

# PNP

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**Walnut Clone Plantings**  
*The Next Frontier*

In early January, Bob Beede, UC Cooperative Extension farm advisor, Kings County, left, with Jeb Headrick look over a cloned Vlach rootstock planted in August 2007.



# Walnut Clone Plantings

*Containerized Stocks Need Careful Consideration*

*By Patrick Cavanaugh, Editor*

When Don and Jeb Headrick took delivery of their containerized paradox Vlach cloned rootstocks in August 2007, they were excited about the prospects of planting 35 acres of the vigorous, genetically strong tree.

Planting in August, you may ask? Yes, with firmly rooted in-the-pot plants, it's theoretically possible to plant at any time. What about triple digit temperatures a week or so following planting? What about the initial shock that is anticipated with any transplant operation? And, what about early winter frost on the sensitive trees?

The Hanford, Calif. father and son team, veteran walnut growers with 300 mature acres and 110 acres in development, suddenly found themselves getting a new education in walnut growing.

The supplier of the potted, four-inch tall clonal rootstock was Duarte Nursery who is on schedule to deliver an additional shipment to the Headricks in April for another 35-acre planting. "They said it was important to keep the root ball of the small trees moist," said Jeb. "So we put in a very cost-effective drip irrigation system with a one gallon emitter at each tree. A week later, there was five days of 105-108 temperatures.

"At planting, the trees went into shock, and then we got hit by the hot weather," noted Jeb. "I was surprised at the extent of the shock and I didn't know what to expect." He said the hot temperatures shut down photosynthesis and the trees started going into survival mode, using stored energy reserves.

"I was nervous," Jeb said. "We kept walking around the field with moisture

meters and probing. When the hot weather hit we found that a quick shot of water worked best. After the hot weather the terminal bud hardened off due to shock, hot weather, and possibly over watering initially. It arrested continued growth, but the leaves looked good going into the warm fall."

In mid-October, Jeb, along with Bob Beede, UC Cooperative Extension farm advisor, Kings County, dug up a root ball for observation and found the roots healthy and growing. "It was encouraging," he said, adding that Beede has been coaching him in all manners of how to treat the tiny trees in the field. With all the challenges of the current planting the Headricks loss less than one percent of the plants—a possible testament of the strength of the

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## Walnut Clones

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vigorous Vlach clone. One percent loss is the same as that experienced in their older bare root plantings.

When they planted the trees, the soil was moist from pre-plant irrigation. "In talking with Duarte, they said the post-plant priority was to keep the root ball moist and to make sure the drip emitter was right next to each tree," said Jeb. "We made sure we did that and anchored the tubing with wire hoops at each tree to keep it from shifting."

To save on the huge capital cost of a conventional drip filtration system, Don Headricks devised a simple, but ingenious system using a 4 hp Honda two-inch water pump at the edge of the field. It draws water from a PVC pipe epoxied into a hole created in a 12-inch valve lid on their existing conventional pipe line. The pressurized water then passes through a 100 mesh in-line screen filter. This is then connected to a lateral line in the middle of the field, which distributes it to the drip tubes. The use of quick-connect flexible hoses allows removal of the pump when not

**Jeb Headrick, left and his father Don are optimistic that the tough start on their most recent planting will catch up this spring.**



in use to avoid theft. "The amazing thing about this is that we run the motor just over an idle and it does the whole field at one gallon an hour per emitter," noted Jeb.

"Not knowing for sure, we ended up applying more water than was probably needed at first. But then we backed off and applied about a quart every 3-5 days, which meant the pump was run-

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## Could the Solution to the Planting Dilemma be Custom Growing?

Bob Beede, UC Cooperative Extension farm advisor, Kings County, thinks that some growers might be better served if the potted clones were custom grown by the grower's selected nursery and then delivered during the traditional winter planting season as bare root June-budded trees.

Presently, growers plant a two year-old nursery tree, with the second year serving as the development period for the English scion whipped grafted during the winter. This is in contrast to a June-budded walnut tree, which is planted in the nursery in the early spring, budded in June, and then dug as a one-year-old tree the following winter.

"The proposal for custom growing would insure walnut growers of having successfully budded rootstock with good root structure for development of the main trunk during its first year in the orchard," said Beede.

"This custom growing concept differs from planting clonal materials in the field, in that growers will be faced with the challenge of having to successfully bud the rootstock in their fields and then achieve a growth rate of the English scion equal to an inch a day in order to have a tree at least eight feet tall for dormant heading," Beede said. "Failure to achieve this first season goal, will require that the scions be headed back and re-grown during the second season--losing a year in orchard development."

This distinct possibility requires individual farmers to assess their horticultural skills in walnut plant development. Inexperienced growers may not want wish to assume this risk, noted Beede.

Tom Burchell sounded off on Beede's concept. "To me it sounds like what we have been doing all along," Burchell said. "We get the order and grow the trees out. We like the custom growing concept because we are field grown operation."

ning only 12 minutes,” said Jeb. “We found that this was enough to keep the root ball moist.

