

Conservation processes of creole seeds are theme to a doctorate thesis

Researcher has studied the means in which knowledge about the creole varieties is built and shared and their linkage with ecological, cultural, and affective aspects

The seeds market has a turnover of about R\$ 10 billion (about U\$ 3 billion) a year in Brazil, according to the Associação Brasileira de Sementes e Mudanças (Abrasem) [Brazilian Association of Seeds and Seedling]. Bearing the third largest industry in the world, behind only the United States and China, the Brazilian seeds market grew 122% in ten years, going from 1,8 million tons in the 2005/06 harvest to 4 million in 2015/16. Usually sold in technological combos which include provision of services and the acquisition of chemical inputs, hybrid and transgenic seeds have, as their main appeals, the increase in productivity – the industry is praised up to the point of being highlighted by ABRASEM (Brazilian Association of Seeds and Seedlings) as the primary responsible for the increase of agricultural productivity in the country. However, the industry has no few opposers. Several researchers, social organizations, ecologists and rural workers have accused seed patent owners of monopolistic practices and great pressure on agriculturists for the acquisition of transgenic seeds, as it was reported by Brazilian news agency Repórter Brasil. It is also pointed out that the homogenization of practices promoted by the industry, which does not take into account environmental and cultural specificities, could cause reduction of biodiversity and the loss of traditional empirical knowledge. Besides that, there are no few families that, in spite of the dissemination of hybrid and transgenic commercial seeds, still resist as guardians of creole seeds, so preserving the agricultural biodiversity. They share knowledge, practices and beliefs, they get organized in associations and establish networks and partnerships, seeking for solutions for their own demands.

Understanding the conservation process and handling of creole seeds employed by agriculturists of Rio Grande do Sul, and how these practices are linked to ecological, cultural and affective aspects of agricultural practices was the goal of researcher Viviane Camejo during her doctorate thesis, defended in the Postgraduate Program in Rural Development at UFRGS. A creole seed is the one whose germplasm has been multiplied by agriculturists throughout time. It could originate in the very place where it has been cultivated or it could come from other regions and even from other countries. Its in loco cultivation leads to an adaptation to the environment, which occurs as a result of natural selection, artificial selection by the agriculturist or a combination of both. The creole seeds did not have its genetic structure modified by the industry by means of a generic improvement process, so they are not patented by any company. Moving beyond its technical definition, however, each creole seed has a story and an affective relationship with the agriculturist who keeps them. “The guardians who plant those seeds have done this for decades. Creole seeds are not just a phytogenetic resource. Some people say the seed is part of the family legacy. And each variety will have a story with the family: some couples won the seeds when they were engaged or when they got married, so they keep always planting the same seed. It has this very intimate relationship with the family of this creole variety. As one lady told me: ‘I know the things it likes to eat, I know how it likes the sun, and how it likes to be planted’. “It is as if the seed communicates with the people who keep them,” tells Viviane, who performed an ethnographic approach for her thesis and lived with seven guardian families of creole seeds: three linked to the Associação de Guardiões das Sementes Crioulas de Ibarama (Ibarama’s Association of Creole Seeds Guardians) and four from the Associação de Agricultores Guardiões da Agrobiodiversidade de Tenente Portela (Tenente Portela’s Association of Guardian Agriculturists of Biodiversity). The researcher made periodical visits to the families between April 2014 and August 2016. In the beginning, she spent a week staying in each one their homes, trying to create proximity and trust. After that, she came back a few more times to keep up with the agriculturists day-to-day activities. Data collection was made through interviews and observation of these people’s practices. “I visited them from time to time, keeping up with their plantation system and seed storage strategies, and I also observed how much they were involved, on a daily basis, with the whole seed management. As we were spending time together, we were able to talk about it, occasion when I used to take notes of the things that sounded more relevant,” tells Viviane. Conservation of the creole seeds The guardians



