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# Getting intimate with crops in horticulture's loveless human-plant relations

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## ABSTRACT

Intimacy suggests familiar, close-up knowing, resulting in emotional attachment to another. Such affective encounters occur between domestic gardeners and their plants, but what about commercial horticulture? Anna Tsing suggests not, characterizing plantationocene agribusiness as production without the love (2012). Relations between commercial growers and plants have scarcely been considered, but horticulture complicates multispecies ethics as plants are to be eaten, and tackling human exploitation might have precedence. Applying a care ethic to agriculture therefore must question care work's outcomes and motivations. In research with UK commercial growers I trace plant intimacies as how growers relate to their plants, and how globalized food systems touch plant and human bodies in horticultural fields, asking: can following plant intimacies signal how more just food production could love human and plant labourers? Intimacies are shown to be shaped by time, scale and labour, as global food regimes press into intimate plant work, whilst specific modes of plantiness shape labour regimes. Tracing plant intimacies reveals that power to gain intimate plant knowledge is unequally distributed, whilst harmful intimacy concentrates with the most marginalized workers. Rather than questioning whether growers love or care for plants, it may be more important to ask who owns the crops, and who/what benefits.

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## Intimate integrated pest management

'So these are our sad cucumbers', crop manager Roger says as he leads me to a row of plants strung towards the polytunnel roof; 'these are looking really unhappy'. The problem is aphids have 'taken over control':

What they'll also do, aphids, is they will come along and they won't land and feed on the first plant they find, they want to know there's lots of plants here that they can eat. So they'll come in here and they'll have a little test of that one: 'Oh yeah, this is a cucumber, I could eat that' and they'll fly over and have a go on that one. And they'll do three or four. But every single one of them, the moment they put their proboscis into it, and start to have a taste, they can

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transfer the disease. So one aphid could infect 50-odd plants. So that's how it can really spread, really rapidly.

I ask if this will damage the crop and he says the fruit will become covered in 'sticky aphid shit', or honeydew, reducing the plant's ability to photosynthesize, encouraging mildew 'because you've got this hot atmosphere and this sort of sooty mildew, sooty dust on top'. He hoped he had spotted it in time to control through pyrethrum, a chrysanthemum-based pesticide permitted within organics. Then he introduced beneficial insects, a typical process of integrated pest management (IPM). Roger looked over the leaves, pulling out a hand lens for a closer look (Figure 1). 'So we've got some beneficial activity'. He points to a blob:

That one there, it's what we call a mummy, and that's a dead aphid. And what's happened is you get parasitic wasps, which are one of the beneficial insects we put out, and they come along and they will lay their egg in an aphid. And it will hatch out and eat its way out, and kill the aphid, you know, eat it alive from the inside.

I borrow the lens as he points out predatory wasps and hoverfly larvae, then excitedly spots loads of ladybird larvae. He continues moving the lens over the leaf, and soon sees a good sign: adult ladybirds. I ask if the plants will recover, but they will not generate fresh growth:

These yellow leaves are basically disease. It's probably - well, I'm not quite sure. I want to send some of these leaf samples off to get it tested. The main one we usually get is one called cucumber mosaic virus. But this is a slightly different pattern to what I'm usually used to seeing, so it could be something like that, something different, but it'll be something similar.



**Figure 1.** "This is no good at all" the crop manager Roger looking at his 'sad' cucumbers (photo by the author).

There's another one called cucumber mottle mosaic virus, which is slightly different. But yeah, aphids are great vectors of disease and they carry a lot of disease, sort of in their stomachs.

Later he showed me more plants with yellowed leaves around their base, but this was senescence as older parts died off, 'just part of its natural cycle'.

Roger shared learning from his decade-plus working for a large organic vegetable producer in southwest England. Without any formal horticultural training, he could identify problems, and tailor conditions to optimize growth, or as he put it, ensure the plants are happy. He attended to nonhumans and environment to judge how to respond (Ingold, 2000; Pitt, 2021). Roger spoke about the plants as if a fellow human expressing emotions, echoing how hobby gardeners interact with more-than-human friends or loved ones (Archambault, 2016; Degnen, 2009; Pitt, 2018). His effort to protect cucumbers from disease exercised care for another being whose specific needs he attended to so they would flourish, with IPM's nonhuman actors designated friend or foe according to their contribution to crop production (Pitt, 2018). Whilst Roger could spot a stressed plant and work out what induced this, crops' plantiness presented plenty of unknowns and unpredictable events (Head & Atchison, 2012). These human-plant relations resonated with those observed in domestic gardening, but plants' status as food complicates vegetal ethics (Marder, 2013). Here I interrogate the nature of plant intimacies in commercial horticulture, asking whether attention to these relations helps understand how to undo this production's tendencies to harm environments and workers.

Critical plant studies too rarely considers commercial crop production, perhaps seduced by the agency of more unruly plants (Lawrence, 2022). How people relate to crop plants has focused more on production systems beyond the mainstream (Beacham, 2018), and plants which endure across seasons such as vines (Alarcon et al., 2020; Brice, 2014; Krzywoszynska, 2016) tea bushes (Barua, 2023), fruit (Betz, 2020) or nut trees (Reisman, 2021), and seeds which carry potential for the future (Rezvani, 2022). The specificity of relations within one crop-cycle are less understood (although see Head & Atchison, 2012). Horticultural plants do not hang around as long as vines or trees, with non-perennial seasonal cycles shaping human-plant relations and labour organization distinct from those of tea, for example (see Barua, 2023). Considering commercial horticulture assists vegetal geographies with differentiating types of plants *and* people (Lawrence, 2022), whilst situating plant intimacies within their broader political context.

