



AGRI EXPORT ADVANTAGE



EXPORT-IMPORT BANK OF INDIA

Visit us at www.eximbankagro.com

Published in English, Hindi, Marathi, Assamese, Bengali, Gujarati, Kannada, Malayalam, Oriya, Punjabi, Tamil and Telugu

**JANUARY 2005
VOL IV ISSUE I**

contents

- ★ Patent (Third) Amendment Bill and its Impact on Indian Agriculture 1
- ★ Export Potential of Makhana (Fox nut) 2-3
- ★ Post Harvest Technologies of Litchi 4
- ★ Brazil: An Agriculture Economy 5
- ★ Direction of World Agricultural Trade 6-7
- ★ Health, Safety, Quality, Cost Effectiveness and Consumer (HSQC) - Challenge for Tomorrow's Food Technologists for a Healthy and Nutritious Food 7-9
- ★ Neem Plant and Its Uses 9-10
- ★ Top 15 Agricultural Exporters and Importers and their Share in Global Trade (2003) 11
- ★ News Focus 12

PATENT (THIRD) AMENDMENT BILL AND ITS IMPACT ON INDIAN AGRICULTURE

With a view to meet the commitments to World Trade Organisation (WTO) by January 1, 2005, Government of India set to pass third amendment of Indian Patent Act 1970 in the current winter session of the parliament. The amendments are proposed to be in the line of Trade Related Intellectual Property Rights (TRIPs) – 1994, which requires extension of product patent protection to all areas of technologies such as pharmaceuticals, foods, chemicals including agro-chemicals, and transgenic seeds and products. The third amendment is also envisaged to cover granting of patenting right for microorganisms, microbiologicals and non-biological processes for production of plants and animals.

The post-third amendment regime would impact pharmaceuticals sector, as the Indian market, mainly dominated by generic products, could gradually be upgraded to innovative-patented drugs and pharmaceuticals. However, its impact on agriculture is also being discussed and debated. By using the flexibility clause of TRIPs, India has already introduced a *sui generis* system to provide protection for plant varieties. Moreover, TRIPs also allows exclusion of plants and animals and the essential biological process for their production from patents. Hence, the much discussed, food security issue in the post-product regime, should not be of major concern. Complying with Convention of Biological Diversity, Government of India has also introduced Biological Diversity Act, which provides for regulation and use of Indian biodiversity in a manner that sovereign rights for Indian citizen on indigenous biodiversity are honoured.

To understand the patented regime better, to be patentable, an invention must be new, industrially applicable, non-obvious, and the subject of an enabling disclosure (invention should be described so that a person skilled in the art to which the invention relates can reproduce it). Broadly, the new patent regime includes high-end agricultural technologies such as new processed foods, novel genes and transgenic seeds. Gene patent applications may include gene, partial DNA segments, promoters & enhancers, proteins encoded by these genes and their functions in the organism, vectors used for transfer of genes from one organism to another, genetically modified micro-organisms, cells, plants and animals and processes used for developing a transgenic product.

The new patent regime would allow scope for protection of biotechnology-led products, a necessity to gain from new advances in research and technology in agricultural sector. Some experts opined that due to involvement of various patents in development of a transgenic seeds, the cost of the final products would be very high as compared to traditional seeds.

Considering the concerns of various stakeholders in agriculture, it is expected that the new patent act and other laws and regulations such as biodiversity act, geographical indication and trade mark, farmers' and community rights and plant breeders' rights (PBRs) would address the concerns of indigenous knowledge, food security and documentation of traditional knowledge.



EXPORT POTENTIAL OF MAKHANA (FOX NUT)

A unique plant, native to East Indies, cultivated in China for the last 3000 years, fox nut or gorgon nut, an aquatic herb, is commonly known as makhana and botanically called *Euryle ferox salibs*. Main edible portion of the crop is the seed, which is highly nutritious and reported to be used as anti-oxidants, strengthening kidneys and enhancing sperms production. The organic non-cereal food, makhana, is extensively grown in stagnant water of wetlands, ponds, tanks, lakes and ditches.

Uses

In India, makhana is mainly consumed in popped (roasted and fried) form and powder form. In some parts of Manipur, the vegetative parts of the plants are also used for making delicious vegetables. They also utilize leaf petiole and young seeds in the form of salad and sauce. It has been also reported that, ayurveda and unani texts have accepted its aphrodisiac and spermatogenic properties. Popped makhana contains almost 12% of protein.

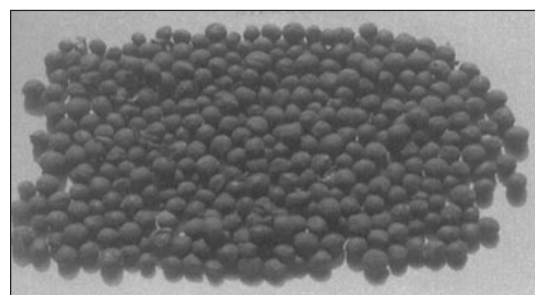
Nutritional Contents of Popped Makhana

Parameters	Contents (%)
Moisture	10%
Protein	10 - 12 %
Carbohydrates	79.0 %
Ether extract	0.9 %
Ash	0.6 %

Processing

Processing of makhana seeds is labour-intensive, time consuming and manual. Processing of it involves following steps:

Sun drying and storage: Cleaned seeds (picture 1) are sun dried and stored for easy transportation and storage. It is necessary to sprinkle water at regular intervals during storage of seeds in order to keep them fresh. Popping of seeds and the quality of makhana is very much dependent on its initial moisture content.

