

## PLANTS, PATHOGENS, AND THE POLITICS OF CARE: *Xylella fastidiosa* and the Intra-active Breakdown of Mallorca's Almond Ecology

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Almonds were once “the gold of Mallorca,” a source of modest wealth and a pillar of diversified farming systems for smallholders on the largest of Spain’s Balearic Islands. Today researchers believe that nearly every rainfed almond tree on the island will be dead within as few as five years. An introduced bacteria, *Xylella fastidiosa*, enabled by its spittle-bug vector, and emboldened by climate change, has flooded the xylem of these rainfed trees, impeding the flow of fluid and nutrients to the point where the tree can no longer survive. As a localized island issue, the plant epidemic was a contained tragedy. Once detected in mainland Spain, it provoked a sense of rural crisis. As almond farmers, farm advisors, government officials, and scientists grappled with this new reality, often with sharp disagreement and blame, their words were threaded together by a common fundamental concern: care, or *cuidado*.

“They should apologize to the farmers. The almond trees were not poorly cared for [*mal cuidados*]” quoted a headline in the local newspaper (Cortés 2017). The featured interview reflected the frustrated exhaustion of an agronomist and almond farmer who had tracked the disease early in its emergence. When Tomeu Melis welcomed me to his farm, we passed through the gate and immediately came upon the carcass of an enormous infected almond tree, cut cleanly at the

base and severed into segments to facilitate removal. The hillsides beyond were dotted with a contrast of vibrant carob trees and decaying almond trees navigated by a small flock of sheep. Carob trees, unaffected by the new disease, would be planted in place of almonds, Tomeu explained pragmatically. The lingering sting of accusations that farmers lacked care for their land would require a more complex and uncertain remedy. What does it mean for farmers to care for trees? For a government to care for farmers? For trees to care for a diverse agroecological landscape? What does it mean to fail to care in these contexts? Or to be careless?

This essay elaborates a distinctly feminist account of Spain's faltering almond assemblage using two tools: [María Puig de la Bellacasa's \(2017\)](#) theorization of care and [Karen Barad's \(2007\)](#) notion of "intra-activity." Puig de la Bellacasa offers a theorization of care that does not entirely correspond to its vernacular usage. Rather than benevolent concern, care is a form of maintenance work. Research on care follows in the feminist tradition of drawing attention to unrecognized labors, such as [Silvia López Gil's \(2007\)](#) description of care as largely unseen work "without which life does not function." It is embedded in everyday practice ([M. Barnes 2012](#)), so seamless a process that it lacks a clear beginning or end. Centering care is a feminist approach regardless of the gendered dimensions of the lives in question, as examinations of interdependence, maintenance, and more-than-human relations have been marginalized by Western patriarchal values privileging individuality, invention, and human dominance ([Wynter 2003](#); [Puig de la Bellacasa 2012](#); [Mattern 2018](#); [Russell and Vinsel 2018](#)). Consonant with new materialist approaches, care for [Puig de la Bellacasa \(2015, 2017\)](#) includes not only human acts but the activities of an assemblage that promote ongoingness—irrespective of scale, aliveness, or species.

As [Annemarie Mol \(2008, 84\)](#) elaborates, "articulating 'good care' is an intervention rather than factual assessment." As feminist scholars introducing a special issue on the politics of care argue, "practices of care are always shot through with asymmetrical power relations" ([Martin, Myers, and Viseu 2015, 3](#)). "Care organizes, classifies and disciplines bodies," the authors note, with colonial governance as an instructive illustration ([Martin, Myers, and Viseu 2015, 3](#)). They encourage a critical approach to care that situates care practices within relations of power and privilege. Care is non-innocent. It is a form of more-than-human biopolitics, privileging the maintenance of certain lives over others. Care is, to quote [Puig de la Bellacasa \(2017, introduction\)](#), "a thick, *impure* involvement in a world where the question of how to care is posed." She suggests that as researchers we look for where this question is not easily answered.

Barad's (2003) theory of agential realism provides an ontological foundation for thinking with care. She insists that entities do not preexist their relatings. Whereas *interaction* implies a prior state of independence between distinct actors, her term *intra-action* maintains their ongoing mutual co-constitution. This blurring of subject-object distinctions becomes palpable in the circling blame of a plant epidemic where causal mechanisms are multiple and uncertain, simultaneously external and internal. Indeed, some farmers confronting *Xylella* ultimately argued for "living with" the disease by deepening the long-term engagement of scientists and policymakers in their community. Their plea underscores how the narrow agronomic view of disease fails to acknowledge, and may even undermine, the relational maintenance work and interdependence at the core of an agroecological system's resilience.

Environmental anthropology has long attended to the intimacy of interspecies linkages in agrarian lifeways (Evans-Pritchard 1940; Conklin 1957; Netting 1974). Recent work highlights the interacting agencies of organisms across scales, from microbes (Paxson 2008) to forests (Kohn 2013; Tsing 2015). Yet despite the significance of plant diseases to empire-making (Crosby 2004) and their suspected amplification by climate change, these life-altering encounters have received little attention (Seshia Galvin 2018). Anthropological scholarship on pathogenesis has predominantly focused on the threats animal confinement poses to more-than-human lives (Dunn 2007; Lowe 2010; Porter 2013; Blanchette 2015). In studies of agricultural plants, much like their animal counterparts, vulnerability to disease is described largely as a product of industrial conditions of density and uniformity (Soluri 2005; McCook 2006; Guthman 2019). The case of *Xylella* in Spain, by contrast, reveals the pathogenic vulnerabilities of a diversified agricultural system struggling to persist amid capitalist pressures near and far, both within agriculture and beyond.

The socio-ecological devastation of plant disease is well known. Plant disease famously provoked mass migration during the Irish potato famine (Yoshida et al. 2013), forever changed the ecology of North America during the chestnut blight (Biermann 2016), and nearly eliminated European wine cultivation (Campbell 2004). As global transportation networks become increasingly fluid (Chapman et al. 2017), resistance to agrochemicals becomes more common (Gould, Brown, and Kuzma 2018), socioeconomic change refashions landscapes (Meentemeyer et al. 2008), and climate change alters the ranges and populations of organisms (Jones 2016; Trębicki et al. 2017), experts expect plant diseases to become more frequent and possibly more destructive.

