"OUR GOMATA HAS OUTSTANDING BIO-POTENTIAL TO USHER A NEW ORGANIC-GREEN-REVOLUTION"

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The world-wide concern of Global Warming on account of increasing man-made industrial activity during last 200 years (post Industrial Revolution) has generated awareness about the increasing adoption of Clean Development Management (CDM) technologies: The Kyoto Protocol-1997. Under such knowledge scenario, we have now entered into Biotechnological Era in which organic-farming (chemical free food, medicine and water) is assuming top-most priority all over the world.

But, it is not a new concept for India. Till 1950's we had been using these techniques from centuries: courtesy of our Rishi/Muni, who were themselves outstanding foresighted scientists committed towards designing Human Welfare Models maintaining full peace with nature. The Vedic literature is full with many outstanding and time tested technologies of outstanding economic success under Indian environment (Ref. Ayurveda, Vriksa Ayurveda, Vishwa Ballab, Jatak Katha's of Budha period, etc.) The mass scale adoption of these technologies was the economic backbone of India, when it earned the name of Golden Bird.

However under the influence of material success achieved by the Western countries we in India started using chemical-fertilizers and pesticides (developed by them) since 1950 (forgetting our past success during 200 years of British rule). This was the time when India was reeling under the pressure of food-shortage and had to import wheat under PL-480 scheme (increasing international debts). The immediate success of such use, resulting in high farm production gave permanency to their continuous application in agricultural sector in India and elsewhere in the world, without realizing its long-term implication on local environment and contamination in food chain on account of being unnatural products.

The progressive increase in population all over the world has necessitated greater and greater use of chemical fertilizers, pesticides and insecticides for increasing food production. The resultant effect of their increasing use has started producing land degradation, water pollution (no method evolved so far to treat it) and introduction of unwanted harmful elements in food chain (for different elements present in soil has a natural trait/tendency to get concentrated in specific parts of the plants—roots/stem/leaf or flower/fruit and this concentration characteristics defines the nutrient value of the food or otherwise).

According to a WHO report (1998), 20,000 deaths occur annually from pesticide poisoning in developing countries and some 25 million farm workers in developing countries are actually poisoned each year. One group of chemicals, including many of the organ chlorine pesticides such as DDT, Chlordane and Heptaclor, is suspected of causing reproductive abnormalities in wild life and humans by disrupting the endocrine system of living organism. Traces of

DDT and HCF isomers have been found on soil, cereals, pulses, vegetable oils, bovine/human milk, fat, butter, fish, meat, egg, fruits, animal feed and ground water. The increasing knowledge about such contamination of the food-chain, many countries are now trying to regulate or even ban the use of these chemicals.

The nature itself has provided many potential (effective) alternatives to avoid use of such inorganic chemicals for food production in form of plant origin pesticides, biopesticides, biofertilizers, bioherbicides, organic manure, etc. Now, since they are natural products. They do not confront the nature. Such organically grown food using Gobara, Gomutra and Farm Compost tastes better, has natural flavour, is more nutritious, ensures betterment of soil and water quality. But above all it is a sustainable process. The application of plant origin pesticides like Neem, Tulasi, Marigold, Sorghum, Bougainvillaea, Chrysanthemum are well known to function as a pest-controller and effective against number of diseases.

Armed with such scientific background of Natures modus-operandi our ancestors had developed several organic farming technologies (most suited to different type of climatic scenario prevailing in India), making full use of locally available material, in which the native cow species (endemic to India) play the most dominant role. In the process they had taught us that " (i.e., Goddess Laxmi Resides in Cow). This pronouncement is not merely a myth, it is hard scientific truth (such pronounced biopropogative curative traits are not found in foreign cows). This truth has now started gaining worldwide recognition.

It is heartening to note that some industrious Indian farmers have started successful economic demonstration of these ancient environment friendly techniques (afforestation of endemic species, water resource management by pond construction and optimum use of their cow potential) of organic farming in different parts of the country. Some examples are discussed below —

1) Kanti Sen Shroff (the chairman of Excel Group of industries, Mumbai) is one such foresighted individual who has organized a trust named as "Shroff Foundation" for social development work. It was 25 years back, he had identified a piece of waste-land at his birth-place in Kachchh (Gujarat) for village development work. The idea was —"if this drought prone waste land (where grass was also not growing) could be turned into fertile land, then the entire land area of Kachchh can be converted into a granary."