Approaching horticulture through the notion of plant intimacies as explored in this special issue, I demonstrate commercial plant intimacies which may not imply love for plants. Growers' relations with plants are affected by the duration and intent of growth, suggesting intimacy which does not always culminate in mutual care. Relations archetypal to plantation production are more coercive towards human and plant labourers. Intimacies within horticulture as shaped by time, scale and labour, reveal how pressures of global food regimes press into the close-up work of tending plants, whilst limiting who is free to become intimate with plants and concentrating harmful plant intimacy with marginalized workers. Commercial horticulture entails high degrees of attentiveness to plants, but as Tsing might state, it lacks the love.

The empirical material comes from qualitative research in UK horticulture. Fieldwork ranged across scales and types of growing, from family-run organic market gardens, to international, vertically integrated industrial scale producers. In addition to visiting farms

and production sites, I interviewed 51 people working for growers and related stakeholders, covering roles from farm manager down to field worker, through specialists such as agronomists. Ethical approval was provided by Cardiff University School of Geography and Planning Research Ethics Committee. Vignettes were selected to highlight modes of plant intimacy, illustrating dynamics suggested through thematic analysis of interview transcripts and fieldnotes. Where encounters between person and crop are shaped by the specific production system and enterprise I indicate such, whilst drawing connections across horticultural know-how (Pitt, 2025). Next I define intimacy in the context of human-plant relations, then contrast loveless plantationocene food production with more caring agriculture. Then follows exposition of three dynamics shaping human-plant relations in commercial horticulture, before discussion of these as sites of plant intimacy, and the implications for understanding how to improve food growing.

### **Plant intimacies and why they may matter**

Intimacy suggests familiarity, relations and knowledge felt at the bodily scale, through getting up close and personal with another individual. It is a form of attachment (Berlant, 1998), connecting others through something shared (Collins, 2024). That shared is often assumed to be space, hence associations with physical proximity – literal and affective closeness (Valentine, 2008). As a mode of relating, intimacy has both cognitive and emotional dimensions (Jamieson, 2011), knowing, loving and caring for another (Jamieson, 2005). It infers connections of love and care as between lovers, family or friends (Berlant, 1998; Valentine, 2008). Feminist attentions to this as a personal relation highlights intimacy as always political (Oswin & Olund 2010), whilst stressing that intimate relations are not always or wholly loving, and can include violence. Intimate practices can bring the harm of geopolitics right into the body, such as in exploitation of domestic workers (Pain & Staeheli, 2014). Meanwhile, geographers remind that the proximal is always globally connected, so intimacy stretches across distance or via virtual connectivity (Mountz & Hyndman, 2006; Pain & Staeheli, 2014; Valentine, 2008). Still, intimacy suggests relationships which an individual can grasp and feel at a bodily level, knowing another with an intensity that makes them particularly familiar and knowable, that feels like closeness. Most often considered in contexts of inter-human relationships, parallels are drawn into more-than-human relations. Knight (2020) suggests humans can become intimate with animals, particularly those more easily distinguished as specific individuals. Similarly, gardeners which identify with particular plants, and perceive them to exhibit specific intent, develop reciprocity akin to love (Archambault, 2016; Degnen, 2009). Urban Mozambique gardeners' highly affective inter-species relationships may even be love as they devote time and energy to plants, which reciprocate through offering joy, beauty and inspiration (Archambault, 2016).

Although not synonymous, love, care and intimacy often coincide: some definitions combine the three (Jamieson, 2005), others position the first two as forms of the third (Pain & Staeheli, 2014; Valentine, 2008). If love comprises care, commitment, knowledge, responsibility, and trust (hooks, 2000), it also overlaps with intimacy. Collins (2024) suggests intimate relations carry an expectation – if not guarantee – of care and support for the other. So intimacy – knowing another and becoming attached – can be a pre-cursor to care, as suggested by a feminist care ethic. Tronto and Fisher's influential definition indicates care as an inevitability between those who share the planet, comprising all the work of maintaining

the world (Lawson, 2007, 2009). This echoes intimacy as the closeness both enabling *of* and enabled *by* sharing space or concerns (Collins, 2024). Tronto's (1995) four dimensions of care start with 'caring about' through attentiveness to others, akin to intimacy's cognitive aspect of knowing another (Jamieson, 2011). These foundational phases may be followed by taking 'care of', dedicating time and resources to others' needs, applying the competences of 'care giving' (Fisher & Tronto, 1990). The final component 'care receiving', takes the recipients' perspective to consider whether they feel their needs were appropriately met (Tronto, 1993). This requirement for responsiveness between care's subject and object, echoes intimates' sharing of reciprocal responsibility (Collins, 2024; Knight, 2020). Ideally care integrates the four into a holistic process, but often care practices are delivered without a caring disposition, or reduce the recipient's autonomy (Tronto, 1993). Relations of care are crossed by and can reproduce power inequalities; in contrast love requires reciprocity between equals and is antithetical to domination (hooks, 2012). But the distinction between love and care is blurred through a focus on Tronto's ideal of 'good care' which is not always how care work is practiced by individuals or institutions (1993). In *good care*, giving and receiving are responsive, with subject and object both influencing how care is practiced – a relationship between equals. For this to be possible in society the incumbent politics of justice must correct inequalities which push care awry (ibid.).