Epidemiological accounts of plant disease used by scientists and policymakers tend to reify boundaries, positioning pathogens as an outside threat or invasion. Here, I want to draw attention to how pathogens, no matter their origin, are produced from within. Pathogenicity describes “the relational ways in which infectious diseases are made” (Hinchliffe et al. 2017, xiv). I detail how Spain’s *Xylella* epidemic is produced not only by bacteria but also by the conditions of possibility created by tourism, unstable land tenure, histories of marginalization, and the retreat of government from farm advising. Theorizing a plant epidemic through care allows us to uncover the intra-action of pathogenicity and shift from a politics of purification toward a politics of more-than-human care.

To admit the intra-active quality of pathogenicity requires acknowledging that containing the pest is only part of the picture. Such an admission requires a political reckoning that goes beyond trade restrictions or government-funded tree removal and replacement. It broadens the scope of dialogue to reflect long-term commitments to the land. Understanding landscape care as non-innocent avoids a good-bad dichotomy, asking difficult questions about *how* to care. Answers to this question may be incommensurable, as political projects often are (Tuck and Yang 2012), and carry uneven effects. Care is not a shorthand for universal values. It is a call to give relational maintenance work the political weight it is due.

### WORKING WITH CARE

How does one observe and classify care? One way is by listening for the multiple interpretations of care articulated by interlocutors. I did not begin this research seeking to examine care, nor did I anticipate encountering an epidemic of such dramatic proportions. It was the voices of my companions repeatedly deploying the word *cuidado* and detailing the decline in rural maintenance work inherent to the *Xylella* outbreak that drew me to revisit and deepen my engagement with theories of care in order to make sense of an unexpected phenomenon. While emic uses of *cuidado* and the etic theoretical concept of care are not perfectly equivalent, their resonance felt too strong to be ignored. *Cuidado* has a rich variety of uses, including as a common exclamation of caution (“watch out!”) and a way of describing nurturing, attentiveness, concern, or support. In the case of *Xylella*, my interlocutors often deployed *cuidado* in the negative to signal neglect and assign responsibility, while in the positive it marked connections and investments among people and with the land. Importantly, care is not normatively positive as it sustains particular forms of agrarian political economy that benefit some at the expense of others. Both the emic and etic concepts evoke interdependency, responsi-

bility, caution, and a compilation of actions neither unidirectional nor discrete nor exclusively human that hold a lifeworld together—for better or for worse.

Care as a situated analytical practice (Murphy 2015) is not limited to discourse analysis (J. Barnes and Taher 2019). I read care as relational maintenance work, often at a scale that passes unnoticed until interrupted. It is the compounding impact of microlevel engagements that cumulatively sustain a way of being. To do something carefully is to be atypically mindful of its subtleties and implications. Articulations of care are often voiced when seeking to remedy an undesirable quality of existing patterns of maintenance work, imploring others to pay attention to (care about) something otherwise taken for granted. While care operates discursively, it need not be stated to be recognized. Garbage collectors may not characterize their labor as care, yet it keeps urban life flowing and its cessation would quickly raise alarm. Earthworms cannot use words, yet their daily digestion maintains the fertility of soils, facilitating continued farming. The politics of care constitute a politics of relational maintenance: what relations are being sustained, and to what ends?

This article derives insights from interviews with farmers, managers of almond grower cooperatives, government officials, and scientists in Mallorca (Balearic Islands Autonomous Community) and Alicante (Valencia Autonomous Community); participant observation at farmer organizing meetings to discuss the epidemic; and analysis of archival records and secondary sources relevant to Spain's almond ecology. Through these engagements I drew the landscape itself into walking interviews (Bergeron, Paquette, and Poullaouec-Gonidec 2014), seeking to understand the multiple ways my interlocutors read the landscape for relations between people, trees, bacteria, insect vectors, climate, and more. A landscape, rather than land, is an assemblage of more-than-human relations rich with history, economy, cultural practice, and aesthetic values. The orchard form itself—pruned, spaced, and distinctively assembled—reveals histories of more-than-human sociality (Tsing 2014; Mathews 2018). The material contours of Spain's almond ecologies thus served not only as objects of study but also as key participants in the research process.

In examining the intricacies of landscape care, I build on multispecies ethnographic approaches (Kirksey and Helmreich 2010; Ogden, Hall, and Tanita 2013) and more-than-human geographic thought (Braun 2006; Whatmore 2006; Pannelli 2010; Robbins and Marks 2010), fields deeply indebted to, though often lacking engagement with, Indigenous thought (TallBear 2011; Sundberg 2014; Todd 2017). Such approaches serve to decenter humans as exclusive protagonists, and

instead bring relations among beings—plant, animal (humans included), mineral, and otherwise—to the foreground. I find this approach particularly necessary because plant disease is inherently relational across species categories. *Xylella fastidiosa* alone is simply a bacterium; *disease*, as a phenomenon, exists as a pathogen-host-vector-environment complex (Scholthof 2007). As a matter of ethics, this approach proffers a modest and imperfect attempt to break from patterns of human exceptionalism that have enabled socio-ecological violence (Wynter 2003; Weheliye 2014). To be clear, this is not a matter of demonstrating nonhuman agency, but rather an effort to eschew bounded objects in favor of relations, which are always more-than-human. I do not intend to prove that *Xylella fastidiosa* can “speak” (Mitchell 2002) through its impacts; rather, I show how the materiality of a disease event exposes a deterioration of more-than-human relations. It is those relations, not the bacteria or the almond tree as discrete organisms, that demand a more explicit politics of landscape care.

#### *EL ORO DE MALLORCA*

*Xylella fastidiosa* is a bacterium named for its habitat, the xylem of plants, and for its “fastidiousness”: it is notoriously difficult to culture (Purcell 2013). While scientific convention calls for referring to the bacterium as *X. fastidiosa*, I will use the name *Xylella*, as it circulated among my interlocutors. While *Xylella* dislikes laboratories, it finds a plethora of comfortable homes within the xylem of vascular plants: it has 359 known plant hosts from 75 different plant families (Baldi and La Porta 2017). Like most bacterial pathogens it is asymptomatic in the rain forests of South and Central America, where it has co-evolved as an amiable endophyte that inhabits but does not kill its host. This makes sense as tropical plants benefit from abundant water, and a bit of bacteria is unlikely to restrict their flow. Killing the host is generally bad for business. Once introduced to a new environment, *Xylella* rather easily finds a xylem-feeding insect whose mouth and foregut it can colonize, thus hitching a ride to the next juicy xylem the insect seeks out.

