

HYDROPONICALLY PRODUCED OAT SEEDLINGS

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Workers at Purdue over the last couple of years have done additional work on hydroponically produced cereal seedlings. A summary of this work follows.

Hydroponically produced oat seedlings are used exclusively for livestock and poultry feed. Therefore, it is of interest to know if there is a net gain or loss of the various constituents as the result of the hydroponically produced seedlings. The data in the following table were calculated from the data obtained from these experiments. The chemical composition of 100 kg of oat seed is compared with that which would be obtained from 3- and 6-day-old hydroponically produced seedlings grown from 100 kg of seed. The most striking changes were the increases in fresh weight (261% at the end of 3 days growth, and 539% at the end of 6 days growth) and Beta-carotene, particularly in the 6-day-old seedlings. Also, the water soluble carbohydrate fraction was considerably larger in the seedlings than in the original oat seeds. Protein content did not change to any extent, although after 6 days it appeared as though there was a slight decrease in the amount of protein. Dry weight decreased 7.2% after three days of growth and 22.7% after six days of growth as compared to the original dry weight of the oat seeds.

The dry matter contents of the oat seedlings at the beginning of the experiment were 87.7%; the corresponding dry matter contents of 3-day-old seedlings were 31.2%; and those of 6-day-old seedlings were 12.6%. The increase in fresh weight from 3 to 6 days is primarily one of uptake of water and elongation of cells. Actually these experiments were conducted in the presence and absence of light and also in the presence and absence of mineral elements in the cultural solution. Light and mineral elements had a negligible effect upon fresh weight, dry weight and soluble carbohydrates. The presence of light did increase the Beta-carotene content of both 3- and 6-day stages.

In summary, the following had occurred in 6-day-old seedlings as compared to oat seed.

1. A five to sixfold increase in fresh weight had occurred.
2. A 22% decrease in dry weight had occurred.
3. No change in crude protein had occurred on a dry weight basis.
4. No change in ash content had occurred on a dry weight basis.
5. A sixfold increase in soluble carbohydrates had occurred (conversion of starch to soluble carbohydrates which can be transported and utilized in the plant).

Although these experiments were conducted with oat seeds, the same general relationships should also apply for barley seeds.

<u>Analysis</u>	<u>Oat Seed</u>	<u>3-days' growth</u>	<u>6-days' growth</u>
Fresh weight, kg	100	261.0	539.0
Dry weight, kg	87.7	81.4	67.8
Sol. carbohydrates, kg	1.5	6.3	9.7
Crude protein, kg	11.5	12.2	10.4
Ash, kg	2.92	2.47	2.48
Beta-carotene, g	0	.172	.926

(S. E. Brauen, Extension Agronomist, Western Washington Research & Extension Center, Puyallup, Washington State University. Agronomy & Soil Tips, No. 249, Sept. 1, 1971.)

ALICIAGRASS

A type of Bermudagrass (Cynodon dactylon) recently has been announced and recommended in popular press and a number of questions have been asked about its suitability for irrigated pasture in California. Information available to date is summarized in the following brief paragraphs. Aliciagrass does not set seed and is reproduced vegetatively with sprigs.

From Texas, dated 1969: It has not been tested by Texas A&M or other stations and they have no recommendation.

From Georgia in 1971: The company promoting Aliciagrass has been unwilling to send sprigs of Aliciagrass for testing. Zimmerly Select Bermudagrass, produced earlier by the same company did not perform as well as Coastal Bermudagrass.

In California Bermudagrass has been successfully used in the San Joaquin Valley in irrigated pasture, especially in the initial steps of reclamation of saline-alkali land. Farm Advisor Bob Miller shepherded many of these ventures. Vegetatively reproduced Coastal Bermuda was used in the beginning but the seeded variety NK-37 is more commonly used.

Dr. W. F. Lehman of the U.C. Imperial Valley Field Station is watching Aliciagrass there and Arizona Farm Advisor James Armstrong is also evaluating Aliciagrass. More substantial information should be available in the near future.

Remember, Bermudagrass is strictly a hot weather grower.

A relatively new variety of Bermudagrass, Coastcross-I, has been developed by the Georgia Coastal Plain Experiment Station. It produces better quality feed than Coastal and thus animal performance is better. Coastcross-I is less winterhardy. I know of no California data.

Aliciagrass, alias Alisa or Greer's Alicia, is produced by Cecil Greer Grass Farms, Edna, Texas 77957, phone 657-2763.

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