In summary, intimacy suggests proximity or closeness between individuals, interaction at the personal scale. As a mode of relating, it combines cognitive processes of knowing the other, and affective, emotionally charged ones. It implies something – concern, identification, place – shared between intimates, connections which can progress towards ties of responsibility suggestive of love or care. Intimacy is not necessarily positive, given its association with violence (Pain & Staeheli, 2014); care also has its shadow side (Martin et al., 2015). Whilst care work can be practiced between unequals, good care is closer to love as a mutual relationship of reciprocity without domination. Roger demonstrated attentiveness to plants to develop acute awareness of nonhuman needs; like others who work with plants, growers recognize them as active lives with incredible capacities (Hustak & Myers, 2012). Roger also addresses individual plants as if treating an ailing friend or relative, indicating personal contact with specific plants suggesting intimacy. He becomes cognitively and affectively close to plants to understand their needs, then takes responsibility for meeting them, practising 'care for'. Roger feeds cucumbers so they can feed people. Whether such plant intimacies within commercial growing progress towards good care, or love founded in reciprocity without domination, is to be determined.

The notion of intimacies is little applied to agrifood production, but the care ethic is increasingly identified as a multispecies phenomena, suggesting agricultural intimacy can become care. Although more obviously associated with family animals such as pets, livestock has been identified as care recipients (Knight, 2020), as good farmers care for livestock across long-term interactions with individual animals (Holloway et al., 2014; Lundström & Lindblom, 2021). Knight (2020) suggests farmers regard their animals as persons in reciprocal relationships which are not wholly utilitarian. Looking beyond animals, scholars herald signs of multispecies care amid contemporary urban agriculture (Mincytè et al., 2020), and interpret community supported agriculture as practicing the care ethic across species (Beacham, 2018). Graddy-Lovelace regards tending crops as 'people caring for food-plants so as to fulfil broader responsibilities of care and nourishment of others' (2020, p. 238). She identifies



a feminist care ethic centring on attending to plants to identify then meet their needs, in a relationship of 'mutual nourishment'. In viticulture, Alarcon et al. (2020) suggest production practices oriented to sustainability exhibit care for nonhumans, as farmers are driven not only by economic choices but by concern for the vulnerable vines and biodiversity. Others are more cautious about attributing care to these relations: growers are highly attentive to their plants and the surrounding environment, but do not necessarily prioritize nonhuman needs (Krzywoszynska, 2019). Farmers' attentiveness to nonhumans does not always progress to care, or mutually beneficial reciprocity; agriculture's more-than-human relations are always ethically ambiguous (Holloway et al., 2014) particularly for edible plants (Marder, 2013). Farmers combine care and violence in growing crops, as care for one plant often requires killing another, or individuals suffer for the good of the species (Betz, 2020; Chao, 2018; Chrulew, 2011; Rezvani, 2022). Palm oil nursery workers describe their practices as 'tough love' as they weed out some seedlings and prevent certain plants from breeding (Chao, 2018). Care is always riven with power, and can render a recipient powerless (Tronto, 1993); not all have the power to care or to decide where it is directed (Martin et al., 2015). Given how tricky humans find it to understand plants' desires (Marder, 2013), it seems likely their needs will be misunderstood or neglected.

If intimacy does not always progress to care, and agriculture's multispecies care is anyway always ethically ambiguous, then seeking plant intimacies may not indicate a form of food growing beyond socio-ecological injustices. To get at what is wrong with so much globalized food production, Anna Tsing's characterization is useful, for plantation logics of scalability and interchangeability (Tsing, 2021), shape multispecies relationships which seem the very opposite of intimacy – distant, impersonal and non-particular. Tsing highlights modes of relating missing from agri-business production: 'They remove the love' (2012, p. 148). She does not detail how love featured in pre-plantation production, and reference to love is perhaps idealization or ironic. We can infer the nature of production *with the love* from Tsing's beloved mushroom lovers. At a time of extinction and raging capitalism, Tsing portrays mushroom gatherers' alternative ways of relating to nonhumans in places which remain differentiated and have specific food products, whilst supply chains are diverse (2012; 2021). Mushroom lovers draw on divergent knowledge and resource management techniques, whilst fungi itself practices interaction and inclusion. Mushrooms and mushroom lovers indicate lives at the edge of capitalism, the opposite of commodification: diverse interdependent species instead of plantations' hyper-controlled monocropping. She offers these more romantic relations to learn to value indeterminacy instead of mastery (Tsing, 2011).

The term love indicates a desirable or ethical mode of relating (Morrison et al., 2013). It is also the antithesis of capitalism, hence Mozambique's plant lovers describe their relations to garden plants as love in direct attempt to counter the commodification of intimacy (Archambault, 2016). Loveless plantation production is commodified, and replaces love for people and plants with coercion and control, forcing 'superabundance' to maximize profits (Tsing, 2012). If love cannot exist amongst domination (hooks, 2000), control is antithetical: 'Instead of the romance connecting people, plants, and places, European planters introduced cultivation through coercion' (Tsing, 2012, p. 148). Plantations simplified ecology, weeding out interdependencies to favour one plant, replacing diversity with monocrops, cosmopolitanism with

isolation (Tsing, 2011). Colonial logics of quantity drive economies of scale and efficiency in pursuit of capital accumulation (Barua, 2023), and drive labour exploitation, cheapening nature and human life (McKittrick, 2011). Plants and workers are disciplined to generate surplus value (Barua, 2023). Tsing's comment on the absence of love reminds that intensive production prioritizes economic over affective value. Unlike indigenous cultures which consume only enough (Kimmerer, 2013), productionist agriculture prioritizes crop outcomes, seeking efficiency and abundance, relegating nonhuman needs to profit (Krzywoszynska, 2019).

