

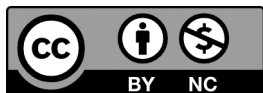
# Mutual Flourishing: Discussion and Strategies to Improve Plant Ethics in Horticultural Therapy

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**Abstract:** With growing attention to holistic health, horticultural therapy has been widely applied in psychological rehabilitation, older adult care, and special education. However, current practices often marginalize the ethical status of plants, treating them instrumentally while prioritizing human therapeutic outcomes. Such approaches risk obscuring the intrinsic value of plants as responsive living beings. Drawing on ecological ethics and the ethics of care, this study provides a normative analysis of three ethical limitations in contemporary horticultural therapy: the instrumentalization of plant-related language, the mechanization of plant care, and the unidirectional evaluation of therapeutic outcomes. In response, the study proposes three improvement strategies: Reframing professional language to acknowledge plants as companions, promoting a responsive care model grounded in observation and sensory engagement rather than procedural routines, and incorporating plant well-being into therapeutic evaluation frameworks. By emphasizing relational responsibility and mutual flourishing, this conceptual inquiry advocates a shift from human-centered practice toward a more ethically integrated model of human-plant interaction.

**Keywords:** Plant ethics; Ecological ethics; Mutual flourishing; Horticultural therapy; Ethics of care



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## 1 Background

Horticultural therapy is a type of plant-assisted therapy (Lu, 2024), defined by the American Horticultural Therapy Association (n.d.) as the use of horticultural techniques to help participants learn new skills or regain those that have been lost. From a psychological perspective, horticultural therapy helps improve memory, cognitive abilities, task initiation, language skills, and socialization (American Horticultural Therapy Association, n.d.). From a physical rehabilitation perspective, it can help strengthen muscles and improve coordination, balance, and endurance (American Horticultural Therapy Association, n.d.). In contrast to traditional psychotherapy, horticultural therapy offers the benefits of non-drug interventions and low participant resistance (Sempik et al., 2010). With a growing global emphasis on holistic health, horticultural therapy has been increasingly applied in various practice settings, such as psychological

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rehabilitation (Gonzalez et al., 2011), older adult care (Wang et al., 2022), and special education (Flick, 2012).

Plants play vital roles in horticultural therapy. For example, patients gain health benefits through interactions with plants. Historically, horticultural therapy practices, particularly hospital-based rehabilitation, often placed excessive emphasis on human rehabilitation and anthropocentric design models (Sempik et al., 2010). Plants were regarded as tools for therapeutic activities and were arbitrarily shaped or forced to mature according to participants' needs. After being used in therapeutic activities, these plants were often neglected or discarded. This raises concerns regarding "the moral standing of plants".

Ecological ethicists argue that although plants lack sympathetic nerves and the ability to perceive pain, this does not mean they are incapable of experiencing harm (Kallhoff, 2014). Injuries to plants are common in daily life but often overlooked due to humanity's disregard for the ethical status of plants. Plants respond to external stressors; common stress factors include water, temperature, parasites, and extreme environmental conditions. For example, under high temperatures, plants experience heat stress because they must open their stomata to absorb more carbon dioxide, which in turn increases water loss through evaporation. Consequently, plants must balance the risk of damage from excessive temperatures and insufficient water supply. Plants exhibit complex adaptive responses to environmental stressors that differ fundamentally from machinelike reactions. Machine behavior functions under externally imposed rules and human-engineered programming, whereas plant responses arise from long-term species evolution. Furthermore, machine outputs lack a self-preserving purpose, while plant adaptations are oriented toward survival and driven by biological imperatives. These persistent adaptive reactions suggest a form of biological agency and adaptive capacity. Therefore, in therapeutic activities, plants should not be regarded merely as passive materials but as "living beings" that warrant understanding and responsive care. Like humans, plants require suitable living environments; accordingly, just as attention is given to human well-being and happiness, ethical consideration should also be extended to the living conditions of plants.