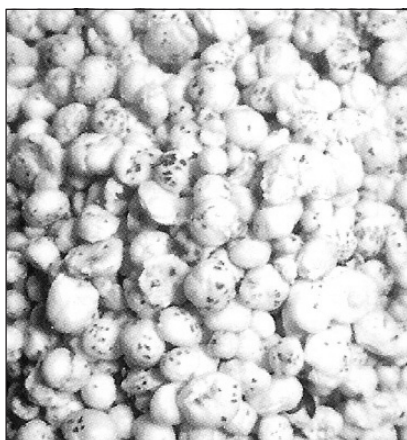


Picture 1: Makhana seeds

Drying and size grading: Seeds are spread on cemented or paved yard in sun to remove the free moisture. The moisture content of the seeds after sun drying reduces to an extent of 25%. The dried nuts are hit by a wooden hammer. Easy separation of the kernel fragments confirms proper drying of the seeds. The sun dried seeds are then graded into 5 to 7 grades according to their sizes by means of a set of sieves. Grading of seeds facilitates the uniform heating of each seed during roasting.

Preheating and tempering: Sun dried seeds are generally heated in earthen pitcher or cast iron pan and stirred continuously. The preheated seeds are then kept for tempering in basket at ambient conditions for 45-72 hours. Tempering of seeds facilitates the loosening of kernels within the hard seed coats.

Roasting and popping: Roasting and popping are the most important but laborious and painstaking operations. Popping is the process of creating superheated vapour within the conditioned nut by heating the contained moisture and suddenly releasing the pressure to cause a volume expansion of the kernel. The roasted nuts, 5 to 7 in number, are scooped quickly by hand from the pan and kept on a hard surface and sudden impact force is applied on them by means of a wooden hammer. As the hard shell breaks, the kernel pops out in expanded form, which is called makhana. The yield of makhana is approximately one-third of the weight of its seeds.



Picture 2: Popped Makhana

Polishing, grading and packaging: Immediately after the popping, polishing is done by rubbing of makhana in a basket made of bamboo splits to remove the red coloured layer. This rubbing operation provides more whiteness and lustre to the pops. After polishing, makhana is graded into 2-3 grades, depending on shape and size of pops. The graded makhana is finally packed in polythene lined gunny bags. Makhana is so voluminous that a bag with carrying capacities of 100 Kg of sugar may hold 8-9 Kg of makhana.

Production

According to a literature of National Research Centre for Makhana, Darbhanga in Bihar, it is estimated that in India, around 13000 hectare of pond land is under makhana cultivation, which produces about 90000 tonnes of makhana seed and about 36000 tonnes of popped makhana. The estimated value of the production at farmers' end is Rs. 250 crore and it fetches about Rs. 550 crore at traders end.

Makhana is cultivated in dry and hot weather. Bihar is the major producer of makhana, contributing more than 80% of total production of India. Other states such as West Bengal, Assam, Orissa, Madhya Pradesh, Rajasthan, J & K, Tripura and Manipur also produces

makhana in small quantities. Major makhana producing districts of Bihar are Darbhanga, Sitamarhi, Sahrsha, Katihar, Purnea, Samastipur, Supaul, Kishanganj and Araria. Makhana production and processing, by its very nature of being labour intensive, is a major employment provider to farmers and fishermen of Bihar.

Export Potential

Though data regarding exports are not available, it is believed that India has potential for exporting powdered and popped makhana to some of the Middle East countries for Mughlai, Kashmiri and Afghan food preparations.

Apart from India, China is also a major producer of makhana. It is believed that makhana is used in many traditional medicines in China. Many Chinese companies are involved in exports of makhana based herbal products.

Conclusion

Considering the trade potential in makhana products, Government of India recently opened a National Research Centre for Makhana, Darbhanga (Bihar) for developing economic opportunities in cultivation, post-harvest, processing and marketing of makhana. However, there are other commercial issues such as low level of value addition, voluminous nature of the products, low level of mechnaisation in processing and lack of information about the products and its uses, which need to be addressed by all stakeholders to develop makhana as an exportable commodity.

References:

- National Research Centre for Makhana, Darbhanga (Bihar)
- Exim Bank's study on "Potential for Export of Horticulture Products from Bihar and Jharkhand"
- Mithila Samajik Evam Arthik Vikas Sansthan, Darbhanga, Bihar

POST HARVEST TECHNOLOGIES OF LITCHI

With good quality litchi and highest yield, India is second largest producers of litchi in the world. India, along with China, produces almost 90% of global production of over 2 million tonnes. In 2001-02, litchi production in India stood at 4.2 lakh tonnes, marginal decline from 4.12 lakh tones in 2000-01. It is cultivated in the sub-tropical foothills of Himalayas in Bihar, Tripura, West Bengal, Uttar Pradesh, Punjab and Haryana. Bihar holds the largest area under litchi cultivation with 26,000 ha (over 46% of the total area) and accounts for more than 74% of the total production in the country. West Bengal stands second in terms of production at 36,000 tonnes.

