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ENVIRONMENTAL AND EMBODIED AGRO-TOXIC HERITAGE IN RURAL URUGUAY: FROM RECOGNITION TO TRANSITION TO SUSTAINABILITY AMONG DAIRY FARMERS

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Introduction

Life, as a process of development, involves continuous exchanges between organisms and their environments. The Anthropocene has been recognized as a new geological era in which human activity becomes a dominant force in the transformation of the globe, with important effects on the conditions that sustain life as we know it. In particular, “the saturation of the biosphere with toxic substances is the most notable reminder of the lasting human impact on Earth” (Hendlin, 2021; Nading, 2020). Likewise, the emerging knowledge in epigenetics provides evidence that the human genome responds to the environment we are altering and that the effects of environmental toxicity can be transmitted between generations, configuring “toxic local biologies” (Lock, 2020:33). This entails the collapse of the distinction between natural history and human history and the recognition of the importance of histories lived in both natural and social environments. As Nading (2020) argues, toxicity emerges in situated biologies since the effects of chemicals in the body depend on doses, the presence of other substances, genetic and nutritional factors, among others. In turn, these particulars are framed in global patterns of colonialism, racism and economic exploitation, exposing some people to much more toxic substances and doses than others.

Environmental toxicity can be understood as “heritage”. Toxic heritage includes both, the history of the substances and processes that create physical harm or threats of harm to environments (soil, water, air, etc.), the life supported within them (plants, animals, humans, etc.), and the intersections of that history of harm with both formal heritage institutions and informal memory practices (Kryder-Reid, 2021).

The field of heritage studies is concerned with how we manage human and natural legacies; how one’s sense of place, social and cultural experiences and memories’ are

legitimised or delegitimised and a responsibility towards the future with future generations' quality of life (Wollentz et al., 2020). Important for anthropological studies on toxicity is the understanding of how "toxic risks" and "toxic experiences" are constructed; how meanings are formed and negotiated from interactions between different types of actors (lay, experts, decision-makers), the role of the experience of dwelling and embodied knowledge about exposure, as well as the processes of uncertainty and frustration regarding knowledge gaps (Auyero & Swistun, 2009; Little, 2016; Shapiro, 2015; Singer, 2011). In both fields, social and cultural memories and experiences are central elements for understanding the different present and future narratives and practices regarding toxicity.

Most social studies on the experience of toxicity and its socio-health impacts, including toxic heritage studies, have been developed mainly in urban contexts, linked to industrial or deindustrialization processes and/or industrial and nuclear emergencies (Auyero & Swistun, 2009; Fortun, 2012; Little, 2016; Mah, 2012; Nading, 2020; Wollentz et al., 2020). These works, among others, have shown that although people may recognise the damage that environmental deterioration processes have on the material conditions of existence of their communities as well as on their health, there are also complex ties of affectivity and attachment that bind them to the territories they inhabit which condition its propensity to move away.

Fewer studies address the experiences of toxicity linked to the dominant agro-industrial regime, despite growing criticism regarding its environmental and health negative externalities (Levidow, 2015; Melby & Mauger, 2016). The technoeconomic package of conventional agribusiness dependent on fossil-based inputs such as agrochemicals, and the abuse of medicines for production animals has shown systemic limits: prevalence of hunger in the world, nutritional problems caused by the global food regime and environmental and health externalities, manifested among others in soil and water contamination and the release of viruses and bacteria that impact human health (Svampa & Viale, 2020). Anthropological studies (Gamlin, 2016; Nading, 2017; Saxton, 2015; Tsing et al., 2019) show that in industrial agricultural systems pesticides and other toxic substances affect racialized communities of the global south, migrants, indigenous groups, workers and inhabitants of agro-industrial enclaves to a greater extent. They also show that pesticide toxicity experience among vulnerable social groups is plagued by uncertainties about the potential damages that these substances cause in their bodies and in their environment, recognising acute signs and symptoms whilst minimising or denying chronic outcomes.

