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Research briefs . . .

that conflicts of interest for particular uses can be expected to intensify.

These developments demand that agencies responsible for water project management have accurate information and methods of estimating water quality changes in order to consider alternative plans and make decisions.

Water quality models for predicting changes in the quality of irrigation return flows have been formulated. However, there is uncertainty as to the degree of their applicability to a specific system as complex as the San Joaquin River Basin.

Hydrosalinity models are being assessed to determine their applicability to the study area. Suggestions will be made to modify or update models to more accurately predict emission of salts, specifically in those models now being applied to the San Joaquin River. The project is being conducted by J. W. Biggar, K. K. Tanji, and R. J. Miller, U.C., Davis. (WSE 3399)

Improved tree propagation

Present methods of propagating some of our most important timber trees may in reality favor poor specimens—a shortcoming that does not become evident until the new tree has been growing

for some years. In a scientific advance that could have immediate practical use, University of California forest researchers and geneticists W. J. Libby and M. Freeling have developed techniques for vegetatively propagating superior Monterey pine seedlings from small trees held in a juvenile state, and report significant progress in achieving the same goal with the coast redwood.

The technique, involving repeated physical and chemical manipulation, which in effect arrests the aging process of young trees, is the first phase of a two-part project in which scientists hope to develop ways to regenerate superior timber trees from embryoid tissue cultures. Such genetic engineering could be of major importance to our forest industry, not only for the varieties involved in the present projects, but for most of our commercial trees, here and worldwide. Pilot projects to extend the Monterey pine technology to other species of Sierra conifers are in preparation.

Progress to date may be reason to be hesitant about current extensive replanting of redwoods in their native range. It may be wiser to plant no more of this difficult-to-eliminate variety than is necessary until research can come up with methods for selecting above-average trees instead of a random group or below-average group. (XXX 3750)

Stabilizing animal wastes

Rapid urbanization in southern California has forced the livestock industry to move out of former agricultural areas to areas where limited acreage is available for manure disposal.

Problems originating from the buildup of dairy cattle wastes have become an ever-growing concern. Dairies in the Chino Valley generate the same amount of total dry solids as would the waste of more than two million people. Livestock producers in other areas face similar problems. Improvement of waste handling techniques is a necessity.

In an attempt to solve the problem, soil scientists and agricultural engineers A. C. Chang and P. F. Pratt, U.C., Riverside, are studying on-site stabilization of dairy cattle wastes. If wastes were stabilized as they accumulate on the corral surfaces, the hazards of pollution and environmental nuisances would be greatly reduced, as would the number of corral cleanings required.

Attention is also being given to utilization of waste material. With this in mind, the researchers are recharacterizing and analyzing animal waste as an animal feed supplement, a source of fuel, and fertilizer. (SSE 2774)