Exports of litchi from India has gone up from 167 metric tonnes in 2000-01 to 963 metric tonnes in 2003-04, more than five fold increase. In 2003-04, India exported litchi of Rs.134 lakh as compared to Rs. 100 lakh in 2002-03. Major export destinations for Indian litchi are Bangladesh, Belgium, UAE, the Netherlands and UK.

Having edge over other litchi producing countries in form of harvesting seasons and quality, Indian litchi holds tremendous export potential. To maintain the quality of fresh produce at international standards, exporters and farmers should be careful in the post harvest operations of litchi.

Post Harvest Operations

Litchi, being a non-climacteric fruit, requires to be harvested after attaining full maturity on the tree. The fruits are harvested in bunches along with a portion of the branch and a few leaves. At the time of harvesting, care is taken to harvest the selected bunch, which has attained the desirable maturity as determined by colour development and taste of the pulp. To get a longer shelf life, fruits should be harvested in early morning, when temperature and humidity are favourable. For distant markets, fruits are harvested when total soluble solids (TSS) attains 19° Brix and acidity 0.3-0.4%. Care should be taken at the time of harvesting, so that fruits should not fall on ground. Harvesting season of litchi is May-June, depending on the varieties and locations. However, in the hills of southern India, it is harvested in November-December.

Damaged, sunburnt and cracked fruits should be sorted out and graded properly according to their size. Fruits of one variety and same grade should be packed in separate boxes and the box or container should be tagged by the name of variety and grade. Selection of packaging depends on market preferences and availability. The ideal package protects fruit from damage and minimizes water loss and condensation. Proper packing of fruits is important in maintaining freshness and quality and preventing fruit decay during transit for marketing to distant places. A good box for packing fruits should be light in weight, shallow and rigid enough to protect the fruits. It should have few holes for ventilation and rope handles on either side for lifting the box. Fruits are packed in clusters along with few leaves.

Fruits could be stored at 2°C in perforated polythene bags for 5 weeks without much spoilage. For short-term storage (less than two weeks), a temperature of 7°C is satisfactory. A relative humidity should be kept at 90-95% throughout storage and transport.

Litchi deteriorates very fast after harvesting. Pericarp (outer cover) browning is a major post harvest problem, which not only reduces the price of final product but also hinders marketing of produce. Sulphur dioxide (SO₂) fumigation is used as a post-harvest treatment to reduce browning and treated fruits have a bleached pericarp, which turns uniformly pink in colour after 2-3 days. Fumigated fruits absorb 30-65% of applied SO₂. There is increasing concern about the sulphur residue as the residual limit is only 10 ppm. The recommended dosage of sulphur for fumigation of litchi by sea transportation is 600-650 gm for 50-60 minutes and by air transportation is 300-400 gm for 30 minutes. Aril (pulpy part) breakdown or softening of aril involves a loss of turgidity, which makes the taste of fruits blunt. Irradiation of fruit is considered to reduce browning and post-harvest losses. Controlled atmosphere storage is considered better for maintenance of the freshness of the fruits.

References:

- Food and Agriculture Organisation (FAO)
- CMIE and India trade Database
- www.foodindia.org

BRAZIL: AN AGRICULTURE ECONOMY

Agriculture, though it contributes to only 8.7% of Brazil's gross domestic product (GDP), has an important role in the economy, owing to export intensity and its significance as an employer in rural areas. According to figures available from WTO, the contribution of agriculture has improved to 9.6% to total GDP of the country in 2003 from 8.2% in 2002. With processing activities, the total contribution of agriculture in GDP is about 12.5%. It employed almost 12.5 million people in 2002, as compare to 13.3 million in 1998.

Coffee, soybeans, wheat, rice, corn, sugarcane, cocoa, citrus and beef are the major agricultural products of Brazil. Brazil is the largest producer of sugarcane, coffee and oranges, second largest of soyabean, third largest producer of corn and pineapple and major producer of cotton, wheat, beef, cocoa and rice. In 2003, Brazil produced 2.2 million tonnes of cotton, 51 million tonnes of soyabean, 1.9 million tonnes of coffee, 387 million tonnes of sugarcane and 17.2 million tonnes of oranges.

Brazil is a major exporter of agricultural and food products, which accounted for about 42% of the country's exports in 2003, totaling US\$ 30.6 billion. In value terms, soybeans are the largest exports, followed by wood and wood-derived products, meat, leather, sugar, and coffee. Exports of both sugar and coffee have exhibited an upward trend in recent years. Exports of meat, which accounted for about 40% of the agricultural GDP, have quadrupled in terms of volume and more than doubled in terms of value between 1997 and 2003. Brazil remains the world's largest exporter of coffee, sugar, tobacco, soybeans, and orange juice. Major destinations for Brazil's agricultural exports are Japan, the EU, and the US. Import of agricultural products accounted for 9.9% of total imports, amounting US\$4.8 billion in 2003. Wheat is the single most important import commodity.