In the Latin American Southern Cone (Argentina, southern Brazil, Paraguay and Uruguay), since the early 2000s, there has been a process of expansion of industrial agriculture under the agribusiness model, led by the expansion of transgenic soybean cultivation. This model has been strongly criticised for its environmental, social and health consequences, such as the intensification of the use of natural resources, the displacement of small family farmers and the dependence on transgenic cultivars, pesticides and other petroleum derivatives (Catacora-Vargas, G. et al., 2012; Gras & Hernández, 2013). A growing social literature addresses the socio-environmental and

health impacts of this model and the emerging alternatives among affected populations. These studies have focused on documenting the lived experiences of the rural population and waged workers on the increasing environmental degradation, impacts on individual and community health as well as socio-environmental conflicts between urban actors, rural producers and government agents.

Uruguay is an agro-exporting country. In 2019 the country's main export product was beef, followed by cellulose, soybeans and dairy products (Uruguay XXI 2019). During the last 20 years, the consolidation of hegemonic production models, highly dependent on synthetic chemical inputs and large-scale machinery, has been consolidated, with increasing concentration of productive area in fewer owners, intensification of natural resources usage and higher use of water, with its consequential impact on quality (Alonso et al., 2020; García Préchac et al., 2010; Gómez Perazzoli, 2019). These models have been promoted by government policies in recent decades, supported by multilateral financial institutions, and have great support from the majority of farmers and other rural actors.

Hegemonic narratives that sustain the agribusiness regime-originated not only in academy, industry and state agencies but also among local folks-have historically minimised the toxicity of the dominant way of production, which is intensive in the use of pesticides, synthetic fertilisers, and veterinary medicinal products. Nevertheless, for the last decade, there has been increasing visibility and recognition by inhabitants in both rural and suburban territories of consequential environmental and embodied effects (Abbate et al., 2017; Alonso et al., 2020; Chiappe, 2020; Evia, 2018, 2020, 2022). For example, events such as the eutrophication of watercourses and the consequent blooming of cyanobacteria, or the spraying of people and population centres as a result of pesticide applications, have brought agricultural technologies to the forefront of public discussion in the country. The increasing recognition of this toxicity has also become a claim that mobilises reactions -still fragmented- facing multiple pressures and dependencies determined by agribusiness as a way of life. The socio-ecological transition in food production has become a central concern in international forums and local technical conferences (Svampa & Viale, 2020, pp. 248 et seq.).

In a context of the growing concern about the environmental limits of the dominant production model, some dairy farmers and agricultural technicians are questioning the consequences of environmental toxicity in terms of personal and collective health; moreover, they link these hazards to 'agribusinesses'. Based on ethnographic fieldwork and collaborative research among agriculture scientists, rural extensionists and family dairy farmers searching for a transition towards sustainability in milk production, in this article, we want to discuss how agricultural toxicity is understood and experienced by farmers who are part of family and community histories linked to this production. The questioning can be problematized as a heritage struggle: is frequently signified as an affront by farmers; as inherited farming practices are questioned, their whole legacy is under the spotlight.

Toxic Heritage and the Search for Alternatives to the Conventional Dairy Production Model

Dairy production in Uruguay is mainly based in the South and South-western region (comprising the departments of Canelones, Colonia and San José). The most traditional dairy basin has been located, since the beginning of the 20th century, in the territory of the Santa Lucía river basin (Figure 12.1). This river is also the main source of raw water for drinking water for almost half of the country's population, concentrated in the metropolitan area of Montevideo. The southwest region of the

