# Drip Irrigation on Slopes

**Lucile Whitman**
Whitman Farms, Salem, Oregon 97304

At Whitman Farms we grow unusual trees in root-control bags, tree seedlings, and cuttings of *Ribes* and other species Each enterprise demands it's own irrigation system, but by far the most difficult to manage is the root-control bag. Root-control bags have always been a challenge to the irrigator, so some guidelines have been developed The most important is that the bag should be filled with the soil removed from the hole in which the bag is placed If an amended soil, or heaven-forbid, potting medium is used in the bag, the much finer clay particles of the natural soil outside the bag will draw the moisture from the bag. I know this is true because I use potting medium in my bags I also use 10 in. root-control bags in which I can grow a tree up to 2 in. caliper The final result is a healthy, excellently rooted plant that I can lift easily.

However, it has taken ten years to develop a suitable irrigation system. Since we have very limited water, drip was the only option, but there are myriad wrong ways to deliver the drop. With bags only 10 in wide, it didn't take long to realize that the standard in-line emission systems with their 12 in. or more spacings could miss the bag entirely and usually did. My rows are 400 ft long with some on an 8% grade, so a pressure compensating system would be optimal I have not been able to find such a set-up that is cost effective. I have finally settled on a product called Ro-drip with holes at an 8 in spacing It is fairly inexpensive, is only 5 mils thick, and can handle no more than 8 lb of pressure or it will explode like a balloon. It is supposed to deliver 40 gal of water per 100 ft of tubing and is designed to be used only one year.

Needless to say it does not begin to put out an even supply of water on uneven ground, and I use the tubing for more than one year Hence, for insurance, I run two tubes down each row If I run 18 rows (thus 36 lines) for 8 hours a day, I can maintain about 8 lb of pressure and I can get around the field in 4 days.

With these two rows of delicate tubing, we want to keep hoeing to a minimum. We can't use preemergent herbicides because if a plant dies before maturity which, due to the nature of the species I have chosen to grow, happens frequently, we replant into the same bag and so can't have a residual herbicide So the first year a bag row is put in, we mulch heavily with wood chips which we can usually get free. This helps with weed suppression and water retention and the chips usually last a couple of years It is preferable to mulch all the bags every year with mushroom compost, but the price of compost has soared, and the resistance from the field workers who were charged with the task of spreading the highly redolent material was high to start with.

The other two enterprises at Whitman farms are simple. The seeds are watered overhead and the cuttings are stuck four across, between two lines of Ro-drip—one cutting on each outside and two in the middle.

My system is working adequately for the time being, but there is one major drawback to Ro-drip, and that is disposal of the used plastic tubing. I have miles of it in my shed still looking for a recycling center.