There are three major government institutions involved in policy formulation and implementation for sustainable development of agriculture in Brazil. First, Ministry of Agriculture, Livestock and Food Supply (MAPA), which is responsible for the formulation and implementation of agricultural policy including WTO issues. It is mandated

to integrate market, technological, organizational, and environmental considerations, to take into account consumer interests, food security, growth, and employment creation, and reduce social inequalities. Second, The National Food Supply Company (CONAB), a state trading company linked to the MAPA, in charge of implementing certain agricultural policies such as Policy of Guaranteed Minimum Prices (PGPM), the programme of Option Contracts, and the programme of "open sales" and storage policies. Third, Ministry of Agrarian Development (MDA) is responsible for policies aiming at sustainable rural development by means of land reform and household agriculture.

Agricultural policies of Brazil have traditionally been centred around creating financing mechanisms for farmers, originally with a large degree of state intervention. Since 1995, however, agricultural policy has been geared towards reducing Government participation, so as to leave more room for the private sector to undertake these financing activities. Government expects the private sector to increase its provision of credit and insurance, while assuming and covering part of the risks involved. The rural credit programmes continue to be the main financing instrument. The authorities note that Government involvement in the provision of credit and insurance is limited and targeted, with specific goals like supporting small farms, product acquisition for food programmes, etc. Government continues to provide marketing support and assume part of the risks in non-credit activities in the sector. Partly as a result these policies, investments has taken off, especially among large export-oriented farms in south and south-east regions of Brazil. With huge investment in modernization of agriculture, Brazil, in last one decade, has emerged as one of the major exporters of agricultural produce.

References:

- World Trade Organisation (WTO)
- Food and Agriculture Organisation (FAO)
- <http://www.agricultura.gov.br>

DIRECTION OF WORLD AGRICULTURAL TRADE

With slower population growth (from 1.35% per annum in the second half of 1990s to a projected 1.1% by 2015 and 0.8% by 2030), at global level, and gradual attainment of medium to high food consumption levels (average per capita food consumption of developing countries is projected to go up to 3000 kilo calorie (kcal) in 2030 from 2680 kcal in 1997/99) in several countries, the growth rate of demand for food is expected to be lower than in the past, according to an FAO report "World Agriculture: Towards 2015/2030".

According to a report "OECD Agricultural Outlook 2004-13", diet diversification due to increasing urbanisation and change in eating patterns is forecasted to generate demands of value added products such as dairy products, vegetable oils and meats. During 2003-13, consumption of agricultural products such as vegetable oil, butter, cheese, whole milk powder, and poultry meat is expected to exhibit compound annual growth rates of above 2%, whereas consumption of wheat and rice is expected to grow at 1.2% and 0.8%, respectively.

According to "Agricultural Baseline Projections: Global Agricultural Trade" released by USDA in February 2004, global trade in soyabean and soyabean products has surpassed that for wheat –the traditional leader in agricultural commodity trade- and total coarse grains. It is expected that due to global demand for vegetable oil and protein meal, the trade of soyabean and soyabean products will be well above wheat and coarse grain trade throughout the next decade.

Vegetable oil has been the commodity with one of the most significant and continued growth rates over the last thirty years. According to FAPRI and OECD projections, global consumption of vegetable oils is estimated to grow at 1.7% and 2.8% respectively in medium term (till 2009). Income and population increases in China and India, which together account for more than a third of total world population, are expected to drive trade growth in vegetable oil in future. Palm oil and soybean oil should absorb the largest share of additional consumption and trade. Palm oil trade is forecast to grow by 1.6% by 2009-10 as compared to an average annual growth of about

9% in the 1990s. China, the EU and India would remain the major palm oil importing countries. Malaysia and Indonesia constitute the two largest suppliers of palm oil (accounting for more than 80% of world production and 95% of world trade). These two countries are forecast to increase domestic supply of palm oil by 15%.

Brazil, one of the lowest cost producers of sugar and the leading exporting nation, is expected to increase its exports by 50% by 2013. Other major exporters, such as Thailand, are also expected to expand exports by 21% and Australia by 15% by 2013.

During the projection period 2004-2013, prices (in nominal terms) of wheat, coarse grains and especially rice are expected to rise somewhat, partly due to lowering in global stock levels. Oilseed prices, after an initial sharp drop, is expected to remain flat in nominal terms throughout the projection period, as production is expected to meet increased demand. Though sugar production is expected to exceed consumption in most of the projection years, but this change would not be enough to push up prices and hence, it is expected that prices would remain stable.

China is expected to play a major role in global cereal market. Many analysts expect China to become a net importer of grains, due to rising income and expectations of dietary shift to more dairy and livestock products.

Livestock production currently accounts for about 40% of total gross value of global agricultural production and its share is rising. During the last three decades, the share of animal products has gone up in human diets, while that of cereals and other staples have fallen down. Within the livestock category, share of poultry in total consumption has gone up significantly. According to an FAO forecast, these trends are likely to continue over the next 30 years, though at lower growth rates. Developing countries will continue to increase their part in world production, with their share in meat going up to two-thirds of the world total by 2030 (from 53% in 1997/99) and in milk to 55 percent (from 39%). It is also estimated that India, along with China, would be a major

**Chat Online with Exim Bank's Officials at www.eximbankagro.com on issues related to Agri-Business, Agri-Exports and Agri-Finance.
Time : 4.00 to 5.00 p.m. (IST) – every Tuesday and Friday**

consumption center of meat products in future. It is forecasted that in India, current consumption of 1 kg per capita of all meat, will rise to 2 kg per capita in 2015 and 10 kg per capita in 2030.