   He started this work with Gopalan (year Indian cows) in this waste land. It started showing results in 3 years time and the soil of this barren land attained fertility traits under the influence (combination) of Gobara and Gomutra. As a result the dairy farm became self-supporting in cow-fodder. Then he began manufacturing carbonic-fertilizer by mixing locally available biomass materials like the seeds of Babool *(Robasta arahical)* stalk of Bajara (Millet) and Bhusa (straw cuttings) with Gobara and Gomutra. The application of this organic fertilizer not only increased the agricultural productivity, but the resultant availability of nutrient green fodder for cows increased their milk production. In this soil-enrichment programme no chemical-fertilizer and

pesticide was used (which need plenty of water for their effective performance and are the main source of polluting the entire food-chain).

In this connection an important point has to be mentioned for the benefit of the readers: "Almost all Indian's are aware about the Vedic-practice of using Gobara inform of organic-fertilizer and our farmers are making full use of it. But we have forgotten about our ancient science that Gomutra is an outstanding organic product in form of a strong-natural fertilizer, pesticide and curative medicine as well." This knowledge is now once again emerging among the enlightened Indian farmers/scientists and they have began using these old techniques with commercial success. Besides, the ancient Gomutra Chikitsa Vigyan has also started gaining popularity in India.

2) India is a big tea exporter in the international market. Many Indian teagardens have now switched over to produce organic tea by utilizing only Gobara & Gomutra by dovetailing them with modern techniques of farming and irrigation practices. The Western Business Houses importing tea from India give purchase preference to such Indian gardens who grow organic tea. This organic-tea commands a higher price in International Market.

3) Besides organic farming, the Shroff Foundation had simultaneously taken up water-harvesting programme by using traditional Indian practices and the modern water-management-techniques developed in Israel. This also started showing results in 2-3 years time. The water-table of the region which had gone down to 100 metre depths (on account of excessive pumping) and had come in contact of underground saline water, began rising to ultimately achieve the normal depth of 10-15 metres from surface. In the process of this upliftment in water table, the fresh water (potable) storage moved upward to automatically achieve separation from saline water, which was left at the bottom of the aquifer on account of its higher specific gravity. In Kachchh area there are 900 villages, where this water management programme is being implemented in mass scale.

4) In the year 2000 any Indian states had to suffer drought conditions leading to acute shortage of water. However, under such grim situation also, it was seen that towns/villages which had been paying attention towards water-harvesting programme for few years in their locality had plenty of water for their daily use. One such successful achievement was displayed by the Deogarh village in Junagarh district of Saurashtra (Gujarat).

The residents of Deogarh had also begun deploying diesel-pumps from early 1960's for pumping underground water, like in other parts of India. This continuous availability of water increased food production and agriculture became a round the year business, which otherwise was monsoon-fed one crop. Thus the local farmers became prosperous and their land prices shot-up to unprecedented level. The price of one acre monsoon fed land for agriculture valued at Rs. 200.00 per acre started commanding a price of Rs. 22,000.00 per acre. But this position lasted only for

10-15 years and with the yearly decreasing level of underground water table the scenario changed drastically to such an extent that the most powerful diesel pums (i.e., high hade) deployed became ineffective to pump out water. Thus farming practice, once again became monsoon dependent.

The shocked villagers started wondering as to how they have lost the magic-land in such a short time, which had made them so prosperous few years back. Gradually they realized their mistake that they have been indiscriminately exploiting their underground water resources without caring for its regular recharge to facilitate non-stop withdrawal (somewhat similar act of regular deposition of money in their bank account for later withdrawals when needed). The emergence of such knowledge inspired them to form a "Deogarh Gram Vikas Board" and through their own collective effort raised a fund of around Rs. 45,000/- for constructing check-bunds in the near vicinity of their village. On the strength of this fund, they obtained some additional finance from the government and by the end of 1997 they had constructed 4 cheek-dams in their area. These check-dams were filled up during the 1998 & 1999 monsoon and had activated natural ground water recharge mechanism in their area. Although during 1999 this region had received less than average rainfall, they did not face any water problem. However, in the year 2000 when Saurashtra and North Gujarat was reeling under acute drought-conditions, the Deoghar residents had no problem of drinking water or for irrigation. They had only to redeploy their old diesel-pumps which were lying idle for few years.

Many similar examples can be quoted from Maharashtra, Tamil Nadu, Madhya Pradesh, Andhra Pradesh, Karnatak, Rajasthan, etc. where local residents have themselves taken up water harvesting programmes to tide over the crisis. This was the traditional ancient practice followed in India—"community participation mechanism for water management", a practical approach.

Ramesh Dagar of Haryana (village—Akbarpur Barota, Dist Sonipet) has been doing organic-farming since last 30 years. He says that we can make our organic-ancient agricultural techniques (described in our classics) financially more effective by dovetailing them with our modern know-how. He is a very successful farmer and has demonstrated that with the application of multicroping organic farming, a 2.5 acre farm land can yield an annual income of Rupees 10 to 12 lakhs, besides generating employment for many farm-land workers.