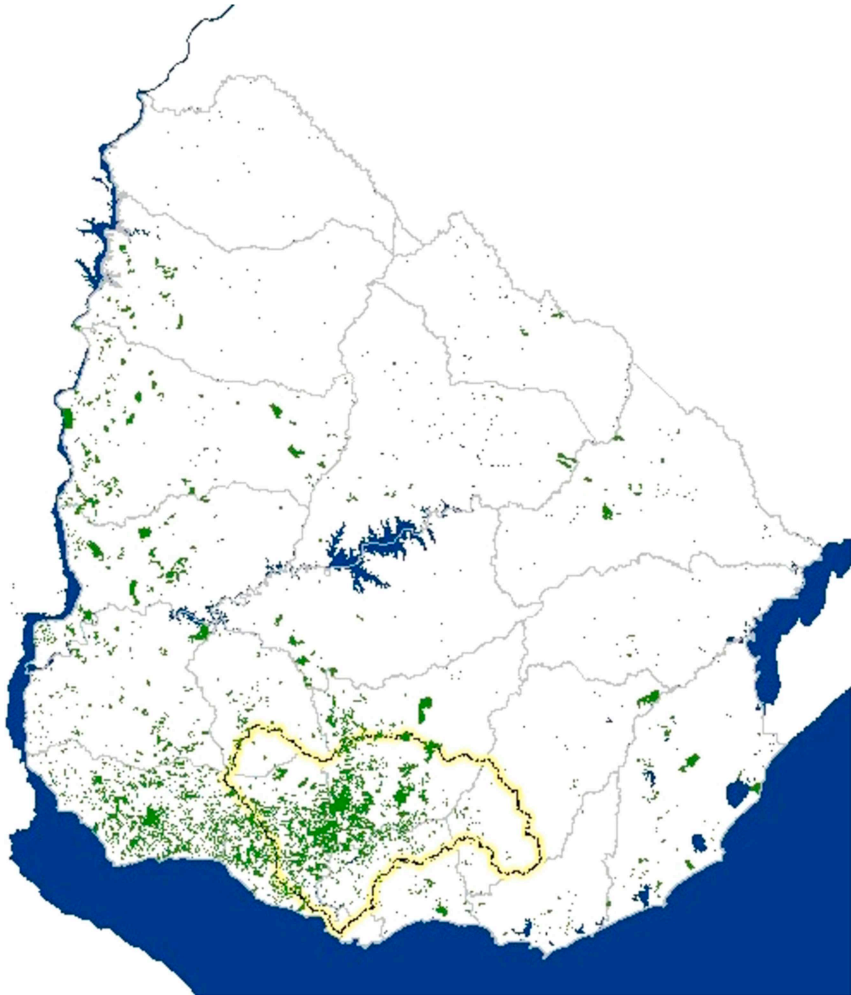


FIGURE 12.1 Territorial distribution of dairy farms in Uruguay, signalling the Santa Lucía river basin.

Source: Mvotma, 2018: 22.

country has a high intensiveness of land use and a relatively low concentration of land ownership (Riella & Mascheroni, 2011). It is characterised by a greater presence of family producers on medium and small farms, mainly dedicated to horticultural, vineyards, and dairy production. Likewise, extensive agriculture, mainly of grains and oilseeds, has advanced (MGAP, 2014).

In the last two decades, this region has seen an increase in socio-environmental controversies and conflicts due to the coexistence of different production systems. In particular, the Santa Lucía river basin has been the subject of proposals for agriculture land use planning and the application of restrictive regulations, with limited progress in terms of transitions to sustainability among cattle and dairy farmers (Schelotto et al., 2015).

In this context, a group of six dairy farms grouped around the NGO Emmanuel Centre (ecumenical social organisation that promotes agroecology), involving around 40 farmers and waged workers, are working to transition from conventional production systems to agroecological production systems (Centro Emmanuel, 2020). The area of influence of the NGO, at the centre and Eastern territories of the province of Colonia, is characterised by a strong presence of populations belonging to the Waldensian Church. These migrants were established in the area at the end of the 19th and beginning of the 20th century, linked to colonisation policies of the Uruguayan state that promoted agricultural production and settlement in the countryside (Geymonat, 2004). Although not all the producers involved in the transition project profess the Waldensian religion, they share a concern for the common good and care for the environment that allows life to be sustained. Furthermore, in all six cases, their families have been involved in agricultural production for several generations, and the lands where they produce are inherited and/or shared with close relatives. This implies a strong weight of the material and immaterial legacies of their respective families, both in terms of production technologies and the values associated with them.

Before the start of the mentioned project, most of the producers in the group had previous links with the Centre because they had participated in other social and/or religious activities in the region, or because of personal friendships with the technical experts. These previous links of affiliation and mutual knowledge contribute to the construction of a common framework in which agroecology is seen as a horizon that transcends technical relations and includes a dimension of care for the communal and spiritual “quality of life”.

Personal and community experiences regarding the toxicity of the chemical products used in the dominant production model appear as a common denominator of the motives to begin the transition to more sustainable production practices. Agricultural toxicity begins to be recognised and named from stories that imply a concern for the effects on the health of the people who work in the production systems, who are their own relatives, workers and/or neighbours, and/or for the environmental effects on the territories they themselves inhabit. For example, at one of the group’s first meetings in 2020, when asked about their motivations for

coming together, one of the farmers shared a motivation that had led her and her husband to rethink their traditional method of dairy farming and to look for alternatives: their concern about the effects of fumigating crops – used as fodder for the cows – on the health of a close family member linked to the farm. “He has health problems that we associate with his work because he has always dedicated himself to ‘that’ [fumigating]” (...) “He was very reluctant. These are things that go back a long time. Today there is more openness to speak”.

