Tapioca Chip/pellet Usage Trend in Thailand's Feed Industry

By Thai Feedmill Association

In the face of unprecedented hike in feed ingredients prices at present, feed producers have to adjust their feed formula or ingredients so as to lower their feed costs but still maintain nutritional values for the benefits of farmers and livestock producers. Therefore, animal feedmills have to do the research to find out the feed ingredient alternatives that have equivalent quality and yet competitively priced. To that effect, tapioca is found to be an interesting substitution with high potential for the future.

Nowadays, usage of tapioca as feed ingredient in Thailand has been increasing greatly compared with the past. Still, continuous development is needed to promote tapioca usage in Thailand's feed industry. There are certain aspects that need to be clarified in order to create a sustaining future for tapioca product market. Potential of tapioca uses also depend a lot on other factors, particularly prices of other substitutions such as corn, broken rice, soybean meal, etc., as well as application of animal drugs, consumer demand for quality meat products, all of which are constantly changing and thereby affecting the uses of tapioca.

Planted and harvested area of tapioca

In 2007/08, Thailand's tapioca production is forecast to reach 27.6 million metric ton, 5% above last season, due to high price attractiveness in the previous year that led to a great expansion in planting areas for the crop, along with favorable weather, and other promotional activities that allowed for increases in planting areas and yields.

From the price index chart, tapioca price has shown a higher rate of increase than corn price, so it provides incentive for farmers to plant more tapioca.

Historical data on tapioca harvested area, yield, and production:

Season	Harvest (Rai)	Yield (Tons/Rai)	Output of Fresh Tapioca Root (Tons)
2002/03	6,744,481	2.50	17,236,873
2003/04	6,973,157	2.90	20,333,510
2004/05	6,695,502	3.30	22,192,509
2005/06	6,692,537	3.40	22,584,402
2006/07	7,201,000	3.60	26,411,000
2007/08 Forecast	7,302,000	3.78	27,619,000

Source: Thai Tapioca Development Institute

From the survey conducted jointly by the four parties (Department of Foreign Trade, Department of Agricultural Extension, Office of Agricultural Economics, and the Thai Tapioca Association), it is perceived that there are impressive increases in tapioca planting areas and production, and there is potential to further improvement in yields by adoption of suitable technologies to improve varieties, and by better handling of harvested output to get increasing starch content.

The four parties have forecasted 2007/08 tapioca production at 27.619 million metric tons on fresh root basis, an increase of 1 million metric tons from last year. But demand in tapioca has increased continuously so that production at that level is still not enough to meet demand which is expected to be at least 30 million metric tons. As a consequence, tapioca price is expected to stay at high level.

Clean tapioca chip for animal feed industry:

Tapioca is an important economic cash crop for Thailand, which generates more than 30 billion baht worth of export revenues for the country, and which provides income for over 500,000 farming families (source: Department of Foreign Trade, Ministry of Commerce). In the past, tapioca faced a lot of trade barriers either in the case of exporting or even in domestic uses, including hygienic measures, or the problems of poor quality of the products which could not meet the user requirement so that fresh tapioca root price was unstable. And as already mentioned above, quality of tapioca chip is one of important factor that determine the decision to use tapioca in feed formula.

Department of Foreign Trade, as a consequence, has taken the role in finding out the solution by initiating the Clean Tapioca program, which has the objective to promote and develop tapioca products to achieve better quality standard to meet the requirement of both domestic and export markets, to expand the usage of tapioca products in animal feed industry and in other processors, to support animal feed quality control measures according to GMP and HACCP of EU. Clean tapioca is also aimed at adding values to the chip because quality of tapioca chip is vital to both exports and animal feed industry, being advantageous to all parties concerned. Farmers will get better prices, chip producers will obtain premium for their products, and users will have better quality of tapioca chip for their further processes or for animal feed producing.

How to make clean tapioca chip:

1. Using good tapioca variety
2. Fresh root with minimized sand/silica
3. Sifting out the outside skin and sand
4. Chipping
5. Sun-drying for 3-4 times
6. Clean tapioca chip (maximum 13% moisture)

Standard:

Clean Tapioca Chip (Recommended)	**General Tapioca Chip (A Must)**
1. Starch content of 70% minimum by weight (EU Polarimetric method) or 75% minimum by weight (NFE method)	1. Starch content of 65% minimum by weight (EU Polarimetric method)
2. Fiber of 4% maximum by weight	2. Fiber of 5% maximum by weight
3. Moisture of 13% maximum by weight	3. Moisture of 14% maximum by weight
4. No foreign matter, except for sand that sticks to fresh root under normal condition, of 2% maximum by weight	4. No foreign matter, except for sand that sticks to fresh root under normal condition, of 3% maximum by weight
5. No irregular odor and color	
6. Don't go sour, rotten, and no mold	
7. No live insects	

Source: Department of Foreign Trade, Ministry of Commerce

Usage of tapioca chip and pellet:

Tapioca is a root crop that provides large content of starch, with average start content of of 20-25%. Thus, many industries use tapioca flour/starch to process into other products. In Thailand, major industries that use tapioca for processing or exports are: Starch producers, exporters of chip/pellet, feedmills, ethanol industry.