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are agents who act in the conservation of creole varieties and the agricultural biodiversity. In her research, Viviane noticed that this conservation favors both technical aspects – such as the most appropriate location to keep every seed, the ideal temperature, and the recommended humidity level – and symbolic aspects related to the organization system of guardians and the means in which knowledge about the seeds is built and shared. Normally, the guardians get grouped in associations or cooperatives, in which they share knowledge and experience. “The great goal of these associations is the conservation of agricultural biodiversity. They preserve the creole seeds but also the seedlings of fruit trees, native plants, creole breeds of animals, and the like. The conservation of the agricultural biodiversity can be thought of beyond the tillage and seeding”, explains the researcher. The organization in associations also contributes to the strengthening of these groups. “They know that when they are organized they have bigger access to projects and bigger visibility,” she adds. According to the Plano Estadual de Agroecologia e Produção Orgânica (Pleapo) [State Plan of Agroecology and Organic Production], until 2012, Rio Grande do Sul had more than 140 guardians, a number to which groups or associations like the ones in Ibarama and Tenente Portela, that gather about 30 families each, were identified as one guardian only. These guardians are, in general, family agriculturists, farmers, quilombolas or indigene, distributed, at the time of the gathering, in 29 cities of the State, with a bigger concentration in the south and central regions. Another important factor for the conservation of creole seeds are the so-called mediators – public institutions, non-governmental organizations, universities and research organs which promote the creation of associations and mediate guardians and the state. “The mediators are partners who help them have access to projects, notices, a cold chamber, a greenhouse, and other resources. Things that would be difficult for them to get on their own,” explains Viviane. Here in Rio Grande do Sul, according to the researcher, EMATER and EMBRAPA are the leading partners, but the guardians also have a close relationship with some universities, especially with Universidade Federal de Santa Maria (UFSM) [Federal University of Santa Maria]. The fairs promoted by the guardians’ associations stand out between the venues of knowledge sharing about the creole seeds, like the Mostra da Agrobiodiversidade de Tenente Portela (Tenente Portela’s Exhibition of Agricultural Biodiversity) and Dia da Troca de Sementes Crioulas de Ibarama (Ibarama’s Day of Exchange of Creole Seeds). These events are open to the public and, as Viviane says, they have a diverse attendance: “Besides the guardians, there are lots of attendants from urban areas who go to these events. They range from bystanders to people who plant hybrid or transgenic seeds and want to make the transition.” In spite of also being a sales opportunity, what rules the event is the seed exchange. “I can see that the guardians have a kind of moral commitment to adopt the exchange. Even if they see that they already have the seed, if someone shows up and wants to exchange seeds with them, they will,” the researcher says. Beyond the seeds, however, these venues are meant for knowledge and experience exchange. “The moment you exchange a seed, you also exchange stories about it, phone numbers, contacts... There are many cases of friendships that began in those fairs.” Viviane also praises the relationship of reciprocity and trust that develops between the guardian families. “In some regions, besides exchanging seeds, they exchange products, food, and services with the neighbors. Mainly in tobacco planting regions, farmers sometimes lack manpower because their youngest sons moved out, and, in many cases, there is only an elderly couple in the property, what makes to seek engagement to other families. For example, on one occasion, everyone helps family X. After that, this family X is indebted to the community, and when a family Y is in need – to plant, to harvest or to do anything else –, family X joins family Y and helps it, too. There are ways of mutual help between these families and that may be characterized as a means of conservation of not only the creole seeds but also the agricultural biodiversity as a whole.” The matter of family succession and permanence of youngsters in the countryside is among the main concerns of the guardians, according to Viviane. “There is this fear, from many of them, of not knowing if this work will continue in their absence. Some of them are more optimistic and say that – with or without them – it will go on the same way, but there are others who have heavy concerns about that”, she says. Some actions are being developed to stimulate the interest of young people and guarantee the continuity of the conservation process of creole species, like the group of young guardians from Ibarama, a project developed alongside students from the city’s public schools. An initiative from schools’ teachers and principals, supported by EMATER/RS-Ascar, Secretaria de Educação Municipal (Municipal Secretary of Education), the Associação dos Guardiões de Sementes Crioulas de Ibarama (Ibarama’s Association of Creole Seeds Guardians) and the UFSM (Federal University of Santa Maria), the project created in 2010 aims to encourage the rescue, conservation and sustainable use of creole cultivation. Rural autonomy and food sovereignty The use of creole seeds used to mean backwardness, and those agriculturists who did not have access to the commercial seeds were considered poor and out-of-date. “Many creole seed guardians were criticized at some point in their lives by people who insisted they should leave creole seeds behind to acquire hybrid seeds and, since 2000, transgenic ones. But these people have been resisting since the 40’s and 50’s – when the hybrid seeds first appeared. Some of these farmers even tried the hybrid seeds, and concluded for their pitfalls, but they never left their creole seed behind,” Viviane says. The mediators work, as the researcher explains, was essential to the acceptance of these creole varieties and the empowerment of the guardians. It is recognized, nowadays, that the creole seeds fulfill a fundamental role for the autonomy of rural families and for the sovereignty and food security of these communities. “From the creole seed they can feed the cow, the chickens, the pigs and their own family. It feeds every living being in that area. The creole seed is not a source of revenue for its sale. Its revenue is that you do not need to buy the seed,” Viviane says. Besides that, many guardians sell food in fairs, door-to-door or to the school meal provided by the Programa Nacional de Alimentação Escolar (PNAE) [National Program of Student’s Feeding]. In addition to it, the products derived from creole seeds can become handcraft, like the ones produced with maize straw by the Associação das Artesãs de Ibarama (Ibarama’s Association of Artisans). Among the families interviewed for her research, Viviane noticed that the priority is subsistence. “First, they eat, then, what’s left is sold. If they don’t want to go to the supermarket for a few months, they can. They have a very balanced and varied nutrition from the very things they produce,” she says. Some of the families had more than 200 varieties of creole seeds, the main ones being corn, beans, vegetables, and cucurbitaceae (plant family that includes squash, melon, watermelon, zucchini, and cucumber). The creole seeds enable a significant decrease in chemical inputs bought from the industry – which sometimes are not even used. The seeds are more well adapted to the local conditions of climate and soil, so they are more resistant to bugs and disease incidence, as well as climate variation. “Some authors have also identified that the creole seed, after a few dozen decades, is so adapted to the climate and location that it will hold even the occurrence of a climatic event”, Viviane emphasizes. Another factor that influences significantly the option for creole seeds is the taste of food. “They say the food tastes better when produced with creole seeds; the flour produced from the hybrid seed, for example, is not so good. They also say the animals prefer their food derived from creole seeds; they don’t eat, for example, the squash produced with the hybrid seed as much as with the creole one. And the meat also tastes better”, she says. Risks and uncertainties of transgenic contamination Transgenic contamination is also a matter of concern for the guardians of creole seeds. Besides their day to day activities related to the tillage, these people need to keep an eye on their neighbors’ plantations,