Not wanting to draw false equivalence with plantations worked by enslaved workers in colonized spaces, thus minimizing their racial violence (Davis et al., 2019), it is instructive to note tendencies in today's commercial horticulture which resonate with plantationocene production because the archetype connects exploitation of plants and people. Intensive horticulture is only possible through cheap, mobile labour, so horticultural work globally is dominated by mobile migrant workers (Pitt, 2025), too often exploited (Klassen et al., 2023). European horticulture's spatial fix (Scott, 2013) mirrors plantationocene labour regimes which gained efficiency through bringing labour from elsewhere (Haraway, 2015; Haraway et al., 2016). Black geographers remind us to foreground exploitation of plantationocene workers and to differentiate racialized and gendered experiences (Davis et al., 2019). This is an important reminder that scholars' turn to plants should not be a turn away from humans, particularly given an abundant lack of care about and for those who work to produce food. Feminist attention to care was initially driven by the need to recognize the vital importance of care work, often done by women (Lawson, 2009). It would be a perverse outcome of broadening the care ethic beyond humans if a multispecies purview squeezed human plant workers out of view.

Loveless plantations combine mistreatment of human and plant workers, as production intensifies control of people and plants, and alienates plantation workers from crops (Tsing, 2012). Power concentrates with select humans, and human-plant relations lack the reciprocity of less exploitative agricultural practices (see Kimmerer, 2013). Reciprocal relations of mutual care become control and care *of* not *with* the other (Puig de la Bellacasa, 2017). If love opposes domination (hooks, 2012), love for nonhumans would allow them freedom. Such as farmers ceding control to plants, letting them pollinate at will instead of constraining reproduction to corporately bred varieties (Rezvani, 2022). But in loveless production plants are not free to grow anyhow, and they have limited power; even when lives are intertwined, it remains humans who draw up the designs (Myers, 2017). Unpicking the multispecies ethics of food production therefore requires attention to who/what decides, and to what ends? Farm practices might exhibit responsibility, respect, even love, for nonhumans (Beacham, 2018; Lundström & Lindblom, 2021), but the outcomes might be bad lives, particularly when driven by profit for some rather than collective good (Beacham, 2018; Puig De La Bellacasa, 2010). Farmers' attention to soil to inform practices which help biota thrive may be oriented to generating value, transforming nature into a resource of capital accumulation (Krzywoszynska, 2019), as capitalist agri-food systems are adept at coopting farmers' care (Graddy-Lovelace, 2020). So intimacy like Roger's with crop plants, may be good only for capital accumulation and its human benefactors. I highlight this to counter a tendency within recent agrifood scholarship to apply the care ethic non-normatively, emphasizing cognition and practice (Alarcon et al., 2020; Lundström & Lindblom, 2021; Reisman, 2021). Knowing through



attentiveness is an essential basis for multispecies care which requires situated experiential understanding of others (Krzywoszynska, 2019). But attentiveness and knowing others are not the same as loving or doing good for them (hooks, 2000; Srinivasan, 2019; Tronto, 1993). Following Martin et al. (2015), the outcomes of and motivations for multispecies relations are significant: why do growers care, and who/what benefits?

Accounts of agriculture's multispecies care work give due prominence to practices which have been undervalued, but should remember that apparently caring practices do not always enact 'good care', particularly within marketized institutions (Tronto, 2010). In parallel contexts of caring for more vulnerable others, such as social care, financial pressures and efficiency undermine the quality of care practices and co-opt workers' caring disposition for capitalist gain (Dowling, 2022; Fraser, 2016). It will become apparent that time and profit similarly squeeze plant work, and relegate what is good for plants. Good care within agriculture is further complicated as practices are directed to edibility, and care-recipients are eaten.

I recognize that pursuing signs of love or care within agriculture is likely driven by hope for better multispecies relations, an aspiration I share whilst seeking to avoid idealization or over-playing the care ethic's cognitive dimensions. Tracing plant intimacy might help because it moves through attentiveness towards affective relations and responsibility, and as feminist perspectives highlight, it gets to tangible processes of political economy affecting bodies: 'the laboring body functions as the most intimate site in which we experience the global' (Mountz & Hyndman, 2006, p. 457). Zooming in to plant bodies' intimate effects on humans highlights how global pressures squeeze worker and plant bodies. I therefore approach plant intimacies as growers' close-up modes of relating to others, and how globalized food systems touch bodies in horticultural fields. This is a critical endeavour, mindful that horticulture has different goals from gardeners, potentially seeking familiarity with plants to better serve settler capitalism (cf. Cielemecka et al., 2019). I trace these relations to question who does well, and whether intimacy suggest ways for crop production to do better for human and nonhuman labourers – to become more loving. The empirical material shows growers developing intimate knowledge of their plants, as a basis for care work, but 'care for' is timebound, and does not ultimately reciprocate plants' needs. The production imperative precludes 'care with' or love, and constrains workers' freedom to become intimate with others. Next I highlight three dynamics of commercial horticulture which limit potential for plant intimacy to become a loving relationship of reciprocity not domination: time, scale and labour.