In order to achieve this goal, he is doing market-demand oriented organic farming. He has systematically planted Neem trees along the boundary of his land and wide-spread rows of Popular trees within his property. The land area between the Poplar trees is used for farming. These endemic trees function as a natural insecticide/pesticide (these traits are described in Ayurveda etc.) facilitate ground water recharge with their wide-spread roots, which also help in adequate moisture-retention and proper air circulation within the farm-soil to keep it in healthy fertile-organic state.

In recent years, American scientists have developed a genetically modified variety of Poplar tree which is capable of sucking and absorbing pollutants from within 30 metre depth

through its roots like a straw-pipe, while maintaining the natural organic state of the top-soil where it is planted.

He has planted cluster of Banana trees in his property. Banana is one of the most trusted friend of a farmer since it has the capacity to transform worst soil into fertile state. Under its umbrella earth-worms multiply in geometrical proportion (1 kg earth worm yields 50 to 60 kg earth worms in a year). He uses these in manufacturing of wormy-compost. In the process, all rejected material of farm-land (leaves, stems, wild grasses, etc.) are also consumed along with Gobara/Gomutra in producing this rich organic fertilizer. Its consumption per acre is one-fourth of the Urea requirement and its application increases farm yield by 20 to 30 percent. Besides in summer-months its shelter is cool which is very helpful for growing flowers and is most suitable place for keeping Bee-Boxes.

Under such developed scenario, he is doing multicroping farming of seasonal vegetables, baby corn, flowers, mushroom (Dingri Dymushroom), Stevia *(Stevia rebaudiana*—a small plant, its juice is 300 times sweeter than sugar is very useful for diabetes patients), bee keeping along with paddy in monsoon. Simultaneously he is running a diary, a biogas plant and a fish-farm.

For fish cultivation, he has dug a pond in the down-most part of his land as per the ground slope and has constructed a drain, connecting it with the dairy-shed so that it leads its waste-water into the pond. The presence of Gobara, feed stock material, etc. in this waste water enhances plankton growth in the pond, which is the main food of fish and therefore they multiply at a fast rate with bigger size. Besides, he grows Kamal Kakari, Makhana, etc. also in the pond. Not only these, he is also practicing Green House Farming.

To start with, Dagar had only 16 acre of land, but with success in organic farming he is now the owner of 122 acre land. He is running a model 2.5 acre organic farm to demonstrate as to how Rs. 10 to 12 lakhs can be earned out of it. Its broad economic statistics are—

i) Bee Keeping: Start with 150 Boxes, which become double in a year. Its annual earning is Rs. 5 to 6 lakhs.

ii) Wormy Compost: Its surplus selling yields Rs. 3 to 4 lakhs per year.

iii) Mushroom: Its yields Rs. 3 to 4 lakhs per year.

iv) Dairy: A small dairy generates straight income of Rs. 30 to 40 thousand in a year.

v) Fishery : Rs. 15 to 20 thousand per year.

vi) Green House: This farming yields a return of 1 to 1.5 lakhs per year.

Besides, the Poplar trees generate a revenue of Rs. 70 to 80 thousand per acre at seven to eight (7 to 8) years interval.

5) Rajaram Tripathi of Chhatisgarh (Vil-Kodagaon, Dist-Bastar) is a modern high-tech farmer. A post-graduate degree holder in three (3) subjects, he was employed in good bank service, when he decided to plunge into organic farming. However, before under-taking farming as a profession he took specialized management

training of Herbal. Earning at the "Udyamita Development Centre" of Madhya Pradesh. Armed with such background training (including marketing of herbs) he resigned from Bank-Service and started growing white Musali *(chlorophytum borivillianum)* in a 5 acre land in 1999. The white coloured dry-tubers of this plant are used in preparation of all type of tonics, including chawanprash, since its anti-oxidant trait helps in preserving man's youthful vigour for years. It is used in manufacturing of 116 medicines. In the world market its demand has reached a level of 35,000 metric tonne per year, but the world production is only able to meet 20 percent of this demand (i.e. 7000 metric tonne) and of this 50 percent is produced in India (a big exporter of Musali). The current price of dry Musali is Rs. 1000/- per kg.