Some researchers use the term *flourishing* to describe the survival status of plants and regard it as the foundation of plant ethics (Kallhoff, 2014). Plant flourishing refers to a desirable state that requires the simultaneous fulfillment of three conditions (Kallhoff, 2014). First, the plant must maintain overall health (i.e., be free of disease) and possess sufficient viability to withstand external environmental pressures (Kallhoff, 2014). Second, the plant must be capable of completing the typical life cycle of its species; for most plants, this involves progressing from the juvenile to the adult stage and successfully reproducing (Taylor, 1986). Third, the plant must retain the traits and typical characteristics of its species, such that it can be readily classified through observation (Kallhoff, 2014; Rolston, 1988). In artificial horticultural therapy settings, plants often struggle to attain adequate ethical recognition (Marder, 2013). This difficulty arises partly because practitioners overlook the conditions necessary for plant flourishing and partly because of the ethical constraints inherent in extensionism (Callicott, 1989). Although extensionism seeks to move beyond human-centered ethics, it remains fundamentally anthropomorphic (Callicott, 1989). Moral standards are often formulated based on rights, obligations, and responsibilities familiar to humans, and therefore may be poorly aligned with the biological realities and ethical considerations relevant to plants (Plumwood, 1993).

## 2 Purpose

Horticultural therapy should aim not only to rehabilitate participants but also to ensure the plants involved are

respected and cared for. This involves attaining plants the appropriate ethical recognition and working toward the mutual flourishing of both participants and plants. This study conducts an ethical analysis through conceptual reflection and illustrative examples of common practices. It further proposes practical improvement measures grounded in relational ethics of care and ecological ethics.

### 3 Ignoring Plants' Life Status: Instrumentalization of Plant-related Language

#### 3.1 Description of the Phenomenon

In horticultural therapy activities, plants are often referred to as “materials” “tools”, or “media”.

#### 3.2 Summary of Ethical Issues

The use of functional or objectified terms such as “materials” “tools”, or “media” may be convenient for practical operations and teaching; however, such language subtly diminishes the status of plants as living beings and may undermine the possibility of establishing an emotional connection between participants and plants. When plants are perceived solely as tools or materials within therapeutic settings, their life characteristics and individual differences are easily overlooked.

Ethics of care, or relational ethics, emphasizes interdependence, emotional connection, and care responsibilities among individuals. It opposes reducing others to functional tools or isolated moral objects detached from lived context. Within this framework, ethical relationships extend beyond human-to-human interactions to include relationships between people and non-human life forms such as plants, animals, and even broader ecosystems.

Relational ethics emphasizes responsiveness to the call of others in specific situations, with recognition constituting the first step. Referring to plants merely as “tools” or “materials” in horticultural therapy exemplifies instrumentalist discourse that contradicts the central tenet of relational ethics — recognizing the vulnerability, uniqueness, and responsiveness of others in interactions. Failing to acknowledge plants as living beings undermines the empathy, concern, and responsiveness that should exist in therapeutic and healing relationships. From a relational ethics perspective, plants are not passive entities but responsive others within the therapeutic context. Their growth fluctuates through cycles of withering and flourishing, and their responses to light and water constitute a form of non-verbal communication that invites deeper connection and care from participants. Recognizing plants as living beings is the ethical prerequisite for fostering human sensitivity and moral responsibility toward their life status.

#### 3.3 Solution Strategy

To enhance participants' attention toward and emotional investment in plants, horticultural therapy practitioners should modify their plant-related language by using warmer and more respectful terms such as partner, friend, or green companion. For example, when introducing an activity, they could say, “Today we will meet a new green partner,” instead of, “Today we will use a new plant material.” Changing how plants are addressed affirms their life status and emotional value at the linguistic level. This shift in language serves as an ethical starting point for promoting responsibility, empathy, and sympathy.

## 4 Ignoring Plants' Adaptive Behavior: Mechanization of Plant Care

### 4.1 Description of the Phenomenon

In therapeutic practices that focus on planting as an activity, practitioners guide participants in planting seeds or growing new plants through branching and other methods. A key component of these practices is that participants acquire basic knowledge of plant care. A common practice in horticultural therapy involves professional therapists with botanical expertise explaining specific care methods on site or providing participants with written guidance on plant care.