### **Knowing plant time and a timely harvest**

I'm visiting Tom and Siobhan's family farm which supplies an organic vegetable box scheme in rural Wales. They work hard. The previous night they were first to leave the dinner table for bed, but reappeared as the rest of us cleared up, looking for paperwork, checking plans. Dinner had been late because Tom was moving hoses between thirsty crops, typical of a 70+ hour working week. Such self-exploitation is common as much time goes into growing crops, particularly in less intensive systems (Guthman, 2014; Weiler et al., 2016). As well as the volume of work, the timing must be right; the hoses could not be left until morning because the plants needed water. Plants' temporality shapes growers' work as Tom explained:

Spring is the worst if we miss things because catching up in the spring is really difficult. If things are difficult in the spring, so then generally they're difficult throughout the year. If you miss the opportunity of sowing seeds or you miss the opportunity of getting those sown seeds, those modules to plant into the ground, it's quite hard to come back from that. If you haven't got your potatoes in you can't harvest your potatoes. If your onions aren't in the ground you can't harvest them. You can kind of catch up in ways with certain crops but the spring is a crunch and there is some time in generally around about the second week of March where you find that - sorry, I can't do this and talk. I'm usually more efficient than this! There's a point in March where you certainly notice that from walking around the farm you're running around the farm but there's also a point where my spirits tend to lift with that because it's generally - hopefully - in May lovely bright mornings.

A plant cycle dictates planting and harvesting, and plants' rhythms dictate growers' work schedule (Brice, 2014). As indicated by Tom's need to work as we chatted, giving plants what they need creates urgency and deadlines, shaping routines and workload (Medland, 2021). Horticultural time must be highly efficient to maximize profits (Rogaly, 2008), so there is only time for intimacy wholly necessary to production.

Weeds' rhythms also exert influence, as Roger's colleague explained with his maxim: 'Hoe them before you see them'. For organic growers the most efficient way to control weeds is creating a sterile seedbed before sowing. A few weeks before drilling, the bed is covered and irrigated to encourage weed seed to germinate. When 1–2 cm high it is burnt off, leaving sterile soil where the salad can establish a dense crop easily harvested by an automated cutter. The grower must track plant-growth and synchronize interventions to achieve results (Brice, 2014). Timing is crucial, as the sad cucumbers evidenced: Roger planted late to avoid frosts, meaning they were less advanced when aphids arrived. Growers attune to the schedule of plants' needs, so they can meet them, caring for crops through practices which include killing other plants.

The need to synchronize with plant cycles indicates that growers are never wholly in control. Fresh produce depends on negotiating plants' biophysical properties which terminate in decay (Friedberg, 2009). Crops' cycles of growth, ripening, rotting, must synchronize with customers' preferences and retailers' just-in-time supply chains. Take planning a strawberry crop for a supermarket chain:

We give a six-week plan of what we have available. So there's a six-week window that he [the production manager] will go through and he will work out exactly how many kilos we're gonna pick in six weeks' time. Every week he'll adjust it, cos Mother Nature will play a factor. But then the supermarket will go 'well we want this much, and we want this much', and they'll get a weekly one [projection], then they'll do a daily one. So at eight o'clock last night they will have sent over their system how many tons they want from us today and the order was going out at one o'clock. And we'll either have some of it in the fridge, or we'll pick it this morning to put it in the fridge, for it to be packed and be sent away this afternoon.

Meeting orders without wasteful over-production is so vital that Roger's colleagues refer to it as 'head on the block time' when they tell the packing house what will be picked that week. If it does not match what was forecast for orders then 'they're none too pleased, obviously'. They constantly monitor crops across numerous variables to update their 'guesstimates' of yield. Roger's cropping spreadsheets track projected yields against weight harvested, and events affecting growth. During crop walks he notices what proportion of tomatoes are orange, calculating how long before they redden given the weather forecast, adjusting predicted availability accordingly. Attentiveness allows

growers to align plants' timescales with that of their customers (Brice, 2021; Friedberg, 2009).

Whilst they can never completely predict a plant's cropping schedule, Roger and Tom know enough about their plants to accurately plan production. For them, plants cannot be wholly unknowable or unruly (Marder, 2013). The most intensive, specialist producers reduce plants' unknowability through data intensive software such as this salad producer's trial predicting lettuce cropping:

It's a sort of model basically, looking at heat, light, and historical data to predict, basically when a crop's gonna be available. And then we can kind of manage demand, potentially manage the crop in accordance with that so we can sort of try and match up our supply curve with our demand basically. So that's really important. There's Agrii, which is a Hummingbird: we use them to fly crop and map it basically. And you look at sizing, look at variability, you kind of assess crop that way.

Their scale of operation and specialization can afford technology to help attend to crop plants, understanding lettuce's needs and growth in order to heighten control. In the plantationocene the time of vegetal life is reoriented to production time (Barua, 2023, p. 19).

We have seen that growers attend to plant time, and how plant schedules limit the scope of growers' intimacy; temporalities also reveal who/what benefits from care for plants, and that human-plant reciprocity is time-bound. What plants 'want' is typically interpreted as their urge to reproduce (Sheridan, 2016). Growers work to know these desires so they can coordinate with the reproductive cycle to produce sellable fruits and leaves. In the polytunnel next to the sad cucumbers basil plants have their stems removed weekly to stop them flowering Roger explained:

Towards the autumn, it's sort of gone, 'well, I've had enough now, I've been picked lots of times, I'm stressed'. And it wants to flower more and more. And basically when it starts to flower, it's got that in its head and that's all it wants to do.

Flowers obscure leaves, slowing picking until it is unprofitable, making the plant killable – it is pulled up and replaced. Many fruit and vegetable crops are borne by annual plants which complete their growth cycle in one year. This shapes short-term relationships with large numbers of plants, very different from those with vines or trees which receive enduring care (Betz, 2020; Krzywoszynska, 2016). Perennial plants are cared for post-harvest because they will produce more crops, but care for annuals ceases when the plant has delivered its productive value as plant and grower needs no longer align. Horticultural crops' reproductive cycles indicate the motives of and who/what benefits from plant care: horticultural care work ultimately seeks to coordinate and harvest growth for profitability. Care for individual crop plants is timebound, limited to the period of productivity, which can be a single season or many years depending on plant types. Determining whether farm practices do well for plants therefore requires a longer view on human-plant relations, looking beyond a single season of cultivation to assess what happens to plants once they cease fruiting, and to enduring outcomes for the species.

