



NORTHWEST FEATURES

Onions on Drip

by Don Dale

Making the most of available resources

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Of the approximately 22,000 acres of onions in Oregon's Treasure Valley, about 20 percent are now irrigated by drip irrigation. It can be used to extend marginal acreage.

Drip irrigation is no longer a novelty or, on some farms, a luxury—it's absolutely essential to efficient operations. There are a lot of straightforward and compelling reasons that the onion growers at Standage Farms in Vale, Ore., use drip irrigation.

Larry Standage introduced drip onto the farm—where his father is still an integral part of the operation and son, Joe, recently came on board—nine years ago. With 1,400 acres of ground and several crops, the approximately 350 acres of onions provide at least 75 percent of the farm's income. With that level of importance, the arguments for drip irrigation became obvious.



Onion growers in Oregon's Treasure Valley have been able to expand acreage to marginal ground using drip irrigation.

Drip irrigation allows the Standages to make the most of limited irrigation water, especially in years when the flow is low. Those years are now common on a farm that relies on reservoir water from regional snow and rainfall. Environmental concerns about the release of flood irrigation water into the nearby Malheur River worried the family. Drip irrigation water stays on the farm. Uniformity of irrigation, from the top of the field to the bottom of the field, leads to uniformity of the crop and greater yields. That leads to increased returns. Less fertilizer is required, and therefore less cost, when nutrition is applied directly to the root zone without the need for expensive mechanical distribution methods such as tractors. A reduced number of tractor trips through the field results in a reduction of compaction, and that improves root vigor and plant health. That in turn provides resilience during the heat. Crop timing and onion sizing is easier, and drip can be used to selectively grow larger, more premium onions that can be stored for longer periods of time. Onion fields can be created on uneven, sloped or mixed-soil ground where a valuable crop once was not feasible. That expands the scope of the farm as well as allowing production of even more of the most valuable cash crop.

“You get an even crop throughout the field,” son Joe says, even on ground that would not be viable for onions if they had to be grown on flood irrigation. Every year, about half of the farm’s onion acreage is on drip, and it is used on the most uneven fields with the worst soil. It allows the family to expand acreage to ground not normally suited to onions. “That drip irrigation really makes it uniform.”

Jim Klauzer is the first to agree. As manager of ClearWater Supply, a farm consulting and supply firm in nearby Ontario, Ore., he says that since he arrived in the area eight years ago, the percentage of onions grown on drip irrigation has increased from about 3 percent to about 20 percent. There are about 22,000 acres of onions grown in the Treasure Valley along the Snake River and its tributaries in Oregon.

He says that a few risk-taking onion growers started using drip as a means of conservation and management, and now the methodology has become truly mainstream. ClearWater Supply sells drip equipment, but also helps train farmers and design systems, and has seen a lot of change in growing patterns in those few years.

“The drip has been a very effective tool to increase yields, improve quality and improve storability,” Klauzer points out. “It’s benefited the grower very well.”

The Standage Farm onion season is a testament to good management. It begins in the fall as the stalks from a winter wheat crop are shredded—the standard rotation here is sugar beets, field corn, grain and then onions. The ground is irrigated, disked, ripped and plowed. If any fumigation is needed, it is done at this time.



Laying supply hose to drip lines requires manpower, machines and time, but the rest of the season is easy on labor with drip irrigation.

“We go ahead and bed our fields up in the fall,” Standage says, with 6 or 7-inch-tall rows shaped on 21-inch spacing. The fields are fertilized and lie fallow all winter, but shaping the rows in this way facilitates snow and rain penetration where the onion seed will be planted in late March. In a water-poor region, he wants to take advantage of all the residual moisture he can.

Beds are harrowed flat in mid-March, and the seed is planted over fertilized 21-inch rows. Some growers in the valley install their drip tape prior to planting, but the Standages do it afterward. They feel that in order to achieve good timing throughout the season, the seeding should take priority. Since irrigation won’t be needed immediately, it can be injected later.

