I. INTRODUCTION

The challenges of globalization and the determined efforts by the industry and academia, have brought in a monumental improvement in the productivity of birds, not just quantitatively, but also in terms of quality. Commercial layers which were producing 300 eggs viably in one laying cycle a decade back are producing 30 eggs more in the same cycle. The broilers which struggled to touch a live weight of 1.6 Kg with an FCR of 2.25 at 42 days of age are clearing 2 Kg body weight with 1.8-1.85 FCR at the same age today. All these, however, have not come with a compromise in quality of the produce. Consumer awareness on product quality has also increased greatly over the years and hence the concept of feeding poultry has attained a new direction.

In the past few decades the Indian poultry industry has evidenced a remarkable growth rising from a practically non-existent status to rank fourth in table egg production and sixteenth in broiler production. The contribution of the Indian poultry industry to the GDP is estimated at Rs. 40,000 crores, a figure which puts it on par with the much coveted telecom sector. Today, India produces 42,000 million eggs and 1,400 million broilers annually. The compounded feed requirement for sustaining these figures is about 15 million tons, annually.

As well known, poultry is a feed intensive activity with the cost of feed alone tallying up to 70 to 75 per cent of the production cost. Over the past decades, the growth in the poultry industry has helped the agricultural sector greatly by creating demand for the produce as well as assuring better returns to agriculture sector. With the continued growth trends, the demand for feedstuffs is increasing. On the other hand, the ever increasing human population has been strengthening the demand for food grains consistently. The pressure of demand is evident from the feed ingredient prices, the average values for which have been increasing every year.

It is said that necessity is the mother of all inventions. The necessity to keep a tab on the escalating feed cost in poultry has initiated the usage of non-conventional low cost feed ingredients. Several such ingredients like deoiled rice bran (DORB), sunflower meal (SFM) and rapeseed meal (RSM), have found their way into poultry feeding
(Devegowda 1987). However, their usage in poultry feeds is limited by the presence of antinutritional factors (ANFs)

Most of these non-conventional low-cost feed ingredients are agro-industrial by-products. From such products, high value nutrients (oil, starch, syrup etc.) are separated for human use and the remainder would be directed for poultry usage. Usually, such products are rich in fibre which is one of the major antinutritional factors in poultry production. The semi-soluble Non-starch Polysaccharide component of the fibre has been found to have adverse effects on digestion and absorption of nutrients due to its ability to increase viscosity in the birds’ intestines.

Birds lack endogenous enzymes capable of degrading these fibrous material which puts a constraint on the inclusion levels of fibre rich agro-industrial by-products in poultry feeds. Here, it is hypothesized that supplementation of such diets with enzymes like cellulase, xylanase, pectinase etc., would possibly improve the nutritional properties of such feeds thereby making it an efficient poultry feed. While several studies have been conducted regarding enzyme application in poultry diets, results have been reported to be inconsistent, especially on the farm. In every seminar and technical gathering the existence and magnitude of benefits of enzymes in poultry diets are being vouched for by some scientists while the other scientists and several farmers report contradicting on-farm observations.

With this information in the background a study was planned with the following objectives.

- To screen some agro-industrial by-products (sunflower meal, de-oiled rice bran and groundnut cake) for different non-starch polysaccharides.
- To identify suitable enzymes for specific feedstuffs and develop enzyme mixes for compounded diets.
- To conduct a qualitative survey of layer farms on general approach to enzyme application in layer feeds, with the aim of identifying the practical problems lying therein.
To study the efficacy of enzyme supplementation on the productive performance of commercial layers.

To draw a comparison between the inferences derived from the field trial and the farm-survey, and identify the factors responsible for the variation between the research findings and the farm level results.

To make recommendations based on the research outcome for the benefit of farmers.