Almond trees are unlike the plants of *Xylella*’s tropical origin. They are adapted to arid lands, with wild relatives native to the region stretching from Central Asia westward to the Levant (Ladizinsky 1999). For the past few millennia almonds have accompanied farmers throughout the Mediterranean basin, as they are particularly well suited to the long, hot, and dry summers characteristic of the region. While almonds have long been present in Mallorca, they did not gain a prominent place in the landscape until the turn of the twentieth century. At that time a global grain glut and new industrial substitutes for olive oil made agriculture less

profitable for aristocratic landlords (Tello et al. 2018). Political changes during the previous century had already eroded the power of noble estates. To save themselves from bankruptcy, landlords began selling off parcels, and an emerging class of merchant capitalists bought the land at bargain prices before subdividing and reselling it to peasants through long-term annuities (Ferrer Guasp 2000). During the late nineteenth century, this emerging class of diversified peasant farmers initially favored wine grapes as a cash crop, since the global shortage produced by the phylloxera blight in continental Europe promised spectacular profits. Yet a bust quickly followed the boom. A surplus of grapes drove a steep decline in prices, and phylloxera eventually made its way to Mallorca. Many chose to replace vineyards with a polyculture of tree crops in which almonds held a prominent place. The land that peasant farmers had been sold was often at the agricultural margins, much of it formerly forested and on steep slopes, and wage work was an important compliment to subsistence production (Molina de Dios 2012). Almonds made for an ideal choice: a drought resistant tree able to thrive in dry, rocky, low-nutrient soils; easily intercropped with grains and legumes; producing fuelwood, fodder, and fertilizer in addition to marketable nuts; and requiring little maintenance while peasant farmers engaged in wage labor elsewhere. While large estates also benefited from the profitability of almonds (Morey Tous and Fornés Comas 2021), almond trees proved an indispensable lifeline for peasant producers.

In 1930, the Balearic Islands commanded more area in almonds than any other Spanish province, despite its relatively small size. Almond trees served as pillars within a sophisticated diversified rainfed farming system. A typical farm would include a mix of trees (including varying proportions of almonds, olives, carob, and figs, depending on the local pedoclimatic conditions) pruned at chest height to allow sheep grazing in the understory, which was seeded with a rotation of winter grains, legumes, and fodder crops. Limited agrochemical inputs due to embargoes placed on the Francoist regime maintained a largely organic agroecological system (Murray et al. 2019). Almond plantings grew increasingly popular. By 1975, according to government records, 15 percent of the Balearic Islands' total surface area was planted with almonds, with an additional 206,365 individual trees scattered across the landscape along field edges, roads, or hillsides (Instituto Nacional de Estadística 1977). While other regions of Spain's Mediterranean coast grew almonds, nowhere were they quite as economically significant as in the Balearic Islands, where they earned the title *el oro de Mallorca*, the gold of Mallorca. While grains, olive oil,<sup>1</sup> and meat provided sustenance for small farmers, almonds were primarily sold for export. As one farmer explained, almond harvest was the

time of year for buying new clothes and gifts. It was the crop that put money in peasants' pockets.

When commercial airline travel brought an influx of tourism to Mallorca beginning in the 1960s, the landscape of almonds in bloom served as a stunning visual spectacle attracting visitors (Bardolet 1980). Yet most tourists came for the beaches, not the almonds. Fueled by substantial German investments, tourism has come to dominate the island's economy. An estimated ten million tourists visit Mallorca annually (Balearic Islands Tourism Board 2017), whose resident population remains less than one million. Mallorcans I spoke with often repeated a striking statistic: in summertime, an airplane leaves or takes off from the island every minute. Almond farmers I spoke with felt that the landscapes they tended were valued as photo fodder, while they themselves were forgotten. "*Xylella* didn't kill the almonds," one man told me, "tourism did."

Historically, peasant farmers' daily activities constituted care for networks of relations between plants, animals, and others. Preparing soil, herding sheep, harvesting nuts: these activities are never purely human, but rather a complex intra-action that would not function without the decompositional chemistry of the soil's biotic-abiotic interface, the digestive enzymes of the sheep gut, and the sugar-producing propensity of the tree. This more-than-human maintenance work, while easy to romanticize in retrospect, sustained not only an agroecology but also the reproduction of a stratified social structure. Particular arrangements of care in agrarian landscapes enabled the dominance of landowning elites for centuries, "shot through," as always, with asymmetrical power relations (Martin, Myers, and Viseu 2015, 3). The shift toward coastal tourism in the late twentieth century swiftly reoriented Mallorca's dominant landscape-maintenance intra-actions. Road construction and repair, water and waste infrastructure, and beachfront amenity activities accelerated. Political leaders, planners, machine operators, and entrepreneurs intra-acted with palm trees, ocean waves, turf grasses, gravel quarries, timber forests, aquifers, decomposing refuse and more, collectively caring for this landscape of transitory leisure. In doing so, the agrarian character of the landscape eroded. Landscape care operates as part of a political economy, prioritizing certain relations over others as a new *oro de Mallorca* takes the place of the old.

### THE OUTBREAK: A Crisis of Care

When I arrived in Mallorca in January of 2018, *Xylella* had been *officially* detected only fifteen months earlier. Once it had been identified, the Consejería de Agricultura, Pesca y Alimentación (Ministry of Agriculture, Fishing and Food)



studied the issue internally while trying to calm concerned farmers. According to the European Union's protocol (Directive 2000/29/EC), all trees within a hundred-meter radius of the infected site were to be removed. A team of plant pathologists soon found that infected trees spanned the entire island (Olmo et al. 2021). While almonds suffered most visibly, the bacterium was found in wild and cultivated olives, wine grapes, and several shrubs. To follow protocol would be to denude the island. With the island naturally quarantined by the surrounding waters, the Mallorcan government pleaded their case to the EU Commission and received an exception.

