

KPOV: *The Point*
Gardening: Get Good At It
“Robots in the Garden”
January 30, 2018

Before we dive into this week’s topic, I want to introduce our Gardening Word of the Week. This week’s word is: telepistemology. Think you know what it means? The answer; later in the segment.

Today, I want to share some of the advancements in robotics technology that are becoming available for the home gardener. And don’t worry. Despite news headlines proclaiming the end of the human workforce, there are several advantages to assistive technology in the home. But first, how did we get to this point?

Since the advent of intentional sowing and harvesting around 12,000 years ago (what we now call “agriculture”), humans have developed a highly sophisticated system for global food production. The most rapid technological advances occurred during the second half of the last century. In the 1920’s, agriculture not only adopted new machinery, but also the financial, cultural, and ideological apparatus of industrialism.

This process has led to ever-increasing farm equipment, modern plant breeding programs, the use of synthetic fertilizers, delivery of water via irrigation systems, and the use of pesticides to control crop damage, which have all contributed to tremendous increases in crop yield.

Advancements in robotics can decrease the detrimental effects of farming by precise administration of water and nutrients, while bringing agriculture closer to consumers. Small-scale robotic platforms are also not limited to farm operations, but could also reclaim urban environments that are currently deprived from agriculture and horticulture, such as within offices, shopping malls, or on rooftops.

A couple of university experiments demonstrate just how far this concept has progressed:

- First, USC developed the Telegarden. Primarily an art installation that allows internet users to view and interact with a remote garden filled with living plants, members can plant, water, and monitor the progress of seedlings via the tender movements of an industrial robot arm. The Telegarden went online in summer 1995 and attracted over 100,000 visitors to help cultivate it in ten years. The garden was then moved to the lobby of the Ars Electronica Center museum in Austria, where it remained until 2004.
- The other major project is MIT’s Distributed Robotic Garden. Unlike the Telegarden, which relies on humans for perception and decision-making, the distributed robotic garden consists of two mobile robots equipped with mobile manipulators, water bottles and cameras. The robots tend to four potted cherry tomato plants.

How soon will robots be tending your garden? You have probably heard of robotic vacuum cleaners, such as Roomba, that wander your floors. It took nearly 10 years for these machines to match the cleaning performance of the traditional home vacuum cleaner, but now you can have it clean carpets and wood floors while you’re away or even overnight.

There are also commercially available robotic landscape machines that can trim your lawn, rake up leaves, and even clear snow from your driveway. Once finished with the yard work, the robots put themselves back into their charger until needed again.

In the near future, expect to have access to robots that can sow seeds, irrigate, de-weed, and harvest in your garden. That is, if you want that kind of help. Personally, I wear dirt under the fingernails as a badge of accomplishment.

Okay, today's Gardening Word of the Week: telepistemology. It refers to the study of knowledge acquired at a distance. In this week's segment, much of the university research being conducted in automating the agriculture and horticulture industries utilizes the internet to share observations with researchers in other parts of the world. And, when you're watching your garden grow while enjoying one of our Central Oregon summer days from the comfort of your yard chair, you're being a telepistemologist!

For more information on integrating technology into the design and implementation of your garden, visit our website at www.gocomga.com. You've been listening to the greenest four minutes in Central Oregon community radio. This is Gardening: Get Good at It on KPOV's The Point.

Resources:

The Robot in the Garden, University of California Berkeley
http://atc.berkeley.edu/201/readings/Robot_In_The_Garden_Intro.pdf

The Robot in the Garden, University of Colorado at Boulder
http://correll.cs.colorado.edu/wp-content/uploads/correll_therobotinthegarden.pdf

Building a Distributed Robot Garden, Massachusetts Institute of Technology
http://vigir.missouri.edu/~gdesouza/Research/Conference_CDs/IEEE_IROS_2009/papers/1119.pdf

Robots, Farms & Co-Design: The growBot Garden Project, Georgia Tech
<http://cowbell-1.cc.gatech.edu/news/2010-12-03/robots-farms-co-design-growbot-garden-project>