Another farmer also highlighted that among his main motivations for transit is the “caring of health, of those of us who work, and care of the communities”, the “care of the environment” and “giving coherence to life”, coherence between his and the community beliefs and values, and productive practices. He became aware of the toxicity of agrochemicals because there is a rural school on the farmstead, on a piece of land donated to the State by his ancestors who arrived in Uruguay from the Waldensian region. He stated: “My mother used to work in the school’s orchard. At one point I saw that we were spraying [fumigating] 20 metres from the school garden. So I started not to spray in that field”. The decision to stop fumigating there is related to a change in perception about the danger of pesticides, particularly glyphosate: “They [technicians, researchers] lied to us. They told us that glyphosate degrades by itself and it doesn’t”.

A third dairy farmer also pointed out the increasing use of glyphosate and other pesticides, and their consequent generation of waste, referring to plastic containers, as one of the first indicators of problems with the production model. “The drums of glyphosate are piling up. And it wasn’t just that. You had to pour [apply] more and more [product] and the problems [with weeds] accumulate”. During a personal health recovery that gave him “more time to think”, he remembers: “I thought about the soil and I realised that many things were not what we had been told. [For instance], that glyphosate degraded, it wasn’t like that either”.

As evidenced in the testimonies above, the process of signifying the ways in which they are traditionally produced as potentially harmful or toxic legacies centres on concerns regarding the impact of pesticides on human and environmental health. The herbicide glyphosate is the most commonly named product, as for years it has been a substance widely promoted as a technical solution to the problem of soil erosion by the hegemonic agronomic discourses (technological package of no-till or minimum soil tillage) (Cáceres, 2018). At the same time, it is a total-action herbicide (it acts on all plant species), which is why it is massively adopted thanks to its ease of use. However, in recent years, more and more controversy has arisen regarding its alleged safety (Arancibia & Motta, 2015), and more evidence of its harmful effects on soil, watercourses, environmental toxicity and chronic toxicity has been disseminated (Antoniou et al., 2012). Although a popular belief persists that it is a less dangerous product than other pesticides, a belief rooted in the hegemonic discourses of agribusiness actors, and scholars linked to agricultural production (Arancibia, 2013; Cáceres, 2018) and generally found among rural workers (Evia, 2020), dairy farmers involved in this project began to question such a

belief. From the reception and appropriation of new information, producers begin to allude to the hegemonic paradigm as “lies”.

Recognising the toxicity in this legacy can be a difficult experience, as it implies tensions and contradictions with one’s own family inheritance and/or with the technical models that have been taken as valid references up to now. Socialisation in the daily life of family work is fundamental for learning the dairy farming trade, in the production and reproduction of the sexual division of labour and in the mechanisms and criteria that construct and make intergenerational succession possible (Camors, 2016; Courdin et al., 2010; Malán, 2013). For example, in the case of two brothers who, together with their parents, manage a prosperous dairy farm in the area, one of them states that for years he had been eager to “do something different”, because “it has not made much sense to think one thing [to have an idea about best practices] and then get involved in a [productive] system that leads to another”. However, “As it is a family business it is not so easy to change. My father always worked that way”.

Decision-making on productive changes in family businesses can be difficult because not only rational economic-productive variables are at stake, but also affective relationships and alliances marked by kinship and emotional ties. Questioning toxic heritage, as part of inherited practices, is interpreted by those being questioned as an affront to the legacy as a whole; a questioning of a way of life that was intended to be bequeathed and which is signified positively as a whole. Dialogues and agreements regarding changes in management paradigms and forms of production can become conflictive because they confront not only technical differences, but also differences in social evaluations of technology, its potential effects and, eventually, worldviews (Geels, 2005). In most of the testimonies, it is discernible that concerns about the increasingly evident contradictions of the dominant model go back several years, but taking the step towards the new can take time.