*Xylella* was first confirmed present in a cherry tree in a plant nursery, and many believed the international nursery trade was responsible for its arrival in Mallorca. Most farmers suspected that it arrived from California, their almond-growing rival, in the 1990s, when government officials had traveled there to learn about improved almond varieties and intensive growing techniques. When asked, a ministry official quickly dismissed the possibility that a scientist would carry plant material from overseas. A longtime farm advisor remembered returning with a small sample of the Texas variety from California in the 1990s, but nothing since. Another agronomist described pocketing a few almonds on research visits and propagating them back home as a matter of course inherent to scientific curiosity. Regardless of whether such research trips were to blame, the rumor resonated with farmers' perceptions of the ministry as careless and naive, underestimating a single plant's infectious power. Further complicating matters, plant pathologists identified three distinct subspecies of the bacterium, suggesting multiple independent introductions (Olmo et al. 2018). As Natalia Gutkowski (2021) notes, unwanted organisms are often described as blind to borders, yet their enactment is profoundly territorial.

The first thing I encountered when entering the ministry's office was a large vertical banner illustrating the symptoms of *Xylella*. Plant quarantine notices for airports and the cruise ship and ferry docks had been swiftly circulated. I was shown boxes of freshly printed color pocket guides to identifying and managing the disease awaiting distribution. The booklets illustrated best practices, recommending that farmers plow their fields or use herbicides to remove any understory vegetation that might harbor the insect vector. The ministry was in a flurry of activity to address this putatively new disease, but farmers scoffed at the claim that this was anything new.

Almond farmers told me they had noticed abnormalities for more than fifteen years but lacked the support to address the issue. There has been no agricul-

tural extension service providing agronomic advice since the 1980s. No one at the island's only university was actively studying almond diseases. In fact, an enthusiastic plant pathologist working at the airport conducted much of the early investigation into *Xylella* pro bono in his spare time. A lack of official research employment at a university or research institution may have limited his credibility, potentially delaying action on the issue. When consulting the ministry, farmers were either told incorrectly that the problem was a fungus or that they had not properly cared for their trees. According to many at the ministry, the real problem was *falta de cuidado*, a lack of care.

This accusation of lack of care felt deeply unjust to many. "The administration comes back saying, 'they are poorly cared-for almond trees' [*son almendros mal cuidados*]. Obviously when your trees are dying and people have told you there's no solution, you stop taking care of them. Why would you invest?" The assertion seemed out of touch, as farmers were quick to note that the man who first identified the seriousness of the problem with almonds was himself a trained agronomist praised for his carefully tended land. It also put a heavy burden on individuals swimming against the current of the tourism-driven economy. Even the most meticulously cared-for orchard could be surrounded by farms abandoned because of economic opportunity elsewhere or turned into vacation rentals prioritizing aesthetics over tree health. How could more pruning, weeding, or pest treatments possibly compete with "strangulation" by neighboring fields, they asked.

We have a thirty-three-hectare planting, rainfed, old, traditional, organic, that I'm wondering . . . this year should I pull it all out? . . . For the past two years I don't know whether to prune, not to prune, what to do, because no one gives you anything, no breaks. . . . Now they're saying off the cuff that what you should do is tear everything out because if you hadn't had that single weed, because if you hadn't had that single insect, because whatever. Right. But in Mallorca you can have a half hectare of perfectly cared-for almonds, without a single weed, but the neighbor's farm left you with it abandoned. You'll be in the same situation. That's what we told the ministry.

Abandoned orchards signaled a shift in more-than-human relations, with implications spilling over beyond property boundaries. Spittle bugs carrying *Xylella* could proliferate freely in the leafy understory of a neglected orchard. Trees harboring the bacterium undetected would act as perpetual reservoirs of the bacteria. The disease assemblage itself proved the limits of an individualist approach.

Almond farmers fumed at the notion that they had not cared for their trees because it seemed to negate the systemic disruptions of rural life. Farmers had found their economic base gradually dissolving as hotels multiplied. Their regional government had long touted tourism as the saving grace of an island once known for its antiquated agrarian ways. Their children had chosen more comfortable and secure urban lives, often catering to visitors at hotels or restaurants. Their neighbors had abandoned the land, leaving trees that were uncared for and giving passersby the impression that agrarian lifeways had already disappeared into the history books. Agriculture, cared for by a community not so long before, found itself excluded from the cares of most Mallorcans. As one farmer noted,

The image of those almonds, many of them already dead, or those trunks, the big ones on the side of the highway, farms, some abandoned, all the dry wood that's dying. For me this is the graphic image of our agricultural society, of rural society, or what's left of it.

While the ministry's pamphlets detailed tactics to triumph over a novel bacterial invader, farmers confronted a crisis much broader in scope. In the grand scheme, the care work of maintaining almond trees being contested—to prune or spray or mow or not—felt nearly insignificant in the face of a widespread collective failure to maintain agrarian lifeways. The *Xylella* outbreak merely caused those more distanced from agriculture to take notice and perhaps share momentarily in the experience of grief. The large decaying trunks, yellowed leaves, and lifeless limbs in such an iconic species, the materiality of the disease, demanded attention in ways that a dwindling group of aging farmers did not. The faltering trees grabbed a few fleeting headlines in the local press and insisted the ministry show some kind of effort. Their desiccated bodies posed questions of landscape care much more publicly than such matters would have been discussed if healthy almond trees had continued their gradual fade with economic change. The disease intra-action opened opportunities for care as reflection and consideration of how landscapes are maintained, by and for whom, and to what end.

**POLITICAL ECONOMIES OF CARE: “People would care if it affected tourism”**

Almond production went from being the island's agricultural jewel to a husk of its former splendor in less than thirty years, an almond cooperative manager reflected. In that time tourism had transformed every corner of the island's econ-

omy. Three distinct phases mark Mallorca's transition from agriculture to tourism: the mid-century boom (1953–1972), the early neoliberal boom (1979–1987), and the financialization boom (1993–2008) (Murray 2012). Each boom has been followed by years of global economic crisis and restructuring. The year 1953 ended an era of economic isolation for Spain. Allied governments after World War II had maintained embargoes against the fascist-controlled country until the United States, seeking allies in the fight against communism, signed a series of pacts with Franco. The warming of diplomatic relations, the abundance of capital and paid holidays in nearby industrial economies, the comparatively cheap cost of labor, and the triad of sun, sand, and sea made Mallorca an attractive destination for an emerging class of leisure consumers. After the recession of the 1970s and Spain's 1986 integration into the European Union, tourism picked up its pace, with consolidated resort chains benefiting under deregulatory regimes. A map of tourist accommodations in 1996 shows a dense concentration of hotels along the beaches and large coastal cities with very few locations in the island's agricultural interior. By 2010 tourist lodgings permeated the island. During this most recent construction boom, new policies prioritized rural lodges and five-star hotels, a move advocated by established hoteliers protecting themselves against competition (Pons, Rullán Salamanca, and Murray 2014). Farmers had long felt the economic pull of tourism, but now it seemed inescapable.