Starch producers:

Starch producers are the largest sector in Thailand that uses tapioca, sharing of 50% of all tapioca production. Most starch products are exported either in the form of raw starch, and processed starch. Current tapioca starch production is expected to be about 70% of production capacity (source: from the interview of starch producers). Demand for tapioca starch is expected to increase further both domestically and overseas because of natural disasters in Indonesia, one of the world biggest producers of tapioca starch, has caused the country's tapioca production to decrease sharply, and thus foreign users of tapioca starch will have to buy the starch from Thailand. That will increase demand for the raw material to make starch. As a result, price of tapioca starch now is sharply above those in the past by 50-70%.

Exporters of tapioca chip/pellet:

China, which is one of the major exporters of tapioca chip, has a policy to limit usage of corn for energy purpose and thereby switching to tapica chip as a main feedstocks so that tapioca demand has increased sharply. China is expected to use more than 6 million tons of tapioca chip in energy industry. In addition, drought-hit EU faces a short grain crop this year so there are huge demand for imports of tapioca pellets from Thailand. For the first half of this year alone, imports of Thai tapioca pellets exceeds one million tons already. In other words, Thailand's export prospects for both tapioca chip and pellet is quite promising due to demand from large markets like China and the EU member countries.

Exports of Tapioca Chip/Pellet:

Commodity	Year 2006		Year 2007 (Jan-May)	
	Quantity (Tons)	Fresh Roots Equivalent (Tons)	Quantity (Tons)	Fresh Roots Equivalent (Tons)
Tapioca chip	3,820,357	8,022,750	1,873,077	3,933,462
Tapioca pellet	393,315	825,962	718,434	1,508,711
Raw Starch	1,670,610	6,849,501	721,393	2,957,711
Processed Starch	641,034	2,628,239	190,369	780,513
Export Total Forecast				
Fresh Roots Equivalent (Tons)		18,326,452		9,180,397

Source: Department of Foreign Trade

Feedmills

Due to increasing grain prices in the world market, livestocks producers and feedmillers need to depend on raw materials that has more competitive pricing and nutritional values. From research works by government and private sectors, tapioca can be an alternative for other major feed ingredients as it is competitive on feed

costing and results in more usage of tapioca in formula of many kinds of feed. Besides, with good trend in livestock raising in Thailand, livestock sectors has a good potential for both domestic consumption and for exports. So, tapioca product will have an increasing role in feed ingredient usage.

From the domestic usage table, consumption of tapioca chip and pellet in Thailand has increased every year. This reflects strong demand for tapioca product uses in feed industry in the future as substitution for other kind of grains.

Ethanol:

As crude oil prices have been sharply higher, ethanol becomes a promising alternative in many countries worldwide. Tapioca is competitive in term of prices and yields when compared with other crops to be used as feedstocks. At present, there are 45 registered ethanol plants countrywide, 23 of which will use tapioca as feedstock.

In consideration of such huge demand of all kinds of industry domestically, it can be perceived that there is a good opportunity for domestic tapioca crop to serve the need of all demand which has jumped up strongly. Therefore, this should be an incentive for further development of domestic production, and diversified processing of tapioca in Thailand.

Tapioca domestic usage:

	2002	2003	2004	2005	2006	2007 F
Starch (mil tons)	0.81	0.9	0.99	1.09	1.2	1.23
Fresh Roots (mil tons)	3.56	3.96	4.36	4.79	5.28	5.5
Chip/pellet (mil tons)	0.33	0.45	0.49	0.54	0.6	0.7
Root for use in other industry (mil tons)	0.75	1.01	1.11	1.22	1.34	1.36
Ethanol (mil litres)	-	57.6	280.8	376.2	376.2	376.2
Root for use in ethanol (mil tons)	-	0.32	1.56	2.09	2.09	2.09
Total Domestic Uses of Root (mil tons)	4.31	5.29	7.03	8.1	8.7	8.9

Source: Department of Agriculture, and forecast figures

Comparison of tapioca prices against other major feed raw materials:

As tapioca is a carbohydrate type, it is necessary to use protein source to supplement in the feed formula. Therefore, when livestock producers and feedmillers decide to use tapioca in their feed formula, comparison with other types of ingredients such as corn, and protein-source ingredients for feed formula that use tapioca such as soybean meal and fishmeal need to be considered as well.

Besides, usage according to the properties of clean tapioca product will also affect the livestock raising potential, and the quality of animal feed.

From the chart, corn price has a higher trend along the past 5 years. Tapioca usage has increased as a result as difference in corn and tapioca prices has made tapioca to be more competitive in term of feed cost.

Trend of tapioca usage in feed industry

From all the above information, usage of tapioca in Thailand has been increasing due to various factors of both production and demand. Thus, there is potential for development both in term of quantity and quality. Tapioca becomes more acceptable to users worldwide in related industries such as starch producers, domestic and foreign feed industry, and also energy industry as can be seen from higher usage domestically and exports.

As feed industry faces the sharp increase in price of grains which are its main ingredients, tapioca becomes an interesting alternative with an increasing importance for the industry in the future. Usage of tapioca in feed industry has tendency to increase continuously. Therefore, supports from government and private sectors to improve both the quality and quantity of the product will help tapioca in Thailand to grow firmly in the long term.

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Source : Annual Report 2007.The Thai Tapioca Trade Association./
Annual Report 2007.North Eastern Tapioca Trade Association.