
COPRA MEAL: a by product of copra processing

By Josefina C. Suharto

An ITC/UNCTAD/GATT publication titled, *Animal Feed Ingredients: a study of selected markets*, has classified feeds on the basis of their fiber content and the amount of total digestible nutrients they furnish. They are either as concentrates, roughages or compound feeds. The concentrates are feeds that are low in fibre and high in total digestible nutrients. They include various grains and high-grade by-products such as wheat bran, oilcake, skim milk, etc. Roughages, on the other hand, are high in fibre but low in total digestible nutrients. Some examples of these are hay, straw and silage. Meanwhile, no single feed element provides all the nutritional requirements of a certain type of livestock, and balanced feeds have become more and more important as livestock producing units have increased in size. These feeds are normally referred as compound feeds and are made up of carefully measured ingredients.

A wide range of compound feeds are being manufactured according to the requirements for each type of animal product. The most important categories are those for cattle, poultry and pigs. Within limits, compound-feeds are interchangeable. In its formulations, however, a compounder, takes into account such factors as tolerances (toxic

levels in certain ingredients), nutritional value of the major items used and the cost of the ingredients. Consequently the compound feed industry, particularly in the developed countries, has become increasingly flexible in its use of raw materials.

Copra meal

Copra meal, a by product of copra processing, is classified as concentrates. In importing countries it is one of the important ingredients and is largely used as feed to cattle and sheep. As such it

not only does it enhance milk production in dairy cattle but it provides a quality aroma to cow's milk. It also does not transmit any flavor to the flesh or milk. It is reported that feeding with copra meal maximizes milk production to as much as 30 liters per cow per day.

has to compete with other feed ingredients such as other oilmeals, grain (corn, barley), sorghum, grain substitutes (cassava, sweet potato, bran) and others. In terms of production, its share constitutes only about 1.3% and 2.5% of the export of the entire oilmeal sector.

In spite of the competition it faces, still copra meal continues to be a preferred ingredient in feed formulations. But what makes it so? Reports indicated that not only does it enhance milk production in dairy cattle but it provides a quality aroma to cow's milk. It also does not transmit any flavor to the flesh or milk. It is reported that feeding with copra meal maximizes milk production to as much as 30 liters per cow per day. As feed ingredient, copra meal is as good if not better than corn gluten feed for dairy cattle. Besides it is cheaper than either corn or fine rice bran, two principal ingredients in concentrate mixtures for dairy cows.

Proving further the high nutritive value of the meal, was a feeding trial with lactating cows conducted in the Philippines, wherein varying levels of copra meal were used. During early lactation, animals feed with 25% copra meal-ration had the highest milk/concentrate ratio and milk production persistency. In addition, a savings of P.011 or an equivalent of 1 liter of milk for every 100 kg concentrate fed was also attained. The experiment involved three concentrate rations containing 0%, 5% and 25% copra meal fed to selected milking cows who were on their 60 day lactation and who have been producing at least 10 kg milk daily.

Process

In the early days prior to the introduction of expellers, coconut cake was produced from hydraulic presses in the form of slabs about 35 to 40 square cm and 2 ½ to 3 ½ thick, hence the name cake. With the use of presses, which are usually named according to the way in which the pressure is applied, (i.e. wedge, screw, hydraulic), cakes no longer are in the form of a compact mass but in broken flakes or fragments and are disintegrated into meal. But the residue from solvent extraction is a fine meal. The main advantages of extraction by means of expellers are the continuous working, the relative simplicity and the low installation cost.

Meanwhile, the oil content of the meal which is a source of its protein content, varies according to the efficiency of copra milling. In Sri Lanka, for instance, the mill poonac has the lowest oil content and comes into the market as flat round cakes; the expeller poonac which is a dark-colored lump and the chekku poonac. The latter type, the result of inefficient pressing, contains the highest amount of oil which reaches to about 26%.

Quality

Contrary to the present stringent regulations being imposed by importing countries, earlier there was only a minimum standards required which mostly focussed on oil and moisture content of the meal. By ocular inspection, however, coconut oil cakes and meals should be almost white in color, with a reddish tint due to the presence of particles of the kernel skin. If the color is darker, this indicates that the kernels have been overcooked at

the time of oil extraction. Dark colored cakes are not favored as animal feeding stuff because too high a temperature in the process of expelling will considerably decrease the digestibility of the feedmeal. When new the cake has a pleasant sweet odor and flavor of the coconut, but older cakes tend to acquire an undesirable soapy odor and flavor.

EC Directive

With the growing awareness on the quality of food for human consumption emanating from Western countries in the late 80s, attention has likewise been diverted even to feeds being given to ruminants. This awareness has to some extent blown out of proportion, which led the European Community, as the biggest importer of meals, to come out with a directive stipulating a maximum of 20 parts per billion as the permissible limit of aflatoxin B1 contamination in copra meal as well as in feed stuffs. The inclusion of copra meal was brought about by the cases of aflatoxin contamination in copra meal. Rationale is that once taken by ruminants, these are transferred into cow's milk which are used in baby's formula.