Farmers I spoke with felt that agriculture had become an after-thought for public officials:

You can't compete with the quantity of money generated by an activity as powerful as tourism, which requires investments in infrastructure, airports, sea ports, highways, hotels, streets, sidewalks, [compared] with an agricultural sector where people are aging, where there's no relief, where there's not much interest in change.

A few farmers I met had begun incorporating agritourism into their activities, enticing visitors with the authenticity of rustic lodgings or freshly prepared lamb. They had always juggled multiple roles, often selling their labor as a tractor driver or in a factory to make ends meet. "You have to be polyvalent here. You can't live from one thing," one man explained. Most farmers felt the wealth generated by tourism remained highly concentrated. "For all this tourism, it seems like we should be the wealthiest place in Europe. But only three or four people are

really earning . . . the hotel owners. We work very hard now in the summers [in the tourism industry] and we're still just as poor."

Political economic change had shifted relations of care. Tourism's economic heft now demanded wide-ranging forms of infrastructural maintenance and planning, from macro-level public works to household-level chores. The ongoingness of activities like agriculture had become almost incidental. Frustration toward tourism reflected concerns not only over the decline of agriculture but also over the concentration of wealth in Mallorcan society. The inability of agriculture to "compete" for attention was also an inability to challenge a pattern of deepening inequality. What counts as good care among public officials, be it smooth roads or plentiful harvests, echoed shifting power relations. Care is thus constituted within and through political economy. Maintenance work, or lack thereof, reflects and shapes social configurations.

I met a doctoral student who had begun carefully cataloguing more than two hundred Mallorcan almond varieties five years earlier, and suddenly found himself documenting a dying race. "There's a wealth that will be lost forever," he said, but "it's no big deal [*no pasa nada*]. . . . People would care if it affected tourism." Instead he saw the almonds decaying with only a passing sigh. But that did not stop his research. His countless conversations with farmers and detailed documentation of each variety's unique form were acts of care: minor, momentary, more-than-human engagements that worked to sustain Mallorcan agroecologies if not in practice then at least in memory. To care about something deemed a lost cause made some question his sanity, he commented. I sensed the satisfaction in his actions as a form of subtle resistance to the apathy sustaining the status quo. Paying attention is political.

### CONFLICTED LEGACIES OF CARE: No One Left to Consult

Despite their frustration with the ministry's handling of the *Xylella* epidemic, most farmers did not actively display their discontent or make demands on the government. Franco's dictatorship had likely contributed to a sense of resignation toward administrative dismissiveness. Despite forty years of democratic governance since, fascism was in most farmers' living memory. The regime had cared for farmers, providing advising services they now missed. But as a retired farm advisor explained, this was a paternalistic kind of care, expecting obedience. As scholars of colonialism underscore (Martin, Myers, and Viseu 2015; Murphy 2015), care is non-innocent. It shapes and is shaped by power relations, in this case re-inforcing a deference to technocratic authority characteristic of Franco's regime.

The Servicio de Extensión Agraria (SEA), or Agricultural Extension Service, was established during the late 1950s as part of U.S. aid to Franco's regime. Spanish officials traveled to the United States and returned with an agenda to replicate the American model of farm advising. The program aspired to a green revolution for Spain, prioritizing economic efficiency through mechanization, intensification, and irrigation. In line with Franco's technocratic model, farmers were expected to passively receive the wisdom delivered by technical experts (Díaz Geada et al. 2012). Yet due to its decentralized model, the institution enjoyed significant autonomy. Its workers lived alongside farmers, and they gradually adapted their activities to meet community needs, developing a suite of rural social services that evolved to recognize rural populations as the engines of their own development (Benito and Pulgar 2007). Care provided by the extension service proved complex, navigating a tension between its paternalistic mission and a more grassroots manifestation.

During the transition to democracy, between Franco's death in 1975 and the approval of the Spanish constitution in 1978, political power was decentralized from Madrid to seventeen autonomous communities (*comunidades autónomas*), leaving the SEA in limbo. When Spain entered the European Union in 1986, SEA agents became responsible for administering benefits through the EU Common Agricultural Policy, transforming agricultural advisors into bureaucrats.

Mallorcan farmers recalled the SEA with nostalgic praise. Nearly everyone I spoke with remembered one enthusiastic farm advisor who had dedicated his career to troubleshooting almond trees, even though it was not his original assignment. Unlike the ministry's representatives hidden away in offices shuffling stacks of paper, this man was out in the fields, running trials of new techniques and answering farmers' questions. Many felt that the money flowing in from the EU fundamentally changed public perceptions of farming, from a livelihood to a paper chase. They wondered how the detection of and response to *Xylella* might have gone differently if SEA were still active. When I asked farmers where they went when they needed advice, they often responded with a dry laugh. Occasionally they might consult someone at the cooperative, but these advisors had often spent far less time in the field and their priorities lay elsewhere.

Agricultural cooperatives were yet another institution many farmers felt had ultimately failed them despite the best of intentions. For farmers to receive benefits from the EU, they needed to organize into agricultural cooperatives. Cooperatives were intended to allow farmers' greater economic power through bulk purchases of inputs at lower prices and collective sales of their product at higher prices. Al-

monds require processing equipment to remove the hull and shell, and a cooperative would allow farmers to own the expensive processing equipment themselves, capturing a greater share of the sales value. While farmers appreciated these gains in the short term, many felt that they had been tricked in the long term. The cooperatives were not run by farmers concerned with preserving the land, they said, but by businesspeople seeking to satisfy their customers. As evidence, farmers explained that when California almonds became cheaper, some cooperatives began importing and processing large quantities of them for sale, arguing it was to everyone's economic benefit. The orders were filled, and the cooperative's profits were shared by its farmer members, but ultimately the global dominance of California almonds forced Mallorcan growers to accept lower prices. The retired farm advisor said that in the early days, he had proposed forming a cooperative composed only of farmers, but the administration had rejected the idea, saying that this kind of cooperative could not feasibly market their product.