Average dairy consumption of the developing countries is still very low (45 kg of all dairy products in liquid milk equivalent), compared with the average of 220 kg in the industrial countries. In South Asia, where milk and dairy products are preferred foods, per capita consumption of dairy products is very low. Hence, it is estimated that, with rising income and urbanization, the consumption of dairy milk would grow in future.

Fisheries play an important role in the world food economy. Globally, fish provides about 16% of animal protein consumed by human being and are valuable source of minerals and essential fatty acids. Total annual fish production almost doubled between 1970 and 1999, from 65 million tonnes to 125 million tonnes. Almost 40% of all fish production is internationally traded. Developing countries' gross earnings from fish exports have grown rapidly, from US\$ 15.6 billion in 1985 to US\$ 15.6 billion in 1999, a level that far exceeds earning from commodities such as coffee, cocoa, banana and rubber.

Assuming the income growth, dietary changes and population growth, the total annual demand for fish is estimated to be 186 million tonnes in 2030.

Envisaging the shortage of land and water for agriculture in future and increase incidence of problems related to soil, climate, pests and diseases, biotechnology is going to play bigger role in days to come. Biotechnology could be utilized to offer solutions for improving food security and reducing pressures on the environment. However, the widespread use of genetically modified varieties depends on addressing the concerns and issues of food safety and environment adequately.

With the increasing outward-looking trade policies and integration with the world economy, some experts expect that agricultural exports of India to increase at a rate of about 9% per annum, while imports are expected to grow at an average rate of 18% per annum to 2007.

References:

- OECD Agricultural Outlook 2004-2013
- Agricultural Baseline Projections: Global Agricultural Trade of USDA
- World Agriculture: Towards 2015/2030 of FAO
- Globalization of Indian Diets and the Transformation of Food Supply System: FAO Publication

HEALTH, SAFETY, QUALITY, COST EFFECTIVENESS AND CONSUMER (HSQC) - CHALLENGE FOR TOMORROW'S FOOD TECHNOLOGISTS FOR A HEALTHY AND NUTRITIOUS FOOD

Farm income surplus is reaching phenomenal levels. The question is how much of it will reach consumers as a healthy, safe, quality loaded and cost effective food. This paradigm needs to be addressed by Science of Food Technology with the ultimate purpose of value addition and by-product utilization. Role model that developing countries would play perhaps would be emulated by a large number of other countries, which are agro based, and which also looks at leveraging human resource capital for economic upliftment and employment generation.

The traditional foods with the health aspect built into it would perhaps dominate a large amount of market to reach that grand mother's taste for everybody through automation. Low calorie, low sugar foods are becoming more popular with the mandate of alternative sweeteners and less calorie generation in the metabolism.

Consumers, today, are ready to pay more for an assured and guaranteed safe products. To deliver a safe food with zero contamination of pesticides, zero contamination of heavy metals, absence of toxins and no pathogens in food is not an easy task, which certainly requires high science and high technology with the mandate of in-depth basic research and the networking at different levels to implement them at the field level.

Quality aspect has to be nurtured by the wholesomeness not only of the end product but also of the raw material. It is the quality of the raw material that ultimately defines the final quality of the product. When one looks at the supply chain from rural to urban, the quality factor of especially fresh material such as horticultural crops suffers the most damage and perhaps meat, fish, marine and poultry also suffers equally. Hence, Hazard Analysis and

Critical Control Points (HACCP) or Good Manufacturing Practices (GMP) or Good Hygienic Practices (GHP) is total package to maintain quality in processed food industry.

How does one deliver a healthy, safe and quality food to the consumer at a cost effective price? To address the challenge, our scientists, technologists, engineers and growers have to work together. We need to address this issue very boldly and with a practical approach to ensure that every unit of cost reduced in the entire chain could be passed on to the consumers, which could make the food processing an attractive investment. This HSQC concept and approach needs to be networked right from the farm to the lunch or dinner plate without in any way overburdening the cost to the consumer. It is that innovation and knowledge base that shall drive tomorrow's Food Technology.

Bridging the Nutrition gap through Value Addition

The 1996 World Food Summit (WFS), attended by 185 countries plus the European Community, pledged to achieve a measurable and monitorable goal “.. *to eradicate hunger in all countries, with an immediate view to reducing the number of undernourished people to half their present level no later than 2015*”. The FAO-WHO Millennium Development Goal to be achieved by 2015 is a two fold approach firstly to reduce 840 million people in the grip of poverty and hunger to at least 420 million by 2015 and secondly to halve the population who are today living with a livelihood of less than Rs. 45/- a day (US\$1) from 28% of the population to 14% by the year 2015.

