

agricultural sciences

NUTRITION

Urea efficiency depends on diet factor

The use of urea as a dietary supplement for cattle to provide nitrogen for protein manufacture is a rapidly growing practice. It promises to allow the conversion of such nitrogen-poor carbohydrates as wood-pulp and wastepaper to valuable protein. (SN: 8/31, p. 218).

However, at the moment urea use is limited by a lack of a full understanding of what goes on in a cow's rumen, the first stomach that holds a large colony of bacteria capable of using both cellulose and urea to grow on. It is the protein in the excess bacteria that the cow digests to make steak. Dr. W. M. Beeson of Purdue University and Dr. C. Oran Little of the University of Kentucky in Louisville, speaking at the 24th annual Distillers Feed Conference, reported diet additives that apparently promote bacterial use of urea.

Dr. Beeson says five percent dehydrated alfalfa meal in the diet increases urea utilization by 66 percent. Five percent dried distillers' mash boosted utilization by 79 percent. Dr. Little reports that the dried mash contains factors, possibly including the amino acid proline, which aid the bacterial fermentation in the rumen.

FORESTRY

Wood sneaks back into boats

There is a massive trend on toward cheap, strong, easily-maintained fiber glass-reinforced boats, and a trend away from wooden hulls. Due to recent research results, however, wood appears capable of making a disguised comeback.

Dr. Bernard A. Parkin Jr. and colleagues at the Naval Stores Laboratory in Olustee, Fla., report that pine gum yields the precursor of a high-quality polymer of the kind used as a matrix for fiber glass. Gum from either live trees or lumber, or oily waste from paper mills, yield a rosin acid. Heated with phosphoric acid as catalyst, this yields a hydrocarbon rosin oil. In a Diels-Alder reaction with fumaric acid this oil yields a dicarboxylic acid. The acid is reacted with ethylene glycol or other higher alcohols to yield a polyester, which at the time of use can be copolymerized with styrene to form a tough, hard, waterproof, and chemical-resistant plastic. Reinforced with fiber glass, this plastic can be used for anything from boat hulls and auto bodies to furniture and home appliances.

PEST CONTROL

Aluminum foils aphids

Aluminum foil is proving to be almost a panacea to a number of vegetable and ornamental plants.

Agricultural Research Service entomologist F. F. Smith and plant pathologist R. E. Webb report that in tests at Beltsville, Md., foil treated plots showed a 90 to 98 percent reduction in aphid infestation over nearby untreated plots. The foil is laid down along the plant row in a strip, with holes cut out for the plant stems. Ultra-violet radiation is reflected skyward, and this radiation repels flying aphids.

By reflecting infrared radiation, the foil keeps the soil

cooler around the plants, and root systems grow better as a result. Acting as a mulch, the foil traps moisture in the soil at the same time as it prevents violent rain-water washout of soil and applied fertilizers. In addition, weeds are prevented from growing by the foil barrier. All this results, say the ARS researchers, in more than doubled yield. In one case, with squash, the yield was about five-fold.

PEST CONTROL

Sound may battle leafhoppers

Mankind increasingly is turning to sophisticated trickery to eliminate insects without poisoning himself and everything else with insecticides. A new tool of this type may result from the work of researchers at the University of California at Riverside.

Dr. George Gerghiou and graduate student James W. Smith Jr. are recording the mating call of a tiny insect, the beet leafhopper, a serious pest of sugarbeets, tomatoes and other crops. A disease called curly-top which does \$10 million damage annually is transmitted by the insect.

Conceivably analysis of the sounds the males and females produce, and determination of their function, could lead to broadcast imitations at mating time designed either to jam genuine male calls or lure females into poisoned traps.

RESISTANT STRAINS

New alfalfa weathers disease, insects

The livestock forage crop alfalfa is subject to \$57 million worth of damage annually by the alfalfa weevil. A soon-to-be available variety of alfalfa is the first strain of the legume to show some natural resistance to the weevil. Called Team, the new variety was developed for use in the East by the Agricultural Research Service in Beltsville, Md., in cooperation with state researchers in Maryland, North Carolina and other Eastern states.

Team's yield and quality are equal or superior to presently grown varieties. It is resistant not only to the alfalfa weevil but also to the pea aphid and to the diseases anthracnose, *Stemphylium* leafspot and common leafspot.

SANITATION

Meat law closes 700 plants

On Dec. 15, 1967, a Federal wholesome meat law went into effect which extended Federal sanitation standards for meat packing and processing plants from those doing business interstate to an additional 15,000 plants selling all their products within their own states. These plants produce between 12 and 15 percent of the nation's slaughtered meat. A national furor resulted from charges of adulterated meat and unsanitary conditions in some of the plants, and the law resulted.

Recently the U.S. Department of Agriculture disclosed that more than 700 of the affected plants have closed down since the law went into effect, rather than bring themselves up to the new standards.