The decline of institutional support through the SEA, as well as the lack of full alignment between farmers and cooperative employees, left farmers with fewer people to consult when they encountered something strange in their almonds. When they did call on the ministry or their cooperative, a degree of distance, distraction, or distrust seemed to limit the connection. Institutional networks of care for farmers themselves require regular care to maintain. The shift from farm advising to farm administrating revealed just how crucial relationships had been to the daily troubleshooting of living from the land. Yet nostalgia for the care provided by SEA proved complex, unable to be disentangled from the dishonor of Franco's legacy. Care is always relational, contextual, and political. Care can be conservative, sustaining existing structures. Recognizing the significance of care work does not presume inherent benefits flow in all directions.

#### **WANING CYCLES OF CARE: Little Reason to Invest**

"The farms aren't actually mine," one farmer mentioned as an aside after our lengthy conversation discussing the rhythms of his days and years pasturing sheep among the almond groves. It was an afterthought to explain because the situation is so common. The small parcels farmers could afford to buy in the early twentieth century were not big enough to sustain a family. Most full-time farmers were effectively sharecroppers splitting the harvest fifty-fifty with various landlords under informal agreements. As profits from agriculture declined, those who continued working the land stayed afloat by cultivating a dozen or more parcels belonging to various owners. Precarious land-tenure dynamics made it difficult to justify invest-

ments in new almond trees. Wheat gives an annual harvest, so fertilizer costs are easily recuperated at the end of the season. Almond trees take five to eight years to begin producing under rainfed conditions, reaching their full productive capacity around fifteen years. Long-term arrangements with landowners were difficult to secure. With tourism rapidly raising property values, farmers never knew when they might not have their agreement renewed. Tree growth could not conform to the abrupt temporalities of tourism.

A manager at a small almond cooperative told me he had suspected a new disease in 2010, but had had difficulty distinguishing between drought, aging trees, and lack of care. People were not renewing their orchards but merely keeping older, weaker, trees from a previous generation, he explained, valuing them as antiques rather than living landscapes. As [John Hartigan \(2017, 230\)](#) notes, among Catalan botanists, older generations see the lack of tree replacement as sending a dangerous message that “we are a disorderly, careless people.” Many urban-dwelling families inherited land from their elders with little knowledge of how to maintain the landscape. According to almond growers and their advisors, this younger generation comes back just to harvest the nuts, without knowledge of how to care for and renew the orchard. As the aforementioned graduate student of almond diversity explained, “There’s no generational renewal. *Xylella* will make all this faster and more traumatic.”

As in many parts of the world, the agrarian workforce in Mallorca is aging. Some commentators suspected that almonds had suffered neglect because pruning trees is more physically demanding than other farming tasks. Others noted that farmers in their seventies and eighties were unlikely to plant trees because they might not live to see them bear fruit. The temporality of tree bodies and human bodies were intertwined. Many felt less invested in organizing to combat the *Xylella* epidemic because they saw no one who would take care of the land when they passed away. As an elder farmer explained, “We haven’t put up much of a fuss because there’s no social weight forcing us to do things otherwise . . . after me there’s no one else.”

In 2018 the island’s young farmers association had just four members. The young member I met expressed a sense of obligation to care for the land, while acknowledging that such care takes more than just the work of farmers: “We understand that maintaining the environment is our responsibility, that it benefits everyone, and we want to do it. What happens is that alone, alone it’s impossible.” Others echoed the significance of almond trees as essential to the Mallorcan landscape and valued for “more than just production,” slipping fluidly in and out of the



commodity form (Tsing 2015). Landscape care, a far more expansive notion than agricultural output, was a task that demanded more than the actions of increasingly scarce farmers.

As feminist theorists point out, care reveals interdependency (Fischer and Tronto 1990; Martin, Myers, and Viseu 2015; Puig de la Bellacasa 2015). *Xylella*'s spread was in many ways a disease thriving in the wake of disconnections. Gaps in intergenerational knowledge and practice left trees more vulnerable. Farmers' motivation declined as continuity into the future became increasingly elusive, both for their land-tenure arrangements and for their families. A younger group of farmers valuing agriculture for its ecological and cultural role found their ambitions frustrated by isolation. As an intra-action, the devastation of the *Xylella* outbreak could not be separated from its conditions of possibility. The disease complex managed to spread due not only to the combination of species and climate but also to the weakening of relationships experienced by the agricultural community, a relational breakdown encoded in the ecology as aging trees and overgrown orchards.

### MODERNIST CARE: Irrigated Hopes

In 2018, irrigation was emerging as a new form of almond tree care, an act once considered unthinkable for such a drought-resistant species. Because *Xylella* affects the fluid artery of the tree, the xylem, its effects are much less severe in irrigated trees. Intensive modernist agricultural practices were promoted as a new regime of care, one that might secure a future for the Mallorcan almond industry, though not necessarily for most Mallorcan almond farmers. After I interviewed the man handling the *Xylella* case at the Ministry of Agriculture, he offered to take me on a tour of recently planted orchards. "I want to show you the best," he said, "not the stuff by the roadside." He took me to visit a new, irrigated, and intensively managed planting owned by a wealthy doctor and assured me that the trees received abundant fertilizer, interpreted as a sign of care. At the next stop, we marveled at a large orchard owned by a hotelier. My guide felt responsible for performing progress, explaining that *Xylella* was not the real problem. For him it was old trees and lack of care. As we drove along, he pointed out the window to trees with lichen growing on almond branches as evidence. While lichens are not harmful to trees, he found them unsightly. Not enough pruning or treatment with copper fungicide, he explained. Farmers had not taken care of their trees.