## Tending 1 million seeds per acre

So far we have seen growers acutely attentive to plants, who know how to care for them, but relations are time-bound and skewed to human wants rather than reciprocity. These schedules also curtail time to attend to individual plants, particularly when there are so many. The scale of plants and yields is the second intensity shaping horticultural plant intimacy. How this affects growers' plant work was apparent as I helped weed Tom and Siobhan's fields. Tom stooped, straddling a row of leeks, grabbing fistfuls of foliage between the crop, tugging to remove the largest part, dropping it, moving along. I checked 'so you just get the worst of it out?' He explained there was not time to be too neat, just remove enough to give the leeks a chance. My fastidious garden weeding, pulling up the roots, removing them to the compost heap, was careful but slow. The team of fieldworkers I met on their second of three days leek-weeding for Roger went even faster to ensure the task was completed before something else needed doing. Some weeds were left behind; those whose tops had been tugged off may re-grow, but it was good enough. In part this arises from the need for timeliness, but also from scale: amongst thousands of leeks a few can be outcompeted by weeds.

At this scale, plant work still tends individual plants as Roger demonstrated in his polytunnels, carefully winding tomato plants around the string for support, side shoots pinched out to concentrate fruiting. I've seen this task executed similarly in even larger glasshouses of non-organic producers – it is too delicate to automate. Roger prefers a regular team work on this as it takes practice to avoid removing the tip which stops upward growth, meaning less fruit. This inevitably happens each season, which he factors in as a loss. I recalled in contrast the community gardener who carefully applied a paper bandage to a damaged tomato stem in the hope it could keep growing (Pitt, 2015). Growers producing at scale factor in wastage, a cauliflower grower for example, expects 5–10% of heads are not harvested:

Cos it's not like many other types of crops, they're not uniform. They come relatively evenly compared to what they've done historically, but even still, they're not uniform. Any cauliflower that's too small or too large, may be perfectly sound and great to eat, hasn't got a home.

Each plant represents potential income, but the numbers must stack up. The week I visited, Roger's polytunnels yielded around 6,000 cucumbers. At the end of each tunnel was a tray of oversized, mis-shaped fruits, graded out by pickers. Eventually there will be too few good fruits to make the tunnels worth picking so the plants are pulled up, making way for winter salad, wastage indicating the parameters of growers' care for plants.

The numbers of plants growers manage could not become intimates. On Roger's organic farm millions of salad seeds are sown per acre, with successive weekly drillings for continuous cropping (Figure 2). Leaves are harvested by an automated cutter which slices across the bed, leaving stubby tufts, later ploughed in. The salad manager Jimmy tramped across these, talking as we made our way between beds, me tentatively leaping over the plants: 'It feels so wrong walking across it'. 'Oh it's all picked' he reassured me. 'I



**Figure 2.** Salad at scale, including the harvested row no longer requiring attention (photo by the author).

know, but it's just-'. He interjected 'Don't worry'. Down the field we stopped by pickers working through a radish harvest who explained it was slow finding enough without blackening. Jimmy discussed with the team leader how the next bed was possibly not worth picking: 'Yeah, you're going to throw 75, 80% of that away'. We headed to it and he soon found plenty with damaged skin:

Jimmy: We're certainly gonna lose money picking this. I can tell you for a fact.

Me: Because it'll take longer to pick them out?

Jimmy: Yeah. Be better off just to rotavate it in.

He picked through the plants, pulled some up, discarding those too large or blemished, before holding up the selected ones:

Jimmy: So there, I've just got a bunch. That's rubbish.

Me: So that's almost three times the amount, [wasted] isn't it? Nice bunch though.

Jimmy: Yeah, nothing wrong with the product, but you've got to do it at the right speed. I mean they'll probably get there, they'll just grumble a lot.

When the cost of labour to pick to specification outweighs sale-value the crop is unharvested. The radishes exhibited their ways of being, cells expanding rapidly when over-

watered, causing features which Jimmy noted and sought to understand so he could avoid it in future, but he was less concerned with understanding plant pathology than finding enough to pick profitably. Plantationocene economies of scale are driven by colonial logics of quantity (Barua, 2023).

As Head and Atchison argue (2012), in such contexts plants are not considered as individual persons. Jimmy's lack of regard for blackened radishes or post-harvest salads indicates that growers' concern is saleability, perhaps precluding more loving plant relationships. It is hard to apply a more plant-centred ethics with cultivation as mutual collaboration between plant and humans (Hall, 2011). Reciprocal relations which enact care and responsibility for plants do not fit easily into contemporary commercial food production (Head & Atchison, 2012), where crops present a vast plant collective directed towards feeding humans. At scale there are too many plants to become intimate with; growers operate by averages, neglecting individuals as long as the overall crop is thriving. 'Care for' does not develop into 'care with' as growers' needs have precedence, and plants' saleability is prioritized over other qualities.

