Safflower Seed Meal

oil meal proves promising as protein source for laying hens

C. R. Grau and Phyllis A. Zweigart

An economical protein source for laying hens has become available because improved methods of seed hull removal make possible the manufacture of safflower seed oil meals containing as much as 40% crude protein.

Results of preliminary feeding trials indicate that at least 15% of safflower seed oil meal can be fed in place of soybean oil meal in an all-mash ration for laying hens.

Studies of safflower protein for chicks conducted at Davis indicated that lysine and methionine are not present in amounts high enough to allow its use without combination with better sources of these amino acids. Because the hens' requirements for these amino acids are not well established, calculations of practical diets using safflower seed oil meal as the principal protein source could not be used in evaluating this new feedstuff. For these reasons, a feeding trial was devised to test the value of safflower seed oil meal in direct replacement of soybean oil meal with practical rations containing grains and fish meal.

Four groups of 15 White Leghorn hens each were selected on the basis of previous egg production. The control ration—Diet I—contained the following ingredients in amounts per 101 pounds of diet: soybean oil meal—44% protein—13.5 pounds; ground barley 30 pounds; alfalfa meal 5 pounds; fishmeal—64% protein—3 pounds; ground corn 21.5 pounds; special steamed bonemeal 2 pounds; ground limestone 1 pound; ground milo 20 pounds; dried whey 1.5 pounds; flaked oyster shell 3 pounds; salt 0.3 pound; Vitamin A—2250 I.U. per pound—and Vitamin D—300 I.C.U. per pound oil—0.2 pound; manganese sulfate 6 grams; and riboflavin 0.05 gram.

The control diet was compared with the experimental diets in which part or all of the soybean protein was replaced by safflower seed protein.

Diet II continued 9% soybean oil meal and 5% safflower seed oil meal. Diet III contained 4.5% soybean oil meal and 10% safflower seed oil meal and Diet IV contained 15% safflower seed oil meal. The safflower seed oil meal contained 41% crude protein. The total crude protein of the diet was kept constant at 15.9%—calculated—by varying the levels of corn.

The birds were maintained in individual laying cages for 11 weeks, during which time feed and water were available continuously.

Egg production data presented in the table indicate clearly that there were no discernible differences in the rates of egg production among the four groups. The drop in production among all groups toward the end can reasonably be attributed to the summer period of the experiment.

There were no appreciable differences in feed consumption among the groups, and no mortality during the experiment.

After seven weeks on the diets and at the end of the experiment, all eggs laid during one day were broken out and examined for interior quality. No abnormal yolk or albumen conditions were found. Storage trials with eggs from this experiment will not be completed for a number of months; hence nothing can be said concerning the quality of the stored eggs.

Eleven-week Trial

Protein Supplement—%	Egg production %			
	First 4 weeks	Second 4 weeks	Third 3 weeks	All 11 weeks
Soybean oil meal—13.5 ..	73	70	64	70
Soybean oil meal—9.0 Safflower seed oil meal—5.0 .	72	69	46	64
Soybean oil meal—4.5 Safflower seed oil meal—10.0	75	62	58	66
Safflower seed oil meal—15 .	72	66	57	66

C. R. Grau is Associate Professor of Poultry Husbandry, University of California, Berkeley.

Phyllis A. Zweigart is Senior Laboratory Technician, Poultry Husbandry, University of California, Berkeley.

The studies of safflower protein for chicks were conducted by F. H. Kratzer, Associate Professor of Poultry Husbandry, University of California, Davis.

TORTRIX

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ment were made in July at harvest. The results are shown in the accompanying table.

Plot	Treatment	Fruit examined	No. Tortrix	No. Twig borer	No. Codling moth	% wormy
1	DDD-Petal fall Parathion—May	1,000	0	5	0	0.5
2	DDD-Petal fall Malathion—May	1,000	0	7	0	0.7
3	DDD-Petal fall Parathion—June	1,000	1	5	0	0.6
4	Perthane-Petal fall Perthane—May ..	1,000	21	9	1	3.1
5	Check	1,000	54	21	1	7.6

Residues were run on the harvested fruit with the following results: Parathion in May, negative; parathion in June, 0.12 ppm—parts per million; malathion, negative; Perthane, 2.43 ppm.

These data indicate that malathion is as effective against orange tortrix as is parathion, and could be substituted for parathion in the May spray—if grower applications substantiate these results. There is apparently no residue problem with the use of malathion.

Perthane reduced the worm count below the check plot but did not measure up to either parathion or malathion.

There was no significant difference between the May and June sprays of parathion on these plots. Because the May spray is the proper timing for codling moth, it would be advantageous to retain this timing. Also, it would reduce the possibility of any residue problem.

In addition to the above plots, a few trees were sprayed in May with Diazinon, a new organic phosphate. The material showed promise in reducing the percentage of wormy fruit over the check, but because one spray was applied on only a few trees, no definite conclusions can be drawn. Further tests must be made to determine whether this material has a place in the control of orange tortrix on apricots.

Harold F. Madsen is Assistant Entomologist, University of California, Berkeley.

Arthur D. Borden is Entomologist, University of California, Berkeley.

Robert E. Clark is Research Assistant, Entomology, University of California, Berkeley.

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