VI. SUMMARY AND CONCLUSION

A biological trial was conducted to evaluate the effect of enzyme complexes for enhancing the nutritive value of low cost agro-industrial by-products like sunflower meal (SFM) and deoiled rice bran (DORB) in the diets of laying hens in the second phase of production.

The performance and health parameters were studied for six periods of 28 days each. The design was a 4 X 3 factorial experiment using 288 BV 300 layers subjected to 12 dietary treatments with four replicates of six birds each.

Enzyme A or B was supplemented to increasing inclusions (10, 15, 20 and 25%) of SFM and DORB based diets and hence 12 dietary treatments were made. Enzymes A and B had different activities of xylanase, pectinase, cellulase and phytase. Enzyme B had amylase in addition. Both these enzymes were added at the rate of 0.5 kg/ton of feed.

The results of the laboratory analysis of feed ingredients SFM and DORB were higher in NSP contents (pentosans, cellulose and total NSPs) than that of maize and soybean meal. The rising levels of SFM and DORB in the diets simultaneously increased the pentosans, cellulose and total NSPs and decreased the pectin contents in the diets 1 to 4 also.

The increased levels of SFM and DORB in the diet had significantly (P<0.05) increased the feed intake and decreased the feed efficiency. In groups fed with enzymes, significant reduction in feed intake up to 5.74 g/bird/day (with enzyme A) and up to 6.57 g/bird/day (with enzyme B supplementation) along with improved feed efficiency values were observed. Increasing levels of SFM and DORB resulted in significant reduction in egg production due to increased fibre and decreased energy levels in the respective diets. However, enzyme A or B addition resulted in numerical increase in egg production compared to hens fed non-enzyme diets.
Feeding varying levels of SFM and DORB with and without enzyme A or B had no significant influence on egg weight though numerical improvements were observed upon enzyme supplementation. Intestinal viscosity and faecal moisture content reduced with increasing inclusions of SFM and DORB and enzyme supplementation was able to bring down the viscosity and faecal moisture considerably in all the treatment groups.

A net profit of 91, 156, 142 and 149 rupees per ton of feed and 114, 200, 224 and 195 rupees per ton of feed were generated through enzyme A and enzyme B supplementation, respectively to 10, 15, 20 and 25% levels of SFM and DORB diets.

Based on the results of the present investigation, the following conclusions can be drawn.

- Sunflower meal and deoiled rice bran can be safely included in the layer diets up to 25 per cent each, with efforts in formulation to ensure a good nutrient profile.

- Enzymes A or B in layer diets improve the productive performance of the layers fed sunflower meal and deoiled rice bran diets as evidenced by improvement in feed efficiency and egg production with concurrent reduction in feed intake, intestinal viscosity and faecal moisture.

- Enzyme B supplementation had shown more beneficial effects in all the production parameters than the enzyme A supplementation to sunflower meal and deoiled rice bran based diets.

- Enzyme supplementation is economical and cost effective as it paves way for higher inclusions of low cost agro-industrial by products like sunflower
meal and deoiled rice bran without causing performance reduction when compared with normal expensive layer diets.