and Denmark between 2006 and 2009, [www.amaranth-future-food.net](http://www.amaranth-future-food.net).

<sup>3</sup> Iriarte Verde, agro ecological cooperative which works in collaboration with farmers from Parque Pereyra Iraola (a huge Park measuring 10.246 hectares, located 40 kilometres from downtown Buenos Aires) and other cooperatives around the country, [www.iriarteverde.com.ar](http://www.iriarteverde.com.ar).

<sup>4</sup> The research project “Plants\_Intelligence. Learning Like a Plant” (2022-2025) is realized by Yvonne Volkart (lead), Felipe Castelblanco, Julia Mensch and Rasa Smite, funded by the Swiss National Science Foundation, and hosted by the Institute Art Gender Nature at the Academy of Art and Design FHNW Basel.

<sup>5</sup> Plants\_Intelligence Team.

<sup>6</sup> Artist and professor Claire Pentecost together with Alexandra Toland and Yvonne Volkart are the supervisors of this adventure, my PhD project.

<sup>7</sup> What interests me here is that amaranth and other ‘weeds’ naturally develop a trait similar to the one that is artificially inserted into GM soybean seeds in the laboratory: Roundup Ready soybeans’ resistance to RR herbicides. Plant intelligence thus responds to human technological innovations in an act of collective self-defense, somehow mimicking the resistance of the GM crop.