

Chicken Feed From Clippings



Research specialist Steve Cockerham helped develop the Cal-Hy pilot program.

A CALIFORNIA turfgrass farm has found a way to turn clipping disposal from several hundred acres of grass into a money-making sideline.

Cal-Turf, Camarillo, the largest turfgrass grower in western U.S. currently grows more than 600 acres of bluegrass, dichondra and hybrid bermudagrass. Manicuring and constantly maintaining this much acreage is a large, round-the-clock job.

The byproducts of this care are large, too, primarily consisting of mountains of grass clippings. More than 1,000,000 pounds per month.

Getting rid of this huge volume of clippings has never been easy. And today, when pollution regulations make open burning impossible, the problem is compounded. Cal-Turf's solution is unique. They feed the clippings to chickens!

Basically, Cal-Turf has perfected

a process for turning dried grass clippings into a high-quality poultry feed supplement. Called Hy-Gold, the material has proved to be a rapid success among chicken ranchers.

However, the success of Hy-Gold didn't come easily. The project started as no more than an idea in the mind of Toby Grether, president and founder of Cal-Turf. In mid-1969 he

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Custom built 12-foot flail mower is used in grass clipping program at Cal-Turf. Clippings are processed within 45 minutes of cutting.

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sent a batch of grass clippings, dried in the summer sun, to Los Angeles to be analyzed for xanthophyll content. He found it in abundance.

Xanthophyll is the substance that produces the desired yellow pigmentation in a chicken's fat, its skin and in the yolk of its eggs. Chickens do not procure a large amount of xanthophyll naturally; it must be added to their diet in their feed. In the past, ranchers have used expensive corn gluten meal or marigold petals to fulfill the xanthophyll requirement for their birds. Less costly dehydrated alfalfa also has been used, but large quantities of this material are required in the ration to gain the proper level of pigmentation.

Based upon initial findings, Cal-Turf's dried grass clippings promised a high-level source of xanthophyll that was far less costly than corn meal or marifold petals, yet required only half the quantity needed with alfalfa to gain an equal degree of pigmentation. Best of all, the raw materials for this exciting new feed concept were plentiful and close at hand.

Getting from fresh clippings to today's finished product, however, involved many stages, plenty of man-hours and the creative thinking of Cal-Turf people.

One of these men is Steve Cockerham, Cal-Turf's chief research scientist. Steve, a graduate of Purdue with a masters degree in turfgrass from New Mexico State, played an important role in determining how the clippings should be harvested to preserve and maximize the all-important xanthophyll.

With the cooperation of the United States Department of Agriculture and several independent research laboratories, Steve supervised a one-year pilot project. Many experiments were conducted, including tests of stability and duration of xanthophyll content, time and temperature of processing for optimum quality of product, potential yields with varying methods of processing, and other important questions. Small dehydrators were constructed to determine these factors. The USDA, with larger facilities, helped pinpoint them. Finally, with their thesis proved in the laboratory, Cal-Turf turned toward developing commercial production of the new feed.

One of the major factors in processing grass clippings is speed, since Cal-Turf researchers learned that as much as 40% of the xanthophyll

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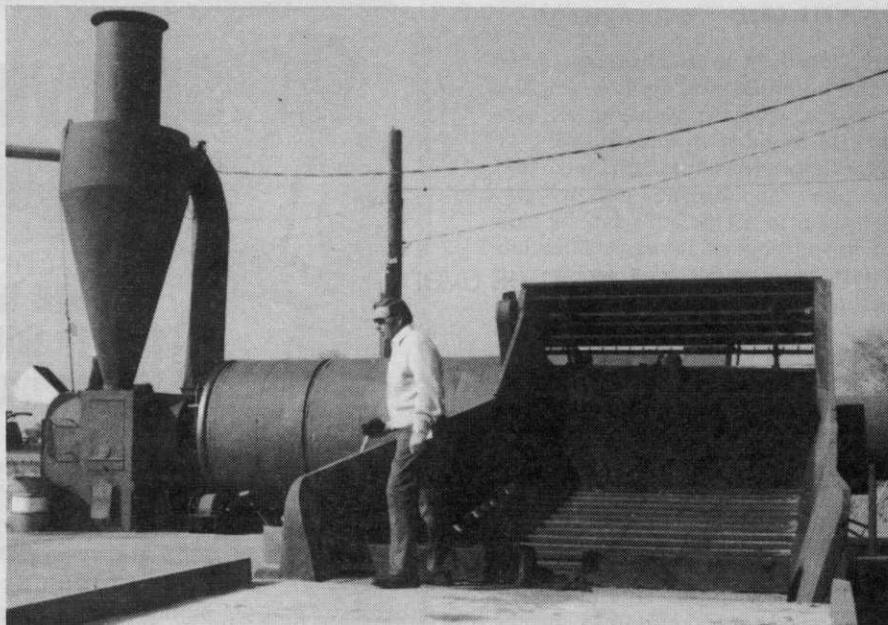
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content can be lost through oxidation just one hour after mowing. To solve this problem, unique harvesting equipment was developed to permit clippings to go from the field to the processing plant in less than 45 minutes.

