

Knowledge in the Making



An even spray pattern is crucial for aerial application of agricultural chemicals.

New Method Cuts Cost Of Testing Aerial Spray Accuracy

Using a new, economical testing method that they developed, UA scientists Dr. George W. Ware and Norman A. Buck are helping agricultural pilots in Arizona check the spray patterns laid down by their aircraft.

Entomologist Ware and pesticide chemist Buck have led testing clinics for the fliers at Wellton, Marana, Chandler and Stanfield. Ware said, "Some aircraft lay down good, uniform patterns; some don't." A farmer who pays for aerial application gets his money's worth only when the spray pattern for a chemical is evenly distributed over the target area.

To read their test, the UA scientists use a \$250 instrument that measures the amount of red dye in a measured volume of water. The federal government has accepted their method as a reliable substitute for the older approved method, which requires instruments costing more than \$50,000.

For each test, 6-inch-wide, Velcro-backed laboratory dishes are placed every 3 feet along a 100-foot track, resting 3 feet off the ground. The pilot approaches from a right angle to that line, and flies over its center point. At 6 to 10 feet off the ground and 100 to 110 miles per hour, the pilot simulates a spray pass 3 times. The spray is a solution of red dye. The amount of dye in each dish can be measured precisely in the field.

When graphed, a good pattern shows a flat line across the middle 45 feet or so that represent the plane's effective swath. "A graph with humps and bumps indicates uneven distribution and it calls for work on the aircraft nozzle and spacing system," said Ware.

Ammonia Treatment Boosts Protein In Wheatstraw Fed to Yuma Cattle

UA animal scientists are checking ways to make straw and other low-quality roughages more useful in livestock diets. Tests at Yuma have shown good weight-gain by cattle fed wheat straw and a protein-mineral supplement for four months, then finished with a diet high in grain. Dr. Spencer Swingle and Dr. Donald Ray are testing an ammonia treat-

ment for straw that triples its protein value and increases its digestibility. They have found that in the Yuma heat, the process takes only 3 days, compared with 4 to 6 weeks where it has been tried in other states.

UA Releases Seed Stock For Salt-Tolerant Alfalfa

Alfalfa that will shrug off salt, even in water about 4 times saltier than levels encountered in commercial farming, has been developed by UA agronomists Dr. Albert K. Dobrenz and Dr. Melvin H. Schonhorst. They used repeated generations of selection in increasingly salty conditions, starting from a parent stock of the popular Mesa-Sirsa variety. The resulting seed stock can sprout in salt concentrations as high as 15,000 parts-per-million, about half as salty as the sea.

Dobrenz believes most interest in the germplasm will be in areas where salinity levels exceed 3,000 to 4,000 parts-per-million. "At these levels, normal alfalfa — or for that matter most other crops — find it difficult to survive," he said.

Plastic Sheets Warm Young Vegetables and Melons

Clear or black plastic sheets covering rows of planted seeds or transplants can provide a few extra degrees of warmth early in the growing season, giving plants a head start toward harvest time. Several years of testing by UA horticulturist Fred C. Harper and others have helped lead to some commercial uses for plastic mulch on vegetables and melons grown in central Arizona.

Plastic mulch can get several types of crops to harvest 2 to 3 weeks earlier than unmulched plantings. Harper said that one advantage for that in Arizona would be in local direct marketing, such as roadside stands, community markets and pick-your-own farms. "There has been a growing interest from consumers in buying their vegetables from direct markets," he said.



These two rows of cucumbers in south Phoenix were planted at the same time, the row at right with a clear plastic mulch covering, the row at left with no mulch.