because of the risk of contamination with transgenic seeds through dispersal and pollination. The transgenic corn and the creole corn, for example, can even grow as plants at some point, but they cannot flourish together. And so, the guardian needs to plan his plantation in a way that his plants and his neighbors' flourish in different periods. "Not all neighbors will let you know they are planting transgenic seeds, but, as we live in a small town, people talk, someone makes a comment. In some cases, the guardians go their neighbors to ask if they will plant transgenic. They are extremely vigilant about everything around them so that contamination doesn't happen," Viviane says. The entry of transgenic genetics in the creole varieties can compromise the way the plant grows, its taste and its history. This situation is worsened by the still unknown potential risks and impacts of transgenic cultivation to the environment, as well as to human and animal health. "In Brazil, generally, we still don't completely understand the true impact of genetically modified crops to our health. There is research being done, but we still don't have scientific evidence. There is much uncertainty about not knowing if the transgenic will really offer some risk, what risk it would be and how long it would last. And that uncertainty leads people to say no." Another factor that reinforces insecurity is the one associated with the fact that transgenic genetics is the property of a company. As the transgenic germplasm is patented, and its use requires the payment of royalties, there is significant risk of agriculturists being forced by companies to pay for the contaminated seeds. "There is this fear of contamination, specially because of the uncertainties these companies raise – one never knows what it's going to be like, if people's health is going to be harmed. So, agriculturists are very suspicious about that," the researcher says. Translated by Carolina Chiarelli Cheik, under the supervision and translation revision of Professor Elizamari R. Becker (PhD/UFRGS).

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