The nutrition agenda of India has migrated from the earlier days of 'protein' to 'protein calorie' and today the aspects of 'micro nutrient' malnutrition. On the one hand, the people in urban areas continue to be aware of the nutrition intervention but the people in rural areas are not totally exposed to nutrition knowledge. Nutrition programmes should pervade all sections of population, which needs to be addressed pragmatically.

When one looks at the fascinating journey from *Pediatrics to Geriatrics*, one sees number of platforms where this

journey stops to catch up with health, well being, economic constraints for growth and more importantly, from a societal angle to really live through the system, many a times not being able to afford a full meal.

It is here that the role played by, first of all, a nutritious food, be it a pediatric or geriatric is a necessity for the well being of the society. When we look at nutrition, right from the breast milk of a mother to the weaning food followed by infant food and the meal that the child eats in its formative years, have all to do a lot in its ultimate health as an adult. Therefore, it is imperative that during the first formative years of the child should get high-class nutritional foods. If we do not pay enough attention to this, the aberration that it causes would only keep everybody busy in trying to solve the problem later when it catches fire rather than a preventive methodology and the damage would have been an irreversible one.

Role of Central Food Technological Research Institute (CFTRI)

Role of CFTRI changes with the environment and social conditions. As compared to twenty years back where the nutritious foods were associated with high protein foods, the scenario has changed today. Now there are high protein foods (12-22% protein) including lactose free food (12% protein); foods based on fluid milk and protein isolate (26% protein), malted weaning foods (12% protein); energy food (15% protein), paushtik atta (13% protein), nutro biscuits (16.5% protein) and high protein breakfast flakes (25% protein) loaded with all the micro and macro nutrients. The number of beneficiaries through target group of children is approximately 25 million per day in India. The schemes are implemented in the States of Madhya Pradesh, Uttar Pradesh, Gujarat, Andhra Pradesh, Karnataka, Tamil Nadu and Orissa. But the outreach is less that seldom one sees and impact. However this has excellent potential for other States in India and for other developing countries also.

Therefore, in a country like India, a massive campaign supported with action is necessary from doctors through mothers who nurture the growing child for the most effective nutrition food using the local raw material.

However, the semi digested or processed foods that are available to infants, who otherwise are nutritionally starved because of lactose intolerant or non-availability of breast milk, these products essentially help them to survive.

Food Processing and Value Addition in Bridging the Nutrition Gap

Apart from research and development (R&D), there are several other factors such as economic imperatives, financial policies, market forces, cost factors and socio-economic pattern, which affects future of health and nutritional formulations. Food processing technologies need to face many problems when they are being implemented at various levels such as cottage scale, small scale, medium scale and large scale, with a focus to extend the shelf life of products without losing its nutritional value.

Looking at our agri biodiversity, India accounts for a large portion of the principal crops such as rice, wheat, pulses, oilseeds and minor millets, horticultural crops such as mangoes, banana, grapes, apples, potatoes, coconuts, onions and medicinal and aromatic plants. We are also leading producers of couple of them, including largest producer of milk. What does it all mean in terms of nutrition? Where is the reach out?

The demand for quality value added food products will definitely increase, because of economic elevation of middle class who will dominate the urban systems in future and therefore the families, who wants to reduce their drudgery, would create a clear demand for processed food products or even semi processed. Consumer, being a knowledge worker, will also demand a complete nutrition in this semi and processed foods which are not that easy to supply therein. Hence, the role of nutrition becomes more crucial in synergizing with food processing system for higher nutrition without sacrificing the quality.

The Institutional arrangements and database for many of the Technology agenda need to be very cautiously reviewed in the game plan of agricultural growth for the country. All this may have a very major ramification on nutrition and especially micronutrients as it spreads both

in the lower income group as well as middle and upper income group. Part of the problem can be answered by biotechnological approaches through sustainable agriculture for a better nutrition package for foods.

Ultimately, consumer is the key element that determines what he / she wants and his / her suggestions should be given importance for any product to reach the market and sustain. It is here that innovation stands as an excellent challenge and also the future depends upon the innovation. In that matter, organizations such as CFTRI focusing on innovations with nearly 782 patents, has shown remarkable performance in the R & D world. The IPR regime will have a new challenge as on December 31,2004. Are we ready to face it?

With a rich traditional foods in India, we can surely make a difference keeping a single goal “more food, more nutrition” with less drudgery. The Bioresources related to nanotechnology and nutrigenomics can make a difference in tomorrow’s reach out. With a clear plan and proactive approaches, we can enhance the nutritional value of our traditional foods. Roles and efforts of all stakeholders such as Government organisation, non-government organizations and others have to synergize to eradicate the nutrition gap in the country. Today’s Governmental programmes are exceedingly good and certainly has come a long way in supporting this idea and nurturing it. We have to make use of it and reach people to show them the benefit of Science & Technology as it intertwines into our daily lives to make it meaningful through the common goal of ‘reaching adequate nutrition to all by 2010’, a dangerously optimistic target, much ahead of WHO and FAO. Why not?

Today we need to work in a different ambience and atmosphere and we have to learn new way of thinking together with multi institutional role alongwith joint ventures with financial institutions and from the networking of such system one can expect greater dividends than ever before.