The largest cooperative on the island was also planting an irrigated orchard. The beneficiaries would be the farmer-members, the cooperative manager explained, but not all growers celebrated the innovation. "There is not enough water

for everyone,” several stated frankly, including those who had planted the newly irrigated orchard. Mallorca has no permanent rivers, and threats of water shortage are constant. Tourism puts serious strain on water supplies, particularly as the government has incentivized higher-end resorts with golf courses and extensive landscaping (Kent, Newnham, and Essex 2002). Overexploitation of aquifers has produced saltwater intrusion, a terrifying prospect for an island depending on groundwater for 75 to 95 percent of its supply. And then there are the omnipresent manifestations of climate change. Hydrologists predict reduced water supplies. Higher winter temperatures and intense heat episodes are also suspected to boost *Xylella*'s virulence. Many believe the record temperatures of recent summers triggered *Xylella* to rapidly multiply and kill its almond host. One farmer noted skeptically,

Now they are doing irrigation, but in my opinion, they are going to end up without water, because it doesn't rain. Every year we surpass record summer temperatures. Every year we set records. It doesn't rain. Every day more people, more human pressure, more tourists, more pools, more needs, and we are going to end up without water. I don't know if they are going to be able to irrigate, though they say they will use recycled water.

Another cooperative manager described hopes for a mixed system. Some intensively managed, irrigated orchards could generate enough almonds to keep production facilities moving and allow farmers to revitalize rainfed almond landscapes, “for the environment more than anything.” For those with access to water, capital, and land to secure their investment, irrigation presented a modernist fix that could keep the almond industry afloat and possibly avert land abandonment in the near future. Strangely, many agronomists expected the polyculture of rainfed almond production to be saved (at least temporarily) by the monoculture of irrigated, fertilized, and pesticide-controlled plantations. For rainfed farmers and others anxious about Mallorca's water future, betting the future of almond cultivation on irrigation seemed careless, lacking in consideration of how it might be sustained in the long term.

Freshwater's unique material properties conjured hopes and fears as its role in landscape care was variously considered. It could flush the vascular tissues of plants, providing life support to a dying industry, and it could retreat from the skies and subterranean stores, jeopardizing future possibilities. Water exposed un-

deniable interdependencies, not only among Mallorcans but also between all living beings on the island and the atmospheric cycles extending beyond its bounds.

### LIVING WITH *XYLELLA*: A Call for Care

While Mallorca mourned its losses, infected almonds were detected on the Spanish mainland in Alicante Province. Here, too, farmers faced accusations of lack of care, but unlike in Mallorca, spared by its geography, in peninsular Spain EU protocols mandated mass tree removals to stem *Xylella*'s spread. "If they tear out the trees, they will tear out the last of rural life," one farmer told me. In a region fighting wave after wave of rural depopulation, these almond trees—not to mention rosemary, myrtle, and the many native shrub hosts potentially slated for removal—rooted people to a sense of place. While these farmers did not rely primarily on almonds for their income, losing vegetation meant losing a landscape whose maintenance was crucial to their identities. "The work of my father, my grandfathers, I can't see it torn out because some guy thinks it's the right idea," one man objected. Much as in [Anna Tsing's \(2015\)](#) account of mushroom foragers, the prospect of tree removal underscored how memory and identity were constantly enacted through more-than-human relations.

A small group of farmers organized, protested in the streets, and lobbied their case with every political party that would listen. They argued that the eradication of *Xylella* was impossible given the range of hosts. Mass tree removal might also hurt the economic lifeline of the community: tourism. According to EU guidelines, once trees were removed landowners would be restricted from planting anything for five years. They would receive nineteen euros per tree for their loss. An already aging farming population might not replant, many feared, accelerating rural abandonment. The weeds that regrow on untended land might also raise the risk of fires, another anticipated consequence of rural depopulation and a warming climate.

When I met the group, united under the title Plataforma de Afectados por la *Xylella fastidiosa* de la Provincia de Alicante (AXFA, Platform for Those Affected by *Xylella fastidiosa* in Alicante Province), researchers had recently discovered the sixth distinct focus of *Xylella* infection. In the previous months, they had fanned out over the province to conduct microbial analyses of trees at risk. As in Mallorca, farmers in Alicante told me they had noticed symptoms for many years and that the disease was nothing new. The woman who first detected *Xylella* in her orchard had been sending samples to a laboratory for four years. Given the pathogen's historic absence in Europe, it took extended, persistent efforts to identify

the culprit, as *Xylella* is renowned among bacteriologists for its resistance to lab culture. Now facing the proposed uprooting of her surroundings, she regretted the persistent care she had taken to send in so many samples.

Landscape purification was simply a futile bureaucratic performance, farmers claimed, advocating for a shift from attempts at eradication to containment. They cited scientific reports detailing the growing list of known plant hosts and insect vectors, the years that the disease had likely spread undetected, and the lack of successful eradication anywhere in the world. Farmers believed that the administration based its decisions more on budget than on biology: the EU provided funding for eradication measures but not for containment. Tree removal was also a business, which some suspected might have financial or political benefits for those in office. Administrators dismissed rainfed almonds as unprofitable, failing to see the trees as integral to the rural landscape. Unlike more powerful capital-intensive agroindustries in the region—such as citrus and olives—small-scale rainfed almond growers felt they were treated as disposable. “The administration only cares about productivity. The smell of almonds turns to pine and they say, ‘oh, well.’”

Farmers advocated for “living with” (*convivir con*) *Xylella*,<sup>2</sup> even though no one knew what that would mean. The difference, for them, was the care it would take. Learning to live with *Xylella* and contain its impacts would require long-term engagements with farmers and other landowners. This call for a broadening of socio-ecological scope resonates with the “360° approach” proposed by Italian olive growers grappling with *Xylella* (Colella, Carradore, and Cerroni 2019). Living with would require iterative, locally situated research and decision-making processes that addressed agroecologies holistically, with considerations not limited to targeting the bacterium or vector. It would require more thorough planning and continuous involvement across many levels; uprooting almond trees, by contrast, appeared to many as a means for the administration to act quickly and then walk away.

