

# Yeast Culture Investigations

## live yeast culture tested for production efficiency as feedstuff for chicks

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**Yeast culture** is being used as a poultry feedstuff in sections of southern California as part of the constant attempt to increase efficiencies of meat and egg production.

Basic information was needed to determine whether yeast culture should be used in meat-bird rations—a tentative answer to this problem can now be given. Further work is needed on feeding yeast culture to laying hens.

Yeast culture is defined by the California Department of Agriculture as *the product composed of yeast grown on malt, in a base of cereal meal and capable of producing active fermentation*. It is, in other words, a live yeast preparation.

The amount of yeast material present in yeast culture is quite low, less than 10%. Since the manufacturers of yeast cultures generally suggest that only low levels—approximately 2%—of the product can be used in poultry mashes, the amount of yeast-cell material added to the feed by yeast culture is of the order of 0.2%.

Yeast culture usually contains about 12% crude protein, because most of its bulk is made up of ground grains. Dried pure yeast, on the other hand, contains approximately 50% crude protein.

The early period of chick growth is perhaps the best one to use for critical tests of quality of a feedstuff, because the chicken's requirements are generally greatest during this period of its life. Also, more extensive trials with larger numbers of birds can be performed with young birds than with adult birds. The tests carried out here were made with White Leghorn chicks of both sexes.

The trials were started during the first week after hatching and were usually continued for six to eight weeks. In the fifth experiment only a three-week period was used. The number of chicks per group varied from 10 to 50 birds of each sex.

The diet used contained corn, wheat, soybean oil meal, fish meal, barley, alfalfa meal, limestone, bonemeal, salt, manganese sulfate, vitamins A and D, and riboflavin.

A summary of the growth results obtained in the six experiments is presented in the table. It is apparent from these data that the addition of yeast culture to the diet increased the rate of

growth of male chicks, but not that of females. The best estimate of the magnitude of the effect for males is about 5% of the final weight—a significant difference.

Data on feed consumption were obtained, but since no significant differences in feed efficiency were noted between pens which received yeast culture and those which did not, they are not included here.

From the results obtained, it appears that yeast culture may have a place in the production of Leghorn cockerel broilers.

The effect is primarily one of increasing the growth rate over that obtained when an ordinary broiler mash is used. Although there is no evidence that feeding yeast culture increases the efficiency of feed utilization, there is a slight increase in over-all efficiency of production, because of the size difference at a particular age.

Since yeast-fed cockerels may be expected to weigh approximately 5% more than those not so fed, the poultryman can estimate the value of the growth effect, and determine if feeding yeast culture will result in a greater profit.

There is apparently no advantage in feeding yeast culture to pullets, as far as growth is concerned; consequently this practice is not recommended.

Some of the several possible explanations for the results observed are as follows:

1. Yeast culture may supply directly some needed nutrient. If this were true, killed yeast culture should have the same effect as the live preparation. This was studied in some trials but the results were inconclusive. Consequently, this possibility remains unanswered.

2. The yeast cells, while growing in the alimentary canal, may produce some unidentified nutrient that affects the growth of males, but not of females.

3. The addition of yeast culture may, in some unknown way, aid males to utilize feed materials more efficiently. This explanation does not appear likely, because yeast culture affected only the growth rate, not the ratio of feed eaten to body weight attained.

A practical broiler mash containing 2% of yeast culture may be expected to increase the growth rate of Leghorn cockerels about 5% when compared to ordinary broiler mashes. No increase can be expected in efficiency of feed use—gain per pound of feed eaten. The growth rate of Leghorn pullets is not affected. At the present time, no recommendation can be made concerning the use of yeast culture for feeding laying hens.

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The effect of yeast culture on the growth of young chicks. In almost all instances, 2% yeast culture replaced 2% barley in a practical broiler mash

Experiment number		Weight in grams at the end of the experiment		Difference in favor of yeast culture		
		Without yeast culture	With yeast culture	grams	males %	females %
1	males	544	585	41	7.6	
	females	475	476	1		0.2
2	males	594	639	45	7.6	
	females	519	500	-19		-3.7
3	males	417	456	39	9.4	
	females	372	390	18		4.9
4	males	411	427	16	3.9	
	females	367	376	9		2.5
5	males	166	167	1	0.6	
	females	148	147	-1		-0.7
6	males	378	401	23	6.1	
	females	336	351	15		4.5
				<b>Average per cent difference</b>	<b>5.5</b>	<b>1.3</b>