

Reinventing Indian Traditional Milk Production system For Healthy Human, Animals & Environment

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Abstract

The production of organic milk in our country cannot be looked in isolation but should be in conjunction with soil, animal & human health. Initiatives should, therefore, be taken to educate the farmers & consumers about the benefits. It is well understood that the entire process may take time and be costly but first step in this direction will be a welcome step which will improve farm profitability, rural prosperity & overall health of the nation.

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In India, our ancestors have been practicing sustainable agriculture maintaining a healthy balance of crop, livestock production & soil health. The farmland is tilled using the human and animal power for optimum agricultural crop production. The grains harvested provided food security and the leftover crop residues served as animal feed. In turn, the animals returned the favor to the soil in the form of dung, which is a natural way to enrich soils with vital nutrients. The livestock produce/milk produced was most nutritious next only to mother's milk. Moreover, this activity provided a source for additional income to the rural household. As the demand for milk increased, the traditional knowledge of milk production met with several departures. Though this resulted in increase in milk yield, it ran into major problems of pesticide & antibiotic residue. The West recognized these problems & adopted newer techniques or organic milk production.

During 1960 or 70's, Indians were already practicing production of milk which the Western world reinvented & named as organically produced milk. This may be a new concept for the Western world. But for us it is our age old traditional knowledge of livestock production. As far as organic or quality milk production in our country is concerned, our ancestors had practiced the same for the past several years. Maybe we did not name it as organic milk. The organic milk is definitely safe, tastier, healthier & safer.

Milk Production in India

We trumpet that we are the largest milk producer in the world. But the fact is that this highest milk production figure is a mere 3% of the total world milk production, and our cattle have the lowest productivity in the world. The highest milk production in the world is from the largest herd population which is 30% of the world. We have 57% of world's buffaloes and 15% of world's cows. The average milk production of Indian cattle is thus about 1/10 of the world's

average milk production. The demand for milk in India is expected to grow at the rate of 10% per year. The shortfall of milk in the Indian market is being made up by import of skimmed milk dry powder. The world milk prices are likely to shoot high owing to the demand in the market.

Organic Dairy Farming

The books define organic farming as a modern, sustainable agriculture system which maintains the long-term fertility of the soil and uses less of the earth's finite resources to produce tasty and healthy food. It is a balanced system that ensures soil, plants and animals enjoy the best conditions for development and growth.

Health Benefits of Organic Milk

Organic milk has all the nutritional goodness of non-organic milk but, due to the cows' more natural diet, it also has some additional health benefits. **"Omega-3- Fatty acids** Organic milk is naturally higher in certain nutrients than non-organic milk. One such nutrient is Omega-3-Fatty acids. Omega 3 fatty acids are essential for maintaining a healthy heart, supple and flexible joints, healthy growth and strong bones and teeth. This is due to the fact that organic cows are fed higher levels of natural red clover than non-organic cows. Further research shows that organic milk contains up to 71% more Omega-3 than non-organic milk and has a better ratio of Omega-3 to Omega-6 than non-organic milk. **"Vitamin E, Vitamin A and Antioxidants** Research has also established that organic milk has higher levels of vitamin E, vitamin A and antioxidants. Organically reared cows, which eat high levels of fresh grass, clover pasture and grass clover silage, produced milk which is on an average 50% higher in Vitamin E (alpha-tocopherol), 75% higher in beta carotene (which our bodies convert to Vitamin A) and two to three times higher in the antioxidants- lutein and zeaxanthine than non-organic milk. **"Conjugated Linoleic acid (CLA)** all milk contains Conjugated Linoleic Acid (CLA), which is believed to boost immune function and reduce the growth of tumors. CLA levels are generally higher in organic milk, possibly because organic cows eat higher levels of grass hay and silage

rather than concentrates. In fact, meat and dairy products from grass-fed animals can produce 300-500% more CLA than those of cattle fed the usual diet of 50% hay and silage and 50% grain. **"Pesticides** Organic dairy farms do not use artificial pesticides (insecticides, fungicides or herbicides) on pastures where cows graze. It has been estimated that in the Western world, human bodies contain traces of at least 300-500 potentially harmful chemicals absorbed from our food. In the Indian context, this would be much higher. The use of increased chemicals since the Second World War, when farming became more intensive led to increased percentage of chemicals in the human body. Some experts believe that children may be particularly susceptible to pesticide residues since they have a higher intake of food per unit of body weight than adults, have immature organ systems and may have limited ability to detoxify these substances. The rise in human fertility problems has been linked to pesticides. Five out of the 12 most commonly found pesticide residues are suspected to be hormone disrupting chemicals

Requirements of Organic dairy Farm "Transition period

The transition period is for one year. Dairy animals must be transitioned (managed 100% organically) for one year. This is a one-time, whole herd conversion to organic. All animals must be managed organically from the date the transition starts. **"Land Requirements** It is recommended that atleast 90% of the land be certifiable before starting the transition process. Land must not have had any prohibited substances, i.e. synthetic fertilizers, pesticides, herbicides, treated seeds, sewage sludge, GMO seeds or inoculants, etc, applied for at least 36 months (3 years) prior to the harvest of an organic crop. Crops harvested from transitional fields must be completely segregated from organic crops. **"Feed Requirements** Dairy animals in transition must be fed 100% organic feed for a full year. This may be from fields that qualify for certification that are included in the Organic Farm Plan. All feed supplements, including minerals and salt blocks must be approved. Antibiotics, GMO-derived products, animal by-products, urea, manure and synthetic preservatives are not permitted in any feed products. Mineral supplements must not contain prohibited ingredients (such as mineral oil and artificial flavors & colors). Use of treated seeds must be discontinued. A Pasturing plan must be developed. All animals - six months and older - are required to be on pasture during the grazing season. Animals must get a significant amount of their forage from pasture during the grazing season.