While I empathized with the affected farmers, I also empathized with administrators acting under extreme uncertainty. Swift action to stem an epidemic might prove the most effective tactic for sparing the region and the entire European continent from widespread harm. Failing to act quickly presented greater risks. Yet ultimately I saw farmers less interested in saving their trees than in finding a collaborative path forward to long-term landscape care. This would require an emphasis on ongoing relations, strengthening the interconnections that allow agrarian landscapes to weather new challenges, which might include scientific engagement, secure land tenure, support for young farmers, or other collective prac-

tices yet to be imagined—rather than discrete one-time actions. These relations extend beyond the human, enrolling healthy soils, biodiversity, and a more stable climate to sustain ways of being. Such care work would always yield uneven consequences. Care itself is not a solution but a perpetually open and deeply political question of *how* relational maintenance takes place.

### TOWARD A MORE-THAN-HUMAN POLITICS OF CARE

Plant epidemics, like *Xylella*, often produce cycles of blame, resentment, and deepened community divides. This may stem in part from treating the phenomenon (1) as an *interaction* between separate biological and social actors—the pathogen is the enemy and the people respond well or poorly; and (2) as a unidirectional causal chain—a single event introduces a pathogen that wipes out a species.

If the pathogen were the clear enemy, then its eradication might be simpler to manage. But like heat, intensifying bacterial activity within a tree, the pathogen's virulence is provoked by a broad assemblage of facilitating conditions. The vector of time in epidemiology illustrates disease spread as a series of discrete events. Yet in the eruption of an epidemic, past wounds, present transformations, and future fantasies or fears permeate one another. To embrace a pathogen as *intra-active*, emerging from within, means to exchange the causal chain inherent to blame for collective response-ability. While blame points to discrete individuals and actions, care indicates the continuous relationships that might be repaired or reimagined.

Care, by its subtle and sustaining nature, is often most perceptible in its absence. Farmers felt a lack of care by government and a tourism-oriented culture. Bureaucrats interpreted trees with minimal management as lacking care. When the prospect that almond trees might disappear from the landscape was raised, either gradually by disease or suddenly by bulldozers, the agroecological maintenance work—a form of care—they provided became clear. The trees not only produce almonds; they root more-than-human lives in place and across time. Just as Bruno Latour (2011) argues that we cannot abandon our monstrous technologies, we cannot abandon our plant epidemics as mere unintended consequences or strictly biological phenomena to be contained and controlled. The *intra-action* of disease demonstrates that our relations bring a pathogen into being, no matter where on the globe it may originate.

Understanding disease as emerging within an existing whole seems at first glance antithetical to agricultural biosecurity tactics that serve to shield unaffected areas from biological intruders. Yet the two approaches can be complementary,

while also pushing responses to become more comprehensive. A more-than-human politics of landscape care requires us to pay attention to the entanglements that allow an epidemic to exist and to respond to each relation accordingly. Eradication, while potentially worthy, is perpetually reactive. And while agroecological production practices, like crop diversification, are popularly understood to confer disease resilience, they do not suffice. When more-than-human maintenance work is rendered visible and valued, it can be more intentionally directed toward desirable, if unpredictable, ends.

There is no saving Mallorca's almonds, at least not in the form they once took. What rural landscapes living with *Xylella* on the Iberian Peninsula might look like remains an open question, potentially requiring dramatic reconfigurations of rural life. The *Xylella* epidemic was always about more than almonds. A politics of landscape care is not a call for protecting, preserving, or proliferating any particular beings—plant, animal, or otherwise. It is a call to see the web of *relations* among plants, farmers, insects, aquifers, bacteria, governments, petrochemicals, scientists, soils, and matter of all kinds as the site of politics where the ongoingness of specific configurations of existence is negotiated. It is a call to question the focus on an individual actor—be it a bacterium or a bureaucracy—as uniquely blameworthy, for the solutions thus proposed likely remain far too narrow. A more-than-human politics of care demands that we examine the slow processes at work in transforming landscapes—like tourism, land tenure, and climate change—as well as the sudden, discrete shocks. Care as politics does not presuppose any normative qualities: forms of maintenance and relation-building will always create differentiated effects. Pathogenic conditions are not anomalous—they are endemic to late capitalist life. Confronting them requires not only swift bold actions but also the subtle, gradual maintenance work of understanding and transforming inherited relationships, broadening imagined constituencies, acknowledging bonds of mutual responsibility, and in doing so weaving new fabrics of more-than-human care.

#### ABSTRACT

*Almonds were once “the gold of Mallorca,” a source of modest wealth and a pillar of diversified farming systems for smallholders on the largest of Spain’s Balearic Islands. Now researchers believe nearly every rainfed almond tree on the island will be dead within as few as five years. The introduced bacteria Xylella fastidiosa, enabled by its spittle-bug vector, and emboldened by climate change, has flooded the xylem of these rainfed trees, impeding the flow of fluid and nutrients to the point where the tree can no longer survive. This article enrolls feminist theorizations of care and agential realism to broaden the political scope and stakes of a plant epidemic. I argue that by*

attending to the care relations underlying pathogenicity we can shift from narratives of landscape purification toward a more-than-human politics of care. [care; more-than-human; agential realism; epidemic; agriculture; Spain]

## ABSTRACTO

Una vez las almendras eran “el oro de Mallorca,” una fuente de riqueza modesta y un pilar de un sistema de agricultura diversificada para los payeses (campesinos) de la isla más grande del archipiélago balear de España. Actualmente los investigadores creen que casi todos los almendros de la isla pueden morir dentro de cinco años. Una bacteria introducida, *Xylella fastidiosa*, apoyada por su insecto vector, el salivazo, y animada por el cambio climático, ha inundado la xilema de los almendros de secano, impidiendo la circulación de fluidos y nutrientes hasta el punto de que el árbol no puede sobrevivir. Este artículo emplea teorizaciones feministas del cuidado y del realismo agencial para ampliar el alcance político de una epidemia de plantas. Argumento que teniendo en cuenta las relaciones de cuidado subyacentes de la patogenicidad, podemos pasar de los temas de purificación del paisaje a una política más-que-humano del cuidado. [cuidado; más-que-humano; realismo agencial; epidemia; agricultura; España]

## NOTES

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1. Olive oil also had an important export role, though it was superseded by almonds in the mid-twentieth century (Morey Tous and Molina de Dios 2016).
2. This emic call for “living with” resonates strongly with Donna J. Haraway’s (2008, 2016) calls for more intimately “living-with” other species and Martin Heidegger’s (1962) theory of “being-with.”

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