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## Low-quality livestock feeds

As population and economic pressures mount, animal agriculture is forced to make less use of the more productive lands and to use smaller amounts of feedstuffs that can be consumed directly by humans. Unless animal utilization of fibrous agricultural products and by-products can be increased, the production and per capita consumption of animal products must decline.

Cellulose and hemicellulose are the most abundant organic materials on earth, but they cannot be utilized directly as a source of food for man. The ruminant, however, with its unique fermentative digestive system, can break down many of these fibrous materials and serve as an intermediary between man and this potential food source.

University of California animal scientists and nutritionists have been investigating this area for more than 50 years. Their research has provided much useful information on the feeding value of such diverse by-products as coffee grounds, date pits, grape leaves, almond hulls, and even recycled cattle manure (which they found to be of little value). Most recent and current efforts by animal scientists W. N. Garrett, U.C., Davis, and G. P. Lofgreen, Imperial Valley Field Station, have been concerned with improving the feeding value of poor-quality roughages, such as cereal straws and corn or sorghum stover.

The possible benefits of successfully

recycling agricultural wastes and crop residues are immense. If only one-half of the 4 million tons of cellulose residue from rice, barley, and sorghum grown in California each year could be converted to livestock feed equal to average-quality hay, enough energy would be salvaged to feed 570,000 beef cows annually, and at the same time air pollution from burning field crop residues would be reduced 55 percent. (ASC 1569)

## Drip irrigation

In the six years since our agricultural researchers began experimenting with drip irrigation—a water-saving technique originated in Israel—this system has spread rapidly in California and the nation. Acreage under drip irrigation is expected to exceed 100,000 acres in California and a half million acres nationally by 1980, with substantial impact both economically and in terms of conservation of a precious natural resource.

Drip irrigation (also called trickle irrigation) uses as much as 50 percent less water than conventional irrigation systems. It facilitates the use of poor-quality saline water; opens for use marginal land such as hillsides that cannot be irrigated economically by conventional furrow or flood irrigation; and reduces environmental problems such as nutrient leaching and drainage water pollution.

Research is required to resolve some major remaining problems, but drip irrigation already represents a significant advance in natural resource conservation and management. (AER 2592)

## Sesame project nears its goals

U.C. agronomists and plant scientists have devoted more than 10 years of intensive work to the development of sesame, a high-protein crop not now grown commercially in California, but viewed as one with considerable potential, particularly for arid, subtropical regions. The project is nearing its goal.

Through meticulous plant selection procedures (over 2,000 single plant selections were made) and extensive genetic experimentation, plant scientists D. M. Yermanos, R. E. Young, and F. T. Bingham, U.C., Riverside, have developed a high-yielding sesame variety with a rough seed coat. The seed can be shelled by friction without the traditional use of chemicals, which lower nutritive quality. The scientists have also developed mechanical harvesters, which could bring about radical changes in sesame growing in the United States and abroad.

These plant varieties and harvesting systems are now being thoroughly re-evaluated preparatory to release to interested California growers. (PLS 2118)

## Correction

In the article "A Crown Rot of Celery," *California Agriculture*, June 1976, page 11, the variety Tall Utah 5270 H 60-1-3 was erroneously referred to as "Tall Utah 5270 H 6-1-3."