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DIET TESTS AT MARQUETTE HATCHERY

By

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This series of tests with various diets for trout was initiated when tests using Head Tide pellets were suggested. Since the arrangement of ponds at Marquette Hatchery is ideal for such tests, and the hatchery superintendent, Mr. Russell Robertson, made them available, the opportunity was present for testing other diets coincident with the Head Tide tests. The following diets were used on brook trout at the Marquette Hatchery:

No. 1 - Pork liver, 35 percent; Pork melts, 35 percent; Rowena meal, 30 percent.

No. 2 - Pork liver 42 1/2 percent; Pork melts, 42 1/2 percent; Torula yeast, 15 percent.

No. 3 - Pork liver, 35 percent; Pork melts, 35 percent; Chick starter, 30 percent.

No. 4 - Pork liver, 35 percent; Pork melts, 35 percent, Chick starter, 30 percent; plus 1 mg. ascorbic acid per 15 pounds of feed.

No. 5 - Head Tide pellets.

No. 6 - Lewis mix, special fine.

After the first two months of the tests, Mr. Lewis added Torula yeast to his special mix.

Due to difficulties imposed by severe winter conditions, monthly checks during January, February and March were not accurate so the results from January to May, 1952, are summarized. Each diet was fed to three ponds of fish, with the exception of the diet containing Rowena which was fed to two ponds of fish. One pond in each three-pond series contained cull, or slow-growing fish, except diets No. 1 and 4, where normal fish were carried in each of the ponds.

Data in Table 1 represents a total inventory of the fish from January 7 to April 28, 1952. Diets No. 1 and 6 began one week later, on January 14, and ran for the same length of time, ending on May 5, 1952. The figures represent an average of the two or three ponds of normal fish on each diet. Culls will be discussed under a separate heading.

Diet No. 2, composed of 42.5 percent each of pork melts and liver and 15 percent Torula yeast produced the highest percentage gain in body weight, the best conversion factor, the lowest cost per pound of fish produced, and the highest poundage of large fish graded. The best record for percent of mortality was shown by the Head Tide pellets, but this diet produced the lowest percent of gain and ranked third as to cost per pound of fish produced.

Results of the diets on slow-growing fish are presented in Table 2. There were none of these fish included in diets No. 1 and 4.

Diet No. 2, pork liver and melts plus 15 percent of Torula yeast, again made the best growth and with lowest cost per pound of fish produced. Evaluation of the various diets may be made by comparing the figures given in Table 1 and Table 2. It is obvious that the diet containing Torula yeast at a 15 percent level proved to be the best hatchery diet in these tests. Other factors, such as time spent in preparation and feeding have not been included in this study.

Table 1

	Diet No. 1 Rowena	2 Torula yeast	3 Chick starter	4 Chick starter Ascorbic acid	5 Head Tide	6 Lewis mix
Total weight per pond of fish, May 5.	122.25	226.0	194.75	210.5	166.25	195.25
Total weight per pond of fish, January 14.	80.0	125.0	125.0	142.5	125.0	125.0
Gain in weight of fish.	42.25	101.0	69.75	68.0	41.2	70.25
Percentage gain in weight of fish.	52.8	80.8	55.8	47.65	32.9	56.25
Total pounds of food fed.	277.5	459.0	424.0	471.5	224.4	420.0
Pounds of food fed per pounds of fish gain.	6.57	4.5	6.07	6.9	5.436	5.97
Diet cost per pound.	0.10	0.097	0.087	0.866	0.106	0.115
Food cost per pound of fish gain.	0.657	0.436	0.526	0.597	0.5771	0.6865
Percent of body weight fed.	2.3	2.3	2.3	2.35	1.3	2.3
Number of fish per pond, January 14.	2500.0	4300.0	4450.0	5200.0	4000.0	4250.0
Number of fish per pond, May 5.	2486.5	4292.0	4440.0	5187.0	3990.5	4242.5
Percent mortality.	0.54	0.18	0.22	0.25	0.130	0.175
Pounds graded: up to 5 inches	38.75	42.5	70.0	64.3	59.75	53.5
over 5 inches	83.5	183.5	124.75	149.3	106.5	141.75

Average water temperatures: January 7 to February 4 -- 38.5° March 4 to March 31 -- 40.0°
February 5 to March 3 -- 39.0° April 1 to April 28 -- 43.0°

Table 2

	Diet No. 2 Torula yeast	Diet No. 3 Chick starter	Diet No. 5 Head Tide	Diet No. 6 Lewis mix
Total weight per pond of fish, May 5.	186.0	140.0	105.5	151.0
Total weight per pond of fish, January 14.	90.0	87.0	81.0	90.0
Gain in weight of fish.	96.0	53.0	24.5	61.0
Percentage gain in weight of fish.	106.6	62.0	30.2	67.7
Total pounds of food fed.	408.5	343.0	188.0	350.0
Pounds of food fed per pound of fish gain.	4.2	6.4	7.6	5.7
Diet cost per pound.	0.0969	0.0866	0.106	0.115
Food cost per pound of fish gain.	0.4069	0.5542	0.8056	0.6555
Percent of body weight fed.	2.6	2.6	1.8	2.5
Number of fish per pond, January 14	5800.0	5700.0	5800.0	5800.0
Number of fish per pond, May 5.	5727.0	5626.0	5678.0	5746.0
Percent mortality.	1.25	1.3	2.1	0.93
Pounds graded: up to 5 inches	123.5	113.0	84.0	112.5
over 5 inches	62.5	27.0	21.5	38.5
Average water temperatures:	January 7 to February 4 -- 38.5°			
	February 5 to March 3 -- 39.0°			
	March 4 to March 31 -- 40.0°			
	April 1 to April 28 -- 43.0°			

Further tests of diets, including Head Tide pellets, will be made at this station if pond conditions permit. The ponds here are in very poor condition and are to be refinished this summer (1952).

Since six different diets were being tested on one species of fish, brook trout, in the same water supply, a sample of each group and a sample of wild brook trout were sent to the Home Economics Department of Michigan State College at Lansing or organoleptic tests. Results of these tests have not been reported as of June 25, 1952, so cannot be included in this report.

The fine cooperation and interest of Mr. Russell Robertson, hatchery superintendent, and the hatchery crew throughout the progress of these tests is gratefully appreciated.

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