### **Good work and hybrid labour**

The third dynamic of horticulture cuts across the first two as a prime factor in plant intimacy: labour. Touring the strawberry farm, manager Logan recalled during his first year there was still one field of ground-grown crops. That very wet season, the owner saw pickers kneeling between sodden rows, so declared enough: only table-top cultivation from now on, meaning pickers avoid the notorious back-breaking conditions of California's ground-grown fruits (Papadopoulos & Fratsea, 2018). Table-top systems enhance air-circulation and input-control, but lose ground heat which benefits the plants, so the agronomist seeks to balance production better for pickers and strawberries. He chooses varieties with good flavour and disease resistance, providing they hold their fruit in forms which enable fast picking. Vegetal agency produces plants which grow to varied heights and forms, shaping labour practices (Barua, 2023). However, the final determinant is neither strawberry plant nor worker needs, but profit.

A large proportion of plant-work within commercial horticulture involves seasonal harvest workers. This workforce is a vital locus of human-plant interaction, where workers enact plant knowledge (Pitt, 2025). Logan's strawberry pickers are adept at moving along the row, quickly spotting ripe, good-sized fruit, both hands becoming pincers leaving the calyx on the picked strawberry. Meanwhile they check for damaged fruit or signs of fungus spores, separating them to be disposed of away from healthy plants. The speed of their work does not suggest an absence of plant knowledge, particularly as many workers return annually and become expert (Klocker et al., 2019). But there are limits to how intimate they become with strawberries. Pickers also remove runners so the plants' energy concentrates in fruiting not reproducing, and are paid a piece rate per runner. They are unlikely to have time or motivation to consider what plants want as working fast increases their income. A couple of times weekly they switch to de-leafing, instructed to remove any leaf in contact with the truss tape along the row. Logan said the simplicity of this instruction reduces the likelihood they remove so many leaves the plant lacks photosynthetic capacity, but sufficiently reduces shade and enhances visibility during



picking. The task must be done quickly and correctly by harvest workers not expected to understand the plants' leaf index; their status is not associated with detailed plant knowledge or skill (Pitt, 2025). Plant knowledge and the capacity to decide what a plant needs sits with the agronomist; intimacy is the privilege of experts higher up the labour hierarchy. Pickers' lack of permission to decide how plants needs are met reveals asymmetric work relations: who has the power to care? (Martin et al., 2015).

Other, harmful, plant intimacies are encountered only by seasonal workers. The leek weeders also harvest the crop; as Jess supervised this task I noticed she kept putting a hand to her lower back, bending back and forth a little. I asked if she was struggling: 'yes I am actually. So yeah, no, not in pain today. Just took some ibuprofen so that should just sort it out. Got my holiday next week. Just got to push through'. Stopping to chat seemed a much-needed break before 'pushing through' the rest of the weeding. We discussed the relative demands of different crops, and I was surprised to learn her team's nemesis, expecting something heavy, dirty, low to the ground, physically demanding. But it is courgettes. Jess knows too well that courgette leaves are a prickly irritant, the fruit grows fast requiring regular picking. Her team had protective neoprene sleeves to ease the discomfort, but at the end of that season the management decided no more courgettes – the picking regime was just too much. Not all employers are so considerate, hence accounts of seasonal workers suffering physical and mental health problems from crop work, as they feel the strains of food production in their bodies (Holmes, 2013; Stead, 2021). Violent plant intimacy is intensified by repeated engagement with many plants, under time pressures.

Vegetal time shapes horticulture's labour regime as work intensifies at harvest, meaning employers require a temporary workforce willing to work hard and fast for short periods (Douglas, 2014). Horticulture's margins are narrow,<sup>1</sup> meaning employers seek to pay as little as possible for as short as possible and pursue efficient work (Rogaly, 2008; Scott, 2013). Harvest labour is typically the largest economic cost so shapes cultivation practices, hence Jimmy judging whether crops are worth picking. Sometimes the result is abuse and exploitation (FLEX, 2021; Mellino & Pangen, 2023), racialized and gendered in ways familiar from plantations (Hellio, 2014). Cheap, plentiful, easily disciplined plantationocene labour is immobilized by tea bushes (Barua, 2023), but annual horticultural crops require mobile workers. Growers reliant on seasonal labour must understand vegetal dynamics so they can recruit just enough workers, as Roger showed me on his spreadsheet tracking labour requirements against predicted cropping. He attends to plants and their timescales to plan production schedules and labour regimes. Imagining more caring labour regimes therefore requires knowledge of varied vegetal agency and rhythms.

Interactions between horticultural workers and plants are numerous and significant, but do not always allow scope or time to become intimate. As in social care, pressure to work efficiently limits workers' care work time (Dowling, 2022). But seeking care for plants in these settings is tricky because ethical plant-human relationships seem trivial considering harmful human-human relations and workers' bodily suffering. Growers I visited had good reputations for their employment practices, meaning workers sought positions with them. But commercial horticulture remains labour-intensive, with abuse, exploitation and injustice too common (Klassen et al., 2023). Reliance on seasonal migrant workers reproduces employment relations embedded in the same hierarchies of racial capitalism which

drove slavery and indenture (Rogaly, 2021). Even supposedly values-driven production struggles to reward workers fairly or ensure good work conditions (Guthman, 2014), as apparent in Tom and Siobhan's self-exploitation. Despite recent appreciation of them as essential (Milbourne & Coulson, 2021), horticultural workers' voices have little influence (Scott & O'Reilly, 2022). So it feels frivolous to worry whether plants' needs are met, when plant workers lack voices to advocate their needs.