The plant itself was the major item in the project. The job of building it fell to another Cal-Turf specialist, project manager Bob Chase. In his lengthy analysis, Bob toured at least 22 dehydrators which were being used for such various products as alfalfa, wood pulp, sawdust and grape pomace. After investigation and evaluation, an alfalfa-drying type was finally chosen for the core of the new plant. Added to it were facilities for grinding, pelletizing, cooling and storing the product, as well as a complex series of electronic controls to maintain critical temperature levels. Actual construction of the plant started in December, 1970. The first batch of Hy-Gold was produced on March 24, 1971.

The processing of the feed occurs in five main stages. First the raw clippings are dehydrated. Then, primary milling takes place, increasing the product density from 12 to



Dehydrator built on Tobias Grether ranch is used to convert grass clippings into Cal-Hy poultry feed. Unit was demonstrated at recent American Sod Producers annual conference.

18 pounds per cubic foot. Next is the pulverizing step (secondary milling) followed by pelletizing (which compacts the material to 48 pounds per cubic foot.) Finally, the pellets are crumbled for delivery to the consumer. In this last step different

sizes of crumbled particles can be produced to fit the varying needs of the poultry industry.

The plant is currently processing more than one million pounds of raw clippings per month. It is
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equipped with elevated dump tanks for loading out bulk trucks and 50-pound-bag packaging facility for small users. On-site bulk storage capacity is 150 tons, and these bulk tanks are equipped with a nitrogen gas generator to reduce oxidation and possible loss of xanthophyll.

Analysis of the feed now being produced at the plant shows higher levels of xanthophyll (and also desirable carotene and protein) than even the exhaustive research had predicted. So successful has the operation proved to be that a second dehydration facility of the same type has been set up at Cal-Turf's El Toro sod farm, located at the Irvine Ranch. The dried clippings from this unit are transported to Camarillo for final processing and marketing.

Perhaps the most encouraging aspect of the Hy-Gold development is the increased contribution the entire process is making toward ecological progress. Not only does the new facility reduce air pollution by making use of waste materials that at one time might have been burned, but the use of long-lasting pesticides has been completely eliminated to maintain purity of the finished feed. The few products that are used in the field are short term and biodegradable. No clippings ever are processed until all traces have vanished. Some biological pest controls also have been successfully employed, and continuing research is being conducted in this important area.

Cost of Weed Control Compared With Slide Rule

A slide rule that compares the cost of using Assault soil sterilant with that of 21 other herbicides is now available from West Chemical Products, Inc.

The movable slide lists herbicide ingredients, unit price, rate of application, and use-cost. An application guide gives dilution instructions for proper use of Assault Concentrate on various types of soils. The tabulation shows that Assault can save the user from \$10.00 to several hundred dollars over current weed control costs.

Assault, a liquid soil sterilant, soaks into the ground and attacks roots and seedling growth. Weeds begin to wither and die within 24 hours. A single treatment can prevent weed growth for up to 12 months. Assault is designed for areas where no plant growth is desired.

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New Formulation of Dylox Registered For Gypsy Moth

A new formulation of Dylox insecticide has been developed by Chemagro Division of Baychem Corporation for use in gypsy moth control programs conducted under the supervision of governmental agencies. A temporary permit application for the new formulation, Dylox 80% SPA insecticide, has been filed

with the Environmental Protection Agency.

Dylox insecticide has been used on a variety of ornamentals and vegetable and field crops for more than a decade. The compound offers the advantage of pest control without destroying beneficial insect populations when applied as directed. Its low order of toxicity to beneficial insects has permitted extensive use in integrated control programs on agricultural crops.

A registered ultra-low volume (ULV) formulation of Dylox has provided exceptional control of gypsy moth larvae on forest and shade trees. However, since the ULV formulation can cause some spotting of automobile paint finishes, it is not to be used in areas where the spray might come in contact with automobiles.

Dylox fits well into a forest environment. It is a bio-degradable insecticide with relatively low toxicity to fish and wildlife as well as beneficial insects. Data indicates that exposure to dosages higher than normal forest insect control rates has not resulted in significant reductions of fish populations.

A mixture of Dylox 80% SPA and horticultural oil has been found suitable for application in helicopter and fixed-wing aircraft spray systems.

In cooperation with the U.S. Department of Agriculture Forestry Service, additional testing is to be conducted under the 1972 temporary permit in the New England and Mid-Atlantic states where gypsy moth infestations are most severe.