



Ralph Phillips

The jack pump, which works like an old windmill, is energy efficient and suitable for deep well applications.

moves. Centrifugal pumps have to build up to a certain number of rpm's before they start moving water. Early in the morning they're not very efficient."

The advisors also compared devices with solar panels that track the sun to those without trackers. "We found a 28% improvement in water movement during summer, but in Novem-

ber the advantage was only 9 to 10%," Phillips said.

"If you need the water supply for animals, this may not move enough water," Phillips cautioned. He prefers not to use tracking during the winter because the tracking device stops with the panels facing west, then in the morning it has to heat up before it turns toward the sun, which may not be until 10 or 11 a.m. A nontracking unit may start working at 9:30 or 10 a.m. They also learned that controllers should be placed in the shade where there is air movement to prevent overheating. When they get too hot they put out less power and may burn out.

In the next phase of their research, Phillips and Sullins, now Tulare County cooperative extension director, plan to look at combining wind and solar power into a hybrid system. "In the areas where we're using them — one is on a coastal range — we can use the breezes after the sun goes down," Phillips said. The initial investment is higher, but it can pump more water using the two types of power.

Interest in solar power is great, but adoption is slow," Phillips said. "The initial cost scares people off." — Ed.

Science brief



Carl B. Huffaker

■ Huffaker wins Wolf Prize

Carl B. Huffaker, professor emeritus of entomology at UC Berkeley and a leading expert in the biological control of weeds and insect pests, has been awarded the 1994–95 Wolf Prize, the highest honor in agriculture.

The \$100,000 prize announced by the Wolf Foundation in Tel Aviv, Israel, is to be shared by Perry L. Adkisson, former chancellor of Texas A&M University and regents professor of entomology.

Huffaker, who retired in 1985, is known not only for his practical field work in the biological control of weeds and other pests, but for broader studies in the area of population dynamics, particularly the interactions between predator and prey.

He and Adkisson were leaders in developing

the concept of integrated pest management (IPM). They documented not only that IPM works, but that it can be cost-effective. Their key contribution was leading a series of national IPM research projects, which for the first time brought together experts from many diverse fields to tackle serious major pests threatening agricultural crops. From 1972 to 1981, Huffaker was director of the IPM Project, which involved 18 universities around the country.

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