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Iron Deficiency in California Crops 4

Because about 5 percent of California's agricultural acreage is affected by iron deficiency problems, it is useful to know why such problems occur, how those problems can be avoided, and where iron deficiency most often occurs.

Devrinol and Surflan: New Selective Herbicides in Young Orchards and Vineyards 6

Devrinol (napropamide) and Surflan (oryzalin), two new herbicides for orchards and vineyards, have given good weed control without injury to nonbearing, newly planted trees. Like all selective herbicides they do not control all weeds; however, they control a broad spectrum of weeds and are particularly effective on grasses.

Rose Powdery Mildew Control in Outdoor Roses 9

Powdery mildew of rose, caused by a fungus, results in unsightly leaves and flowers and may result in reduced growth. Several new fungicides were evaluated for the control of the mildew and are reported here.

Liquid Protein Supplement in Dairy Cattle Rations 10

Liquid protein supplements fed to cows in trials in Georgia resulted in increased milk production. However, be-

cause high protein alfalfa hay usually makes up a high percentage of the roughage portion of California's dairy cow rations, LPS can be fed profitably only if it is priced less than grain concentrate.

Maps of Soil Erosion Potential—An Aid in Land-Use Planning in Range and Wildlands 12

Road building and other construction activities on range and wildlands often involve considerable landscape manipulations and cause serious soil erosion. Maps derived from existing maps on topography, soils, and vegetation can facilitate effective land-use planning.

Survival of the Sugarbeet Cyst Nematode in the Alimentary Canal of Cattle 15

The sugarbeet cyst nematode (*Heterodera schachtii*) can be transferred from field to field by grazing cattle: infested roots and plant residues are eaten by cattle, and the eggs of the nematode are deposited, viable, in the manure onto uninfested fields.

Drip Irrigation for Plants Grown in Containers 16

Drip irrigation offers horticulturists a way to control precisely the irrigation of plants grown in containers, but studies show this system poses some problems in control of salinity. Periodic leaching of the soil is necessary.

Occurrence of *Spiroplasma citri* in Periwinkle in California 18

The stubborn disease organism, *S. citri*, is spread in several areas of California by leafhoppers to healthy periwinkle plants.

***Ocypus olens*: A Predator of Brown Garden Snail 20**

The large black rove-beetle can consume its own weight each day in brown garden snails and may prove to be an effective control once it is cultured and distributed to areas with serious snail problems.

Research Briefs

Short Reports on Current Research in Agricultural Sciences

ENERGY NEEDS OF PREGNANT HEIFERS

Two years of research at U.C. Davis showed that pregnant heifers require little additional energy during the first two-thirds of gestation, but that they should be fed more and higher quality feed during the remainder of the gestation period when energy requirements increase rapidly.

PREDICTING MEAT QUALITY

Animal scientists at Davis are working on ways to determine an animal's meat quality at an early age by examin-

ing small samples of muscle from the neck and leg. If successful the research could take five years off the time needed to determine a beef animal's meat characteristics.

SMOG HURTS ALFALFA

U.C. Riverside plant scientists have shown through field trials that smog has a crippling effect on alfalfa—California's number two field crop. Significant yield and quality differences were evident in test plots growing in clean and smoggy air. Smog tolerant varieties now being developed by UC plant breeders and commercial firms may be released for planting in the near future.

EBBING TIMBER SUPPLY

Total timber removals in California during the next decade are likely to decline moderately but steadily, according to studies at UC Berkeley. By 1985 total removals will likely fall to about four billion board feet per year—about 70 percent of the 1970 level, reflecting policy constraints on timber removal from national forests and inventory constraints on supplies from private lands.

IMPROVING NITROGEN FIXATION

Molecular methods are now available to transfer nitrogen fixation genes from one bacterial strain to another; and U.C. agronomy and range science researchers believe it may be possible to incorporate these genes into crop plants. Thus legumes and other plants would not be dependent upon symbiotic relationships with bacteria to fix atmospheric nitrogen.