Responsibility towards present and future generations also acts both as a motivator and as a barrier for productive transitions. As a motivator, concerns about the quality of life, the environment they live in, and the health of their offspring, workers, and future generations –whom they do not want to continue exposing to new sources of agrochemical toxicity– are drivers for change. As a barrier, the uncertainties regarding the economic and technical viability of these changes are often the main obstacles to advancing concrete modifications in practices within the framework of redesigning production systems. There are cultural legacies and imperatives to be honoured by dairy landlords. We identified the following main ones: the responsibility of not losing inherited land, maintaining and creating new sources of employment for wage earners coming from their local community, and reproducing and transmitting a patrimony (soil fertility, water sources, productive cattle, machinery, etc.) for their offspring that allows the latter to continue a lifestyle in communities heavily dependent on agricultural production.

“This [farm] has to be economically profitable. (...) We have to look for a model that is competitive with what we have today (...) Technology leads us to

extract, extract, extract. In our case, thanks to my father who worked his ass off, we have a larger area. (...) We want to do it out of conviction, for life itself. But, if you are not competitive [you] lose the land. How do we make a change in the production system without putting at risk what we do have? We want a change. How do we start?"

Although there is a model, agroecology, which is proposed as a shared horizon towards which to move in order to reverse this agro-toxic heritage, there are also many doubts about how to do it. Unlike the conventional model, there is no agreed "recipe" either on the part of technicians or producers. There are also technical limitations that make it difficult to substitute key technologies in the hegemonic production model, and there is a lack of scientific knowledge to support different production practices. So far, transitional trajectories have been based on trial-and-error dynamics – sometimes very costly – at the individual farm level.

Final remarks

Toxic heritage, for the people involved in our research, is part of a larger heritage coming from their ancestors who built a way of life in the region. Only recently, dairy farmers started to question that problematic heritage, as they live on their farms and have a situated and embodied experience of the toxic heritage. The shared ideas about the common good, the care of the creation, and the continuity of the legacy of a way of life linked to the land and strongly communal are drivers for change, away from unsustainable productive practices.

The grandparents, first and second generations, brought from Europe the farm, the effort, and ethics and experienced scarcity. The fathers and mothers (third generation) rode the green revolution, increased productivity and improved their standard of living in economic terms, and the possibility of upward social mobility.

The next generation, who are now taking the reins on the farms, became aware of the toxic heritage and want to eliminate toxicity from their legacy, without losing their material well-being and rootedness in the rural milieu.

They face a heritage struggle as, on the one hand, it is very difficult to accuse the green revolution generation of leaving a negative heritage that causes environmental unsustainability and human health problems. For several reasons: a) they were not individual decisions, but the decision-making takes place in a framework of institutional, economic-financial and cultural pressures. The dominant values and goals were increasing production, taking on debt for growth, investing capital in new technologies, and modernising social relations which, among other things, represents the separation between business and family domains. The technological imperative (Mumford, 1974) was strong; b) the results of the application of the toxic technological package are far from being only negative; it allowed the professional and family fulfilment of those who managed to build up a "patrimony" in land, animals and machinery. It has not only provided a material base, but is also

accompanied by positive identity aspects and the configuration of a “community of practice” proud of itself in the south-west region of the country; and c) although a business transfer is taking place, with increasing decision making by the fourth generation, the green revolutionary fathers (and mothers) continue to strongly influence the processes of food and milk production, either because they still control a large part of the means of production or for moral reasons of respect for those who have developed the dairy farms.

The concept of agro-toxic heritage provides a temporary dimension to the crisis of agrochemicals in national agriculture, which transcends individual responsibility for the present and includes, on the one hand, previous generations who transformed the environment on their farms and beyond, constituting an immediate ecological heritage (Foladori, 2005, p. 122) which descendants received and had to adapt to. On the other hand, this temporality of the agro-toxic heritage concept involves future communities and generations of persons, some not yet born that should be taken into account when evaluating current practices within dairy environments.

In another sense, agro-toxic heritage, contests the idyllic image and superior morality of country people, due to their close relationship with nature and their supposed care for resources. Well, the discovery of the toxic legacy of the last twenty years, manifested in the contamination of waters, the degradation and loss of soils and the effects on human and animal health –not yet fully acknowledged– relativizes the “countryside” as a moral reservoir of the national society. However, the recognition of this not-so-desirable heritage gives rise to a deeper critique of the dominant production and reproduction model and to practise an “anticipatory awareness” (Payne & Phillips, 2012), that reality can be defined in terms other than those of the mainstream development paradigm and that, consequently, people and social groups can act on the basis of these different definitions of good living. A modest beginning for the detoxification of life.

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