However, attention to human-plant intimacies within horticultural production is useful for unpicking how plantationocene logics entangle exploitation of workers and plants. The low status of horticultural labourers is another dimension of social devaluing of care work, a tendency the feminist care ethic seeks to correct (Lawson, 2007). But I suggest something specific about work tending plants. Western societies have long tended to plant blindness, the notion that plants are insensitive and passive (Gagliano, 2013). Failure to appreciate plants' faculties relegated them to the bottom of hierarchies of life (Hall, 2011). If plants are unintelligent and of little consequence, it is logical that those who work with them need no special faculty to serve them. Historically, hierarchies of agricultural work in the UK privileged those specialist in handling the 'most intelligent', most demanding stock; horsemen held greater esteem than cattle-hands, in turn above shepherds and their stupid flocks (Verdon, 2017). Plant specialists barely featured in this stratification, with horticultural tasks relegated to women, children and casual labourers who were non-expert. Blindness to the nature of plants fed myopia around the skill of horticultural work, which in turn meant workers in horticulture were under-valued and under-paid, so attention to human-plant intimacy could help interrogate then correct the demeaned status of both.

One suggested route towards this are notions of hybrid labour which regard plants and people as agents in transformations which generate capital value (Battistoni, 2017; Palmer, 2021). But hybrid labour collectives do not easily point to non-exploitative, production systems beyond capitalism (Krzywoszynska, 2020). Indeed following plant intimacies confirmed that plant and human needs do not always align. Strawberry plants favouring growing low to the ground cause pickers to bend uncomfortably; courgettes' spiky hairs protect them but irritate human skin. And when plants have potential to harm people, it is labourers' bodies – those most physically intimate with plants – most exposed to violent vegetal intimacy. Jess's team were heard by managers who gave them protection from courgettes, but not all horticultural workers are so lucky, so human-human labour relations determine how vulnerable workers encounter harmful plant intimacy. Attending to human-plant intimacies revealed these injustices within loveless production, but imagining horticulture fairer for all labourers must examine how work is organized, whether labourers are fairly rewarded and have a stake in their work (Battistoni, 2017; Ernwein, 2021; Palmer, 2021).

### **Closing in on human-plant intimacies**

I opened by introducing Roger's intimate plant knowledge and practices of tending multispecies lives. Following such intimacies through commercial horticulture reinforced the importance of differentiating cognitive processes of attentiveness from affective relations: caring about plants does not always become caring for and with, so we should not over-estimate the ethical intent and reciprocity of

agricultural practices. I then considered whether attention to plant intimacies helps understand how to correct plantationocene tendencies to harm environments and workers. If plantationocene global agribusiness depends not on love, but coercion of people and plants (Tsing, 2012), tracing plant intimacies detailed what loveless cultivation entails. It does not dwell on what each plant wants, and they are not the ultimate beneficiaries. Growers relate to plants as known individuals, attending to their needs, and might even describe them as friends or family, but this is highly limited and directed *care for* not the mutual dependence of *care with*. There are too many plants and too little time to fall in love with them; growers cannot afford workers to devote time to emotive interactions with plants. In commercial horticulture, cultivation without the love entails human-plant relations which are time-bound, production driven, and stretched across multitudes, less a multispecies love than relationships of coercive control. Plants have little say in how they are grown, nor do seasonal workers. Attention to intimacy as a multi-scalar relation, stretching from the personal to the global, also indicated that a grower is not wholly in control, not just because plant agency is never wholly tameable or knowable, but because horticulture's human-plant relations are shaped by global food supply chains and labour mobilities.

Tracing plant intimacies also highlighted how plantationocene logics vary with modes of plantiness as humans work with and against cycles of decay and growth, racing to get the perfectly ripe berry into customers' baskets. These vegetal tendencies shape labour patterns as the scale of workforce flexes to match harvesting, resulting in a mobile, precarious labour force lacking the power to determine plant care. A focus on human-plant intimacy highlighted knowledge related dimensions of their marginalization, but knowing how to make food systems more just for these workers needs equal, if not more attention to human-human relations shaping labour hierarchies, decision making processes and reward structures.

This exploration highlighted dimensions to human-plant relations which problematize more-than-human care ethics within food production. Firstly, not only is care for nonhumans selective with some such as weeds sacrificed to allow others to thrive, others not tended at all (Chao, 2018; Martin et al., 2015); it is also temporally variable and time bound. Annual crops' status as care-recipients is constrained to their productively valuable period, which does not persist long enough for them to become loved individuals. When contrasted with treatment of perennial plants this highlights the importance of remaining vigilant to differences between beings and the temporality of reproductive cycles. Radishes ploughed back into the soil are not feeding people, basil is not free to reproduce, indicating that outcomes for plants should not be assessed prematurely, as any benefits of growers' care for them may be quite temporary. Secondly, the number of plants growers interact with – a field of leeks cared for en masse, not as individuals – and how many are treated with profligacy indicate the need to consider who/what benefits from care. Outcomes for individual plants should be interpreted in light of those for their wider collective – species, biodiversity – taking a long view on whether outcomes favour good lives for all. Third, tracing who gets to become intimate with plants revealed how power to care for is not equally available, as employment relations determine human-plant intimacy. Harmful plant intimacies are unequally distributed across roles, concentrating with lower status workers. These insights confirm how a commodified corporate

context complicates care for plants, with profit often the final determinant (Chao, 2018). Horticulture which aspires to care well for all will struggle to integrate these overlapping, sometimes contradictory needs; imagining food cultivation founded in love might start by listening more to plant workers. Rather than questioning whether producers love or care for plants, it may be more important to ask who owns the crops, and who or what benefits.

## Note

1. Although operating outside the supermarket supply chain associated with cheap produce, Tom told me he still must keep prices as low as possible to retain his box customers, so cannot afford to take on more workers.

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