Excerpts of speech of Dr. V Prakash, Director, CFTRI, delivered at Exim Bank, Mumbai

NEEM PLANT AND ITS USES

Neem (*Azadirachta Indica*), a native of India, is well known and used for its medicinal properties from the ancient period (4000 BC). It is grown in almost all parts of India, in particular Uttar Pradesh, Haryana, Punjab, Himachal Pradesh, Orissa, Andhra Pradesh, Kerala, Karnataka, and Tamil Nadu. Uses of various parts of neem plant can be categorized as below:

Therapeutic or medicinal use: The plant and its various parts are very much associated with healing from ancient time. A large number of medicinal, cosmetics, toiletries and pharmaceuticals are now based on neem derivatives because of its unique properties. Plant parts used for various medicinal purposes are:

- **Leaves:** According to Ayurveda, Neem leaves help in the treatment of vatic disorders (neuro muscular pains). Neem leaves are also reported to remove toxins, purify blood and prevent damage caused by free radical in the body by neutralizing them. Leaves are reported to be beneficial in eye disorders and insect bite poisons.
- **Bark:** Neem bark is cool, bitter, astringent, acrid and refrigerant. It is useful in tiredness, cough, fever, loss of appetite and worm infestation. It heals the wounds and is also used in vomiting, skin diseases and excessive thirst.
- **Fruits:** Neem fruits are bitter, purgative, anti-heamorrhodial and anthelmintic in nature.
- **Flowers:** Neem flowers are used in vitiated conditions of **pitta** (balancing of the body heat) and **kapha** (cough formation). They are astringent, anthelmintic and non-toxic.
- **Seeds:** Seeds are also described as anthelminitic, antileprotic, antipoisonous and bitter in taste.
- **Oil:** Neem oil derived from crushing the seeds is antidermatonic, a powerful anthelmintic and is bitter in taste. It has a wide spectrum of action and is highly medicinal in nature.

- **Mixture:** Five parts of Neem tree i.e. Bark, Root, Fruit, Flower and Leaves together are used in diseases of blood. It is also used in vitiated conditions of excess heat, itching, and wound, burning sensation in body and skin diseases.

Traditional use: There are several instances of Indian traditional custom sanctifying and encouraging usage of Neem. For instance, Neem leaves have been used to avert ill luck and diseases. Neem leaves are kept in the mouth signifying grief, on returning from funerals. A concoction made of Neem leaves, flowers, jaggery and raw mango is drunk on a new year's day for safeguarding health. In the times when the Vedas were composed the Neem was called the *Sarva Roga Nivarini*, (one that could cure all ailments and ills.) and continued to be regarded for several centuries. Neem continued to provide toothbrush, soap, sacrament and spiritual food to millions of Indians.

Environmental use: Neem in Indian culture has been ranked higher than '*Kalpavriksha*', the mythological wish-fulfilling tree. In '*Sharh-e-Mufridat Al-Qanoon*, Neem has been named as '*Shajar-e-Mubarak*', 'the blessed tree', because of its highly beneficial properties. Through scientific studies, it is reported to purify air and the environment. Its shade not only cools but also prevents the occurrence of many diseases. It also helps in restoration of degraded soils and wastelands.

Neem is a very valuable forestry species in India and Africa. Being a hardy, multipurpose tree, it is ideal for reforestation programs and for rehabilitating degraded, semiarid and arid lands. During a severe drought in Tamil Nadu in June-July 1987, it was witnessed that Neem grew luxuriantly, while other vegetation dried up.

Eco- friendly pest management in crop field: Neem has had a long history of use primarily against household and storage pests and to some extent against crop pests in the Indian sub-continent. It was a common practice in rural India to mix dried Neem leaves with grains meant for storage. Mixing of Neem leave (2-5%) with rice, wheat and other grains is even now practiced in

some parts of India and Pakistan. Neem cake was applied to rice and sugarcane fields against stem borers and white ants. Some innovative farmers in Karnataka and Tamil Nadu states in India even today “puddle” green twigs and leaves in rice nursery beds to produce robust seedling and simultaneously ward-off attack by early pests-leafhoppers, planthoppers, and whorl maggots.

Fertiliser: Indian farmers have traditionally used deoiled Neem cake as a fertilizer in their fields. The dual activity of Neem cake as fertilizer and pest repellent has made it

a favoured input. Neem leaves have also been used to enrich the soil. Together, they are widely used in India to fertilize cash crops. When Neem cake is ploughed into the soil it also protects plant roots from nematodes and white ants.