The Standages own all of their own drip tape installation equipment, which is made up on a toolbar by a local machine shop based on a design established by northwestern growers over the years. They use Toro Aquatrax 6 mm tape with emitters a foot apart, and the custom injection equipment is set to place it 3 inches belowground, four rows at a time. A shank prepares the seed row, and a fork smoothes the ground over the injected tape.



Trailer-mounted portable drip stations are used to pump and filter canal water to drip tape.

Every other furrow gets tape, which means it is injected every 42 inches halfway between seed rows. Then, Standage says, comes the most labor-intensive part of the operation: each end of the drip tape must be manually attached by spaghetti tubing to a supply hose, which is laid out by a tractor and attached to a portable irrigation pump station. The size of the fields, slope and the length of runs demand that each field be individually designed and irrigated, and the amount of water delivered is determined by the size of the spaghetti tubing.

The design of each irrigation setup for each field is tricky, and Standage hires ClearWater Supply to do this every year. The company uses GPS in each field to design and size its drip system to match. The portable drip stations have their own small diesel engines, pumps and sand filters that clean up the dirty canal water used. A station may irrigate up to 60 acres, but one may be required for a field as small as 6 acres if it is isolated from other onion ground.

Fertigation and water management are fairly automated during the season, so once the drip is installed and working labor requirements are reduced a lot. On the Standage farm, one irrigator can manage 150 acres. The irrigation method costs much more to install, but Standage says it pays for itself. First of all, it uses 30 percent to 50 percent less water than flood irrigation, which requires about 3 acre-feet to irrigate onions.

"It's pretty labor-intensive to get it started," says Joe, whose job includes marketing from the farm's own packing shed. "Once you get it started it's pretty self-sufficient."

Standage says that the farm is increasing yield, but not in the way one might expect. Yields on the farm's good sandy loam soils is not much higher on drip than on flood irrigation. The difference comes on the marginal soils and slopes. There, where an onion crop couldn't be grown on flood, drip allows an excellent crop to mature. Not only that, onions grown on either good or marginal soils have better size and quality.

"You can tell driving down the road the drip field from the flood field, a lot of times," Standage says. The drip crop will be more uniform and obviously healthier. He has examined roots from crops in both fields, and onion roots under drip are always longer and healthier.

During the heat of summer the difference can be spectacular. Drip-irrigated onions

have much more resistance to heat, and possibly for that they require less treatment for disease or insect pests. It is a simple factor of being able—even when water is scarce—to deliver moisture to the roots consistently.



Onions in Oregon's Treasure Valley have better size and uniformity under drip irrigation.

In addition, Standage points out, drip irrigation makes field management easier during the season; because every other furrow has a drip tape, tractors can be driven down the alternate rows for cultivation or other purposes without compacting wet ground. And, there is much less driving because drip limits weeds and the need to cultivate them.

One drawback is around harvesttime, he says, when drip equipment must be taken up prior to harvesting the onions. All pump stations and hoses must be removed, and the farm pulls up the tape at the same time. It is used only once, so it must be wound up on spools and disposed of at a landfill. Standage would like to recycle it, but recyclers won't take it because of the amount of soil adhering to it.



Larry, Dorrance and Joe Standage at their packing shed in Vale, Ore. —three generations enjoying their crop.

Drip irrigation can be used to do more than irrigate. It can help size the crop. By

applying such consistent irrigation, they produce their largest bulbs. Because of their quality, those onions can be stored for a long period of time. A crop grown on difficult soil with drip can yield bulbs as large or larger than a crop grown on flood in excellent soil. And, irrigation will be uniform from the top of the field to the bottom, even if slope or soil irregularity are involved. Long runs are no longer a problem on drip fields, and laser leveling is no longer a priority.

Standage notes that because onions are the family's primary money earner, it is well worth the extra money and effort to use drip irrigation. It not only allows them to maximize quality and size, but it gives them the use of their marginal ground and allows them to grow a premium crop on it.

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