### 4.2 Summary of Ethical Issues

In horticultural therapy practice, two common care guidance methods are therapists' on-site demonstrations based on botanical expertise and the provision of standardized care materials to participants. However, both practices may conflict with the ethical principles of deep ecology, which maintains that plants do not exist merely for human use and that achieving perfectly grown plants should not be the sole goal of cultivation. Accordingly, the organization of care relationships requires reconsideration.

Both care guidance methods may instrumentalize the plant care process to varying extents. On-site demonstrations emphasize authoritative mastery of plant knowledge, whereas written care materials attempt to "avoid errors" by simplifying procedures. While these approaches lower the knowledge threshold for facilitators and reduce the information burden on participants, they may collectively construct the notion that "process equals care", equating human-plant interaction with weeding, watering, and fertilizing at prescribed times. However, participants' care behaviors should involve not only ensuring plant survival but also understanding and responding to plant needs. For example, succulents often exhibit etiolation (stretching) under insufficient light, excessive moisture, or seasonal changes, which manifests as abnormally elongated stems and lighter coloration. Under conventional care logic, etiology is often regarded as an abnormal outcome requiring correction. From the perspective of responsiveness, however, it can be understood as the plant's feedback to its environment — to find more suitable light. The practical outcome under both perspectives may be similar: participants seek to prevent etiolation. Nevertheless, the abnormal result perspective frames excessive growth as a failure to meet expectations, whereas the response perspective views it as an opportunity for dialogue between humans and plants. Such expressions of life should not be ignored or obscured by a manual-style care framework.

### 4.3 Solution Strategy

To address the instrumentalization of plants in horticultural therapy, facilitators should guide participants to cultivate responsiveness in their relationships with plants while also imparting basic knowledge. Responsiveness in the human-plant relationship is reflected in participants' perceptions and observations of the plant's life status. Practitioners can encourage such responsiveness by emphasizing observation and interpretation. For example: "We do not rely solely on instructions to determine what this plant needs. First, observe its leaf color, overall condition, soil moisture, and even the scent of the soil. Do you think it is doing well today? What does its appearance tell you?" They can also highlight

the dynamic nature of plants: “Plants change every day. The leaves look healthy now, but they may turn yellow in a week. What do you think it might need then?” Furthermore, participants can be guided to notice plant behaviors: “Have you noticed that this plant leans toward the window? It is seeking sunlight,” or “Its leaves are curled. This may be due to a lack of water, or it may be a protective response to the environment.” This approach not only helps participants develop basic care skills but, more importantly, also nurtures their perception of, respect for, and ethical engagement with plants as living beings. The shift from “programmed care to life interaction” is a vital dimension of horticultural therapy, carrying both ethical significance and healing potential.

## 5 One-way Care Relationship: Unidirectional Evaluation of Therapeutic Outcomes

### 5.1 Description of the Phenomenon

Evaluations of horticultural therapy effectiveness are primarily based on treatment goals. For example, in interventions involving older adults with dementia, the Mini-Mental State Examination and the Alzheimer’s Disease Assessment Scale – Cognitive Subscale are often used to assess changes in cognitive performance — such as memory, language, and executive function — before and after the intervention (Lu et al., 2020; Nicholas et al., 2019). Quantitative measures for individuals with physical disabilities, such as those related to hand-eye coordination or limb flexibility, are also commonly applied (Lin et al., 2022; Wang et al., 2022). Even when therapeutic activities involve hands-on tasks, such as planting or harvesting, evaluations typically emphasize participants’ performance rather than the condition or well-being of the plants.

### 5.2 Summary of Ethical Issues

Common horticultural therapy practices — including taking cuttings, grafting, kneading plants to release scents, and collecting leaves and flowers — can cause harm to plants. Even in interactive therapies, horticultural therapy inevitably involves intervention in the plant’s physical integrity. In human – non-human relationships, such as those in agriculture and medicine, complete harmlessness is rarely possible.

