



GLENN WRIGHT

Workers harvesting Medjool dates are lifted into the trees on metal scaffolding attached to large forklifts. The scaffold surrounds the tree's crown and can hold up to 8 workers who harvest ripe dates by hand into shallow baskets. Full baskets are lowered to the ground all at once using a winch and pulley system.

## DEVELOPING NITROGEN APPLICATION GUIDELINES FOR MEDJOOl DATES

*Industry-sponsored research focuses on young trees*

*By Susan McGinley*

**M**edjool dates are among the largest, softest and sweetest in the world. And they are the primary date grown in California's Bard Valley and in neighboring Yuma, Arizona. The combined region produces about 30 million pounds of dates annually—99 percent of them Medjools—with an estimated value of \$40 million.

With date acreage expanding in the Yuma area, and the demand (and price) for Medjools increasing, successful refinements in production practices can make a difference in yields and in crop returns. That is the goal of an industry-sponsored nitrogen application study conducted by Glenn Wright, associate research scientist at the Yuma Valley Agricultural Center—to determine nitrogen requirements for Medjool date palms that will optimize tree growth, yield and fruit quality.

"Nitrogen is the most important nutrient for crop growth," Wright says. "Without it, the tree doesn't grow. You don't want to put on too much—that wastes money and goes into the groundwater. Too little and the tree doesn't grow and yield,

resulting in low profits. Within our area we just don't know what those requirements are."

In 2008 Wright established experiments at two sites on silty clay river bottom soil irrigated by flooding, and at another two sites on the sandy Yuma mesa on low-volume drip. Although flooding has been the most common form of irrigation in the Bard/Yuma area, many acres are currently on drip on the sandy soil, according to Wright.

For each soil type and irrigation regime he has been tracking the progress of both six-year-old bearing palms and two-year-old non-bearing palms. All trees are receiving five varying amounts of nitrogen in liquid form.

The Bard Valley Medjool Date Growers Association funded the study, which involves three grower-cooperators, for three years.

Wright and technician Marco Peña have been monitoring the growth and nitrogen content of the 25 trees under study at each of the four sites by measuring each tree periodically, collecting its yield (if bearing) and taking leaves for tissue analysis.

For tree height, they measure



GLENN WRIGHT

Woven fabric sacks are placed over Medjool date clusters to prevent bird damage. The sacks are tied at the bottom until the dates are mature. At harvest the ends of the sacks are untied, allowing the dates to fall gently into baskets.

from a specific spot on the trunk rather than directly from the ground because the growers bank dirt around the base of the trees. Measurements are taken up to the growth point in the center of the tree, not the height of its fronds. “Right now the trees are small enough to measure by standing on a truck,” Wright says.

Leaf samples are washed, dried and ground before being sent to a laboratory for tissue analysis. The nitrogen levels in the leaves will be correlated to the different nitrogen levels applied so that nutrient level thresholds can be established for the first time for date palm tissues.

Although the study has a year to go, Wright notes some preliminary results: “We’re seeing some increased tree growth, about 10 to 20 percent, with moderate amounts of additional nitrogen,

but not at the highest rates—they were not as effective.” Some of the increased nitrogen applications are stimulating the trees to grow taller more quickly, meaning they will bear fruit earlier and thus increase profits. There is no hard and fast rule of thumb for this: Wright is quantifying the amount of nitrogen required for each soil type, irrigation regime and tree age.

“We have not been able to find any difference in the fruit quality so far,” he says.

When the data are complete in 2010 Wright will be able to chart the effects of nitrogen applications so growers can see the relationship between the Medjool date palms’ ultimate growth at the end of the study versus the amount of nitrogen applied.

“Right now nitrogen application rates are just all over the board,

all over the world,” he says. “We want to get it down for our growing conditions. We don’t have any established best management practices yet.” 🌱

#### Contact

Glenn Wright  
(928) 782-5876  
gwright@ag.arizona.edu