Ask Laura

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Steve Tjosvold

EL NINO AND PLANT DISEASES

Q: What conditions are predicted for the upcoming El Nino winter?

A: El Nino conditions in the Monterey Bay area this winter is predicted to bring above average rainfall, which can come in drenching rains that flood and waterlog soils for extended periods. At the same time, winter air temperatures are predicted to be warmer than normal and consequently soil temperatures will be too.

Q: What impact might this have on plant diseases?

A: At least one important group of plant pathogens might be favored by these conditions. *Phytophthora* are fungus-like pathogens that develop particularly well in wet conditions and some species such as *P. cinnamomi* do best in moderately warm conditions. They all need water to reproduce, spread, and infect plants. During rain downpours, infested soil or spores can move readily in water runoff and splashing water. Water logged soil predispose nursery plants to root and root-crown infection caused by *Phytophthora cactorum, P. tentaculata* and other soil-borne *Phytophthora* species. The longer leaf wetness periods will favor the production of aerial spores and infection of *P. ramorum* (causing sudden oak death and *P. infestans* (causing potato and tomato late blight) and other species that mostly attack and develop in above-ground portions of the plant.

Q: What can be done to manage these diseases in nurseries?

A: Prevention is the key to management of diseases caused by *Phytophthora*. Start with a sterile planting mix, use clean containers, and keep pots up off the ground to avoid contact with existing soil. Gravel nursery beds allow for drainage away from the pots and can eliminate standing water. Don't transplant too deeply because soil covering the base of the stem encourages infection by *Phytophthora*. Avoid irrigation practices that wet the foliage for prolonged periods. If sprinklers are used, irrigate in the morning to allow for thorough and quick drying of foliage. Prudent irrigation scheduling is important to minimize water stress, over-watering, and salt accumulation in the soil. These factors can predispose plants to *Phytophthora* infection. Soil mixes should drain well, providing at least 10% air-filled pore space after drainage. Avoid mixes that have inadequately composted components because they can break down quickly; the soil settles and loses air-filled pore space. There are several fungicides that help control Phytophthora diseases. The most effective fungicides are those that are specifically active on *Phytophthora* and related species. The regular and blanket use of these fungicides encourages the development of resistant strains. Rotation of fungicides with different modes of action is especially important to reduce the chance of resistance from occurring. A rotation strategy attacks different susceptible stages of the *Phytophthora* life cycle too.