Despite the early worries, Jeb thinks the trees will really take off next month in February. “With good root growth, with good shots of water and fertilizer, they should take off this spring. Then we will bud them to Chandler in late May. If not, we may let them grow another year before budding,” said Jeb.

### Off Tradition

Like most walnut growers, the Headricks traditionally have planted a bare-rooted, grafted walnut tree grown in a commercial nursery for two years. These standard trees require the first year to grow the rootstock from seed. At the start of the second year, the desired English walnut scion is whip-grafted onto the rootstock and grown for yet another year before digging and delivery.

The traditional walnut planting season for the southern San Joaquin Valley typically begins right after the first of the year and goes until the middle of March. Early planting allows for good root initiation prior to the onset of warming temperatures, and subsequent growth of dormant plants.

“The standard bare rooted tree has the advantage of giving the grower a thoroughly hardened off and robust plant material which has good root structure and stored carbohydrates and typically grows very vigorously after planting,” noted Beede. “It’s also a relatively forgiving plant material because of its size.”

The field-tested and grower-accepted alternative to the two year old bare root walnut tree is the one-year-old June-budded tree. In this scenario, walnut seed is planted in the nursery and once the black or paradox rootstock reaches a sufficient size in June or July, the rootstock is patch-budded with the desired English scion. This growing method has been perfected by David Bonilla, of Bonilla Nursery.

“The June-budded propagation method in walnut requires highly skilled patch-budders, of which there are only a handful capable of a high take percentage in California,” said Beede. “These patch-budders make June-budding a commercially viable propagation method for walnut,” he noted.

“The problem that we face in the



Beede and Headrick discuss the conventionally planted walnut trees adjacent to his new clone planting.

walnut industry is that the demand for paradox root stock exceeds the nursery supply through 2009,” said Beede. “Consequently, growers are making use of the new clonal plant material, before it has been widely tested,” said Beede. Vlach has been offered as a clone by Burchell for the past eight years and has performed well in UC-Paradox

Diversity study orchards. Until recently, Burchell has offered a traditional two-year-old grafted bare-root rootstock, or one-year-old June-budded tree.

Currently Duarte Nursery is offering Vlach rootstock as well as the UC clonal selections such as VX211, as 4-6 inch tall in 3-inch square potted liners. “The

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## Walnut Clones

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challenge that we now face in the walnut industry is how to best handle this potted plant material so that orchard development rates are not reduced," said Beede.

According to John Duarte, his company is aware of the change in cultural practices required in planting the clones during different parts of the year. "We have been facing the identical issues with almonds, pistachios, cherries and grapes," Duarte said.

"What it comes down to is that the grower must irrigate the root system of the plants to keep the root ball wet and increasing frequency of irrigation. When this is accomplished growers have seen exceptional results," said Duarte.

"What we have found with all of our containerized nursery stock is that the best time to plant is when the plant is ready and the field is ready," noted Duarte. "With walnuts we do have one concern, and it's due to the plant's sensitivity to freezing. So we do not know if small, young walnut tree planted in the fall will be hardy enough for winter conditions," he said. "This is something we are following."



**Headrick and Beede demonstrate the portable pressurization system for the drip irrigation on the new planting.**



Duarte said his company is experimenting with a number of different size and ages of trees. "We have grafted walnut trees in two-gallon pots all the way down to 2-inch liners in trials in commercial field situations," he said, adding, "We have seen excellent results across the board. And this coming year we will be looking at uniformity of growth and field establishment."

Beede, meanwhile, has undertaken his own research on planting dates of the clones on the Headrick land. "I've



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made mid-August and mid-October plantings, and will also make January and early April plantings to see if there are any differences both short and long term,” Beede said. These results will come later.

Of more immediate concern, however, is stepping up to the learning curve on how to properly handle the young cloned plant material in the field. Since it’s coming to them as a small plant only four inches high, and not a bare root tree, walnut growers are not familiar with handling it in their fields.

For instance, a walnut grower must put in drip irrigation to keep the root balls of the small trees moist, while not drowning them. This in itself is not a traditional practice by most walnut growers.

“Walnut is traditionally thought to be very water sensitive. Flood or furrow irrigating this small plant may not provide the uniformity needed by the plant,” said Beede. What’s more, standing water or saturated soil could drown the small plants.”

Beede said if walnut stresses with too much or too little water, it will harden off the terminal bud, which stops veg-

In August 2007 the recently planted rootstock is watered to keep the root ball moist.



etative growth. “This arrested growth may cause a delay in plant development and production---it may even cost them a whole year delay in orchard development,” noted Beede.

To re-initiate vegetative growth, a grower may have to lightly prune or ap-

ply a PGR product called Promalin---yet another cultural practice not typically done by walnut growers.

As for the Headricks, this spring will be the test. “We should see the late summer planting take off and get some height and girth,” said Jeb. PNP

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