Considered by many as a form of non-tariff barrier, the new ruling proved not to be much of a deterrent but a blessing in disguise for the coconut industry in general. Governments of both big and small coconut producing countries have implemented various programmes leading to the improvement of copra quality. Improving quality of copra not only brought additional income to farmers through the premium received but also resulted in

improving quality of coconut oil and copra meal.

Trade

Among the coconut products entering the international market, copra meal ranks second in terms of volume as well as in value. It registered an impressive growth rate up to end of 1980. This was due to the less crushing activities in the importing countries and more meal production in the coconut producing areas. In the early 1960s annual volume of export averaged 453,000 metric tonnes. And it grew at a rate of 6.2% per annum in the 70s. Although growth slowed down to 4.2% per year in the 80s, the average volume reached 1.042 million metric tonnes.

For years it has continued to be a major coconut dollar earner both for the small and major coconut producers in the region. In 1995 combined exports amounted to US\$ 96 million as compared to US\$ 94 million the previous year and were shipped to about 30 countries. With a market share of 61% during the last five years starting 1991, the Philippines is the largest supplier of copra meal to the international market. Indonesia ranked second as exporter of the commodity and Papua New Guinea, the only other regular exporter of copra meal, comes as a distant third with a share averaging to 1% for the 1991-1995 period.

EC continues to be the single largest importer of copra meal although buyers are merely concentrated in a few members namely: Germany, Netherlands, Denmark and Belgium-Luxembourg. USA, however, no longer imported copra meal since 1972.

Although a significant decline in imports of copra meal was registered in 1995, from the European buyers, which among others, could have been the effect of the aflatoxin issue, yet a spectacular growth in meal demand is to materialize in the 10 countries in the Asian region. Leading the pack of newly emerging buyers in the region is South Korea when its purchases registered at 305,600 metric tonnes in 1995 from a mere 1,500 metric tonnes in 1994 and 36,000 metric tonnes in 1993.

Other Uses

Its protein content meanwhile qualifies the copra meal to be used to some extent either as a source of protein for man or as fertilizers.

One of the earlier studies to utilize copra meal as a source of

protein food for man was done half a century ago by a Dutch in Java, Indonesia. Since then, several attempts have been made. A major obstacle, however, is the present method of obtaining it from copra. As the practice is rather unhygienic, not only is the raw material not suitable for a man's diet but the quality of the protein is severely reduced and it also is too fibrous for high level use by humans. Exception, however, is in India where its edible copra, is being eaten in areas which do not produce coconuts and is also a popular midday meal of mill workers. There were also experiments where coconut cake was used as raw material for a sauce similar as soy sauce and also to produce nata de coco. The latter is done by inoculating water infusion of the copra cake preferably with the addition of molasses.

Meanwhile coconut cake and meal have its use as nitrogenous fertilizers but only on a limited scale. Since it contains a mere 3% of nitrogen and a similarly low phosphoric acid and potash, these deficiencies would need to be made good by the addition of chemicals to achieve a better balance.

Until today, copra meal is considered an important ingredient in feed meals despite the threats it faces, particularly on the aflatoxin issue. While it continues to compete with other oilmeals, grain substitutes, etc. yet the copra meal industry will continue to thrive and still be a major foreign exchange earner for the coconut producing countries in the region. □

The author is a staff of the Asian & Pacific Coconut Community.

APCC: Exports of Copra Meal, 1990 - 1995

Country		1991	1992	1993	1994	1995
A. APCC Countries	Vol	1079556.0	891166.0	832721.0	969027.0	1058737.0
	Val	104729.0	89507.0	80779.0	93720.0	95672.0
India	Vol	-	7000.0	1521.0	4500.0 *	100.0 *
	Val	-	-	-	-	-
Indonesia	Vol	451053.0	316863.0	321332.0	367359.0	287319.0
	Val	49049.0	35223.0	33708.0	38592.0	27719.0
Malaysia	Vol	10.0	3503.0	1662.0	1599.0	800.0 *
	Val	-	-	-	-	-
Papua New Guinea	Vol	12517.0	16928.0	8330.0	13734.0	6800.0 *
	Val	795.0	1412.0	1431.0	1754.0	605.0 *
Philippines	Vol	612453.0	539686.0	488493.0	574223.0	756343.0
	Val	54882.0	52537.0	45303.0	53016.0	66872.0
Sri Lanka	Vol	23.0	-	-	3950.0	1251.0
	Val	3.0	-	-	358.0	112.0
Thailand	Vol	-	2750.0	2883.0	- *	-
	Val	-	327.0	337.0	-	-
Western Samoa	Vol	-	36.0	-	-	2624.0
	Val	-	8.0	-	-	364.0
Vietnam	Vol	-	900.0	5000.0	162.0 *	-
	Val	-	-	-	-	-
Palau	Vol	3500.0	3500.0	3500.0 *	3500.0 *	3500.0 *
	Val	-	-	-	-	-