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Research in progress

Natural nitrate levels high

Soil scientists at U.C. Riverside have shown that the high levels of nitrate in many soils on the west side of the San Joaquin Valley are not due to fertilizer applications but to geological conditions. Uniformly high levels of nitrate found on virgin lands to a depth of 50 feet are due to mineralization of organic and fixed inorganic nitrogen existing in the geologic formations of the Coast mountain range, the researchers found. By processes of erosion and solution, the nitrogen in the rocks has moved into the alluvial fans on the west side of the valley.

Measuring denitrification

The development by J. F. Letey, Jr., U.C. Riverside soil scientist, of a method to measure directly the rate of denitrification occurring in a crop soil enables researchers to determine in about 1 hour in the field how much nitrate is being leached out of a crop soil and how much is being carried into the atmosphere. This capability is considered timely because of the concern of some scientists that nitrous oxide escaping from the earth's land and water surfaces may be weakening the ozone layer in the stratosphere.

Nitrogen movement

Field and laboratory research by P.F. Pratt at U.C. Riverside suggests that it generally takes about 10 years for nitrate to move downward out of a crop root zone through the unsaturated zone

sandy soils—the area between the root zone and water table—to a water table 100 feet deep, and about 50 years to reach the same depth through fine clays, silts, or silty clays.

Trees yield well

Experimental dwarf peach trees planted at very high density in a University of California project near Parlier became productive their second season in the field. Standard peach trees usually don't start bearing well until their third season because of earlier heavy pruning to shape them properly. Plant geneticist P. E. Hansche reports that the project's trees, genetic dwarfs in their second leaf, at the densest planting rates under study yielded 21.3 tons per acre, compared to current California averages of 15 tons for clingstones and 10 tons for freestone varieties. Additional study is required before firm conclusions are drawn as to dwarf trees' commercial production feasibility.

Fish don't fight

A widely held assumption that non-game fishes and rainbow trout compete against each other for food and habitat was not borne out in hours of observation by H. W. Li, wildlife and fisheries researcher at U.C., Davis. Li observed no intense contesting or combative behavior among different species. Measurements of daily activity, behavioral interactions and metabolic capacity for swimming at different temperatures show that rainbow trout habitat is not to the liking of non-game species such as hardhead, and vice versa. Species associating with each other

seem to be influenced primarily by physiological responses rather than to competitive interactions.

Colonies increase

Reports of the honey bee's doom in California are exaggerated, according to University of California, Davis, apiculturist Eric C. Mussen, who reports that the trend of severe colony losses caused by pesticides in the 1960s has been reversed. Mussen says beekeepers were losing about 15 percent of their colonies to pesticides in the late 1960s but increased their colony numbers by 25,000 over the past two years in spite of a severe drought that eliminated nearly all wild sources of nectar and pollen.

Pesticide-caused loss of bees in California is estimated at 20,000 to 50,000 colonies a year. In previous years the loss was as high as 89,000 colonies in one year. U.C. researchers say that, even if pesticides killed half of California's 500,000 colonies, there would probably still be enough bees to pollinate all crops except almonds, which have always required imported bees.

Heavy metal contamination

Environmental research by soil scientist A. L. Page at U.C. Riverside shows that motor vehicles cause trace metal contamination of soil and vegetation in a 100-meter-wide corridor adjacent to heavily traveled highways. Long-term (30 to 50 years) lead contamination of surface soil was shown to be three to four times greater in urban than in rural regions.