Constraints of producing organic milk

"Feed the feed & fodder which is given to the animals for feeding has high content of pesticides. In the given situation, it has actually become difficult to think of feed which is free from pesticides. Ayurvet has been working on the Hydroponics technology for the past few years & has now successfully developed a Hydroponics machine which can produce fodder upto 500kg/day. This fodder is safe, nutritious & pesticide free. The solution for pesticide free fodder, thus, is really the Hydroponics technology.

"Recharging the soil humus We had nearly 600 cows per 1000. **Food Total CLA (mg/g fat)**

Homogenized milk 5.50

Butter 4.70

Ice cream 3.60

Fresh beef 4.30

Veal 2.70

Lamb 5.60

Indians at the time of independence. Today this has been reduced to merely 100 cows per 1000 Indians. In the past, milk sector recorded annual growth rate of 6%. However, the cow dung, which is devoid of chemicals & synthetic fertilizers, can be ploughed back as organic manure, into the agricultural fields, which would result in higher crop production. Organic manure strategies will complement the accompanied organic horticulture and other agriculture produce. There are immense domestic and export possibilities in production of organic products.

"Animal Health The health of the animals is the key to success and higher economic development. For centuries, the traditional knowledge of Ayurveda has been used successfully to improve animal health & production. Some of the common problems which Ayurveda addresses are the areas pertaining to mastitis, retention of placenta, improving reproductive efficiency, tympany and indigestion. **"Extension work** Initiatives will have to be taken to educate the dairy farmers that prevention is better than cure. Use of natural medicines & their benefit demonstration in terms of animal health, fertility management and mastitis control should be given top priority. These farms will be the new incarnation of the old Extension services. Unlike present Extension services, these farms will be participating in a productive cost center farming activity by making use of the best of scientifically trained manpower for their practical functioning. The best of modern Vet techniques of ET, AI, Breeding, cattle Nutrition and care strategies, specific to the particular geographic location will have to be practiced.

Indian Heritage & World scenario

According to SAN, the Sustainable Agriculture Network of USDA (United States Department of Agriculture) cow is the one important link in the chain of Atmospheric Carbon and Nitrogen balance cycles. The top six inches of soil is said to contain four times more carbon than all living plants, animals and the atmosphere. This carbon is locked in the organic matter in the soil. As the organic matter of the soil is depleted it becomes a source of more carbon dioxide in the atmosphere. The depletion of organic matter and the accompanying release into the atmosphere of carbon dioxide is a significant reason for global warming than yet perceived, with all the importance being given to vehicular exhausts. As a strategy to economize on cost of production of milk, New Zealand introduced scientifically well managed grazing systems for its cows. In Vedas, these grazing lands were called *Charan* and were not the same as pastures or *Gochar*. The milk from pasture fed cows turned out to be much cheaper and became more available in the market. The consumers not only found this milk cheaper but also tastier. It was established by the scientists that only the milk and meat of the pasture fed cows contained high proportion of Omega3 and CLA (Conjugated linoleic Acid). These constituents in milk played the role of providing protection and immunity from self degenerating human diseases, such as Cancer, particularly breast cancer, Obesity, Cardiac Artery Diseases, Diabetes, Arteriosclerosis etc. This modern medicine research finding does not come as a surprise to us Indians, who have traditionally regarded a good healthy pasture fed cow's milk to be of immense nutritive and medicinal importance. We called it Amrit. Here we are not talking about the synthetically reconstituted white fluid which is being sold to the less informed Indian masses by the Dairy Industry and commercially promoted as the best nutritive milk. **Opportunity for Human Health and Rural Prosperity** In India, the production of milk has been consigned to the unorganized sector. The Dairy Industry that we talk of, is infact only a milk processing Industry. Fresh initiatives are now required to gradually introduce Dairy Farming in India to enhance our domestic milk supply. Looking into the International standards, producing organic milk may not be easy at this stage but atleast certain initiatives may have to be taken to produce good quality milk for human health. This will only be possible when the animal health is ensured through the right feed. Milk and cow can thus be utilized as the fastest and most cost effective methods to bring social change through health, wealth and prosperity of the nation. Rig-Veda mantra says, "*Gav upavatavatam mahiyagyasya rapsuda , Ubha karna hiranyaya*" ..RV8.72.12 where cows are well taken care of, the land remains highly fertile and productive. The people there attain well being and prosperity to wear gold ornaments in their years.

Conclusion

The production of organic milk in our country cannot be looked in isolation but should be in conjunction with soil, animal & human health. Initiatives should, therefore, be taken to educate the farmers & consumers about the benefits. It is well understood that the entire process may take time and be costly but first step in this direction will be a welcome step which will improve farm profitability, rural prosperity & overall health of the nation. Thus, it

may be suggestive to find out a common path & adopt integrated approach of holistic development of man and society.

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