References:

- www.neemfoundation.org
- www.neemresource.com
- Other web sources

TOP 15 AGRICULTURAL EXPORTERS AND IMPORTERS AND THEIR SHARE IN GLOBAL TRADE (2003)

	Value \$bn	Share in world %		Value \$bn	Share in world %
Exporters			Importers		
EU members (15)	284.14	42.2	EU members (15)	308.87	42.8
EU to rest of world	73.38	10.9	EU from rest of world	98.11	13.6
United States	76.24	11.3	United States	77.27	10.7
Canada	33.69	5.0	Japan	58.46	8.1
Brazil	24.21	3.6	China	30.48	4.2
China	22.16	3.3	Canada ^c	18.02	2.5
Australia	16.34	2.4	Korea, Rep. of	15.56	2.2
Thailand ^a	15.08	2.2	Mexico	13.85	1.9
Argentina ^b	12.14	2.1	Russian Fed. ^a	13.73	1.9
Malaysia	11.06	1.6	Hong Kong, China	10.81	
Mexico	9.98	1.5	retained imports	6.47	0.9
			Taipei, Chinese	7.96	1.1
Indonesia	9.94	1.5	Switzerland	7.12	1.0
New Zealand	9.60	1.4	Saudi Arabia	6.26	0.9
Russian Fed. ^a	9.37	1.4	Thailand ^a	5.72	0.8
Chile	7.47	1.1	Indonesia	5.44	0.8
India ^a	7.03	1.2	Turkey	5.22	0.7
Above 15	548.44	81.8	Above 15	580.44	80.4

Source: WTO International Trade Statistics 2004, WTO Secretariat, “EU members” includes trade between EU members

^a Includes Secretariat estimates

^b data for 2002

^c Imports are valued f.o.b

NEWS FOCUS
Global Cereal Output hits Record High

Global cereal production is expected to hit a record 2.04 billion tonnes in 2004, resulting to an increase in cereal stocks for the first time in five years (2000-04), reported in the December 2004 issue of Food Outlook of FAO. World cereal stocks are forecast to rise to 441 million tonnes by the close of the 2004/05 season. The increase in stocks could be mainly attributed to increase in inventories of maize and wheat.

World cereal utilization in 2004/05 is forecast to rise by 2.4%, mainly due to increase in feed usage of cereals. Global cereal trade is forecast to decline in 2004-05, due to reduced demand in the EU, which would be more than an expected increase in imports by developing countries, China in particular.

According to the report, against the background of larger export supplies and improved global stock levels, international prices of wheat and coarse grains are likely to remain under downward pressure during the 2004/05 season. For rice, firmer prices could be expected mostly as a result of reduced production in several major exporting countries.

Global meat prices stabilized somewhat in late 2004, according to the report, as import bans were lifted from previously disease-afflicted areas and exportable supplies increased. Meat production and trade are expected to continue to grow in 2005.

Source: FAO NEWSROOM, December 9, 2004

Food Technologists invented 'Green' Chocolate, Noisy Bread to Fight Obesity

As nutritionists and health gurus worldwide ponder how to reverse growing obesity in many parts of the world, a handful of food designers believe "green" chocolate and bread that makes noises might be solution.

After putting heads and tastebuds together, the food studio and four high-powered European chefs - a Briton, a Spaniard and two Frenchmen - have come up with

designer green chocolate, stylized eggs, chicken leg-like vegetable "drumsticks," and bread able to literally produce three different sound-bites.

"The food industry needs new shapes, new textures, new styles," said Edouard Malbois, who heads the world's self-proclaimed first designer food consultancy firm, Enivrance. "Our job is Imaginary Foods, a new discipline linking the real world and the world of fantasy."

Enivrance, which is developing designer foods for the likes of McDonalds, Lavazza and Barilla, and has worked with top stores such as Harrods of London and Galeries Lafayette in Paris, unveiled its latest creations at the two-yearly SIAL world food and drinks fair opening in the French capital this October.

Just like the fashion designers, the firm has put out one collection of new designs a year, the four concept-foods being the third such collection. Thumbing through his fashion book, Malbois insisted that the space-aged designs were "not virtual" but industrially-viable projects aimed at new-age lifestyles for ordinary people.

Source: <http://www.theallined.com/news/0410/124729.htm>

China's Imports of Soybeans seen as about 20 Million Tonnes for 2004-05

China is expected to import about 20 million tonnes of soybeans in 2004-05, according to USDA. The strong import forecast is based on continuing strong demand for soy products, especially soybean meal, in addition to a relatively low ending stock for 2003-04.

USDA reported that China's total contracts for U.S. soybeans reached 6.6 million tonnes as of November 18 for 2004-05 soybeans. This was 44% higher than the same period in previous year. Arrivals in the coming two months are expected exceed 2 million tonnes monthly, USDA said.

Source: The American Soybean Association Weekly Update, December 13, 2004

The news items and information published herein have been collected from various sources, which are considered to be reliable. While every care has been taken for authenticity of the material published, Exim Bank accepts no responsibility for authenticity or accuracy of such items.

Export-Import Bank of India, Centre One Building, Floor 21, World Trade Centre Complex, Cuffe Parade, Mumbai 400 005. Tel.: 2218 5272 Fax: 2218 2572 E-Mail: eximcord@vsnl.com
Agri Business Group: agrigrp@eximbankindia.com / sailsh@eximbankindia.com

Contact Numbers: Ahmedabad: 26576852, Bangalore: 25585755, Chennai: 25224714, Guwahati: 2599135, Hyderabad: 23307816, Kolkata: 22293416, Mumbai: 22830761, New Delhi: 23326375, Pune: 26458599, Budapest: (00361) 3382833, Johannesburg: (002711) 4428010, Milan: (003902) 58430546, Singapore: (0065) 653 26464, Washington D.C.: (001) 202-223-3238