Therefore, participants’ actions in horticultural therapy should be guided by ethical considerations. Plant partners ought not to be wasted or unnecessarily sacrificed. An anthropocentric, one-way evaluation logic simplifies the therapeutic relationship into a purely instrumental “human” → “plant” process, thereby overlooking the plant’s role as a responsive living organism. Such an approach objectifies the plant and neglects its feedback function within the relational dynamic. A plant’s condition can be regarded as a reflection of the participant’s caregiving ability, sense of responsibility, and emotional investment. When a plant demonstrates vitality during therapy — such as continuous budding, healthy growth, wound healing, or successful flowering and fruiting — it may reflect not only suitable environmental conditions but also the participant’s careful observation, timely responses, and genuine commitment. Conversely, when a plant withers, develops dull leaves, or shows stagnated growth, these conditions may reflect the participant’s insufficient care or emotional disengagement.

### 5.3 Solution Strategy

Plant health should be considered a key indicator of therapeutic effectiveness. Assessments should examine whether plants are being appropriately and responsively cared for during horticultural therapy activities. At present, no mature and standardized scale exists for this type of evaluation. Drawing on conventional methods in psychometrics and eco-behavioral science, evaluation frameworks could combine objective measurements of plant physiological parameters with participants' subjective self-assessments of their caregiving behaviors, enabling a multidimensional understanding of human–plant interaction quality.

Objective measurements of plants' physiological parameters can serve as indicators of adaptability and overall health (Chaves & Oliveira, 2004; Wang et al., 2009; Zarco-Tejada et al., 2009). These indicators may include leaf yellowing, wilting, root rot, the emergence of new buds, stem extension, and recovery capacity following changes in light and water. Following this approach, customized assessment tools can be developed for horticultural interventions according to the characteristics of specific plant species.

Participants' subjective self-evaluations of their caregiving behaviors can also be incorporated. For example, participants may reflect on questions such as “Have I paid attention to the growth rhythm of the green companion?” “When the green companion shows abnormal growth, which of my care behaviors do I adjust in time?” “How do I understand that the green companion is a living being capable of responding to me?” and “What emotionally meaningful moments have occurred during my interaction with the green companion?”

## 6 Conclusion

Although horticultural therapy is widely recognized for its physical and psychological benefits to participants, its ethical structure remains predominantly human-centered, often framing plants as therapeutic materials or passive media, thereby obscuring their status as living beings and overlooking the conditions necessary for them to flourish. Based on the concept of plant “flourishing”, this study argues that plants possess core biological interests centered on health, life-cycle integrity, and the maintenance of species characteristics. Ignoring these dimensions leads to the instrumentalization of plant life and reduces the therapeutic relationship to a one-directional, utilitarian process. Because traditional moral categories derived from human experience are insufficient to address the unique characteristics of plants, horticultural therapy should shift toward an integrated model grounded in ecological and relational ethics to achieve the mutual flourishing of humans and plants.

Through illustrative examples and theoretical reflection, this study identifies three major ethical dilemmas in contemporary horticultural therapy practice: the instrumentalization of plant-related language, the mechanization of plant care, and the unidirectional evaluation of therapeutic outcomes. To address these dilemmas, it proposes several practical recommendations, including the use of warmer and more respectful terminology when referring to plants, the implementation of responsiveness-oriented care practices, and the incorporation of plant health indicators into evaluation frameworks. From this perspective, horticultural therapy is understood as a relational practice in which humans and plants co-participate in processes of growth and transformation.

This study is limited by the primary theoretical nature of its ethical analysis. The viewpoints presented lack empirical support and have not yet been validated through quantitative data derived from horticultural therapy practice.

Future research should incorporate field-based evidence—such as interviews, questionnaires and observational data — to examine the practical feasibility and therapeutic efficacy of the proposed relational and ecological approaches in practice.

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