Thereafter he started growing Lemon Grass *(Cybopogon flexousis)*, Sinduri *(Bixa orellana)*, Gurmar *(Gyminema sylvestre)*, Boch (Acorus Calamus), Sarpa Gandha *(Ranwolfia serpentina)*, Kalmegha *(Andrographis peniculata)*, Konch *(Mucana pruriens)*, etc. in his farm, known as "Ma Danteshwari Hightech Herbal Farm". The current activity of this farm is spread over at seven places in Bastar district—white Musali in 170 acre, Lemon Grass in 70 acre, Sinduri in 15 acre, Gurmar in 2 acre, rest (Sarpa Gandha, Kalnegha, Ashwa Gandha, etc.) in 20 acre. He has also installed a Two (2) tonne capacity distillation plant for processing Lemon Grass and Boch. Besides value addition work of various herbs is carried out in this farm. In a very short time this farm has acquired international status and representatives of many countries (Singapore, Japan, Germany, France etc.) are visiting Bastar for purchase of herbal plants and value added products.

On the strength of such outstanding demonstration he was able to secure a loan of Rs. 1.08 crore from the State Bank of India, Jagdalpur for installing new processing plants to make farm products more competitive in the market.

Besides he has established an institute named "Sampada" to train local tribals (free of cost) in organic farming, medicinal plants and processing of herbal produce. Free seeds are distributed among the local farmers of Bastar and buy-back arrangement of their produce is also functioning through this institute.

Impressed by his work, Dr. A.P.J. Abdul Kalam our former President was in touch with Rajaram Tripathi while developing a Herbal Garden within Rashtrapati Bhawan, New Delhi.

Rajaram Tripathi has successfully demonstrated that an investment of Rs. 2.5 to 3 lakh per acre of land can yield a profit of "twice the invested amount in a year."

6) L.N. Pal, a mechanical engineer employed with the Burn Standard, Howrah resigned from his service in 1977 and took up organic farming of herbal plants in Chhatna and Onda block in the western part of Bankura district in West Bengal, when farming of herbal plants was a very new concept. Now, through his "Indus Krishi Bikash Company" he is growing white

Musali in 150 acres of barren land in these blocks and exporting its produce to western countries, including The Middle East. Indus received a export-order worth Rs. 3 crore during the year 2004.

His efforts have attracted attention of the local marginal-farmers (who have been failing to achieve good paddy yields for years) to organize contract farming of Musali and they have jointly contributed 30 acres of land as their share in the venture. Indus is supplying free seeds to them and has also made buy-back arrangement of the entire produce so that they will not have to face marketing problems.

In a written statement in Lok Sabha (Sept. 2007), the state Minister of Agriculture had informed the members that in India—

i) There is 18.257 crore hectares of agricultural land, 12.73 crore farmers and 10.68 crore farm labour,

ii) Certified organic farming is being done in 1.90 lakh acres (i.e. 76,760 hectares) only,

iii) Although organic farming is done on much larger scale, the lack of infrastructure facility for certification, the produce from such farms cannot be exported in world market,

iv) There are 15,000 certified organic farms (each covering 500 to 1000 acres of land) who are exporting grains, fruits, tea, herb, etc. to USA, Europe, Mid-East, Australia, Japan, etc. These farms are producing 1.5 lakh tones of organic products per year.

v) The world market of organic produces is around 40 billion dollars per year and is growing at the rate of 13 percent in a year. Indian share in this is only 1 percent.

India is biodiversity rich country and therefore, has tremendous potential in this business sector. In India 30 percent agricultural land belongs to marginal farmers, who are mostly uneducated, but are the owner of 70 percent Indian cow (total strength 29.17 crore in the year 2000 with growth rate of 1.3 perent per year). An Indian cow, on average yields 10 kg of Gobara and 17 litres of Gomutra, which as a thumb-rule considered adequate to maintain soil fertility in one acre land. The experience of organic farming in India has also shown that through tradital practice of Gopalan a barren land can be converted to fertile agricultural property within 2 to 3 yrs time. Besides, based on the traditional scientific knowledge of outstanding Bio-Propogative/Curative properties contained in the Panchagavaya * of Indian cow (i.e. Gobra, Gomutra, Milk, Curd, Ghee) a new business of manufacturing organic products of daily use has emerged in India, such as—Soap, Shampoo, Face Pack, Oil, Toothpaste, Washing powder, Grain preservation tablet, Fragrance stick, Distemper, Mosquito repellent coil, Disinfectant, etc. are being commercially manufactured in India. These organic products of daily household use are in great demand in foreign countries. Not only this, India's traditional Cow Urine Therapy has started emerging as an alternative of the western allopathy treatment which produce side-effect in the patient. The antibiotic medicine in this treatment may gradually become ineffective to combat contagious diseases by 2020, due to immunity being developed in source bacteria towards the

modern inorganic drugs as a natural law of adjustment for survival: says a W.H.O. report of 2000. As against this, the cow urine is an natural organic product having outstanding curative potential. Indian scientists have now started acquiring its National and International Patents for different economic/useful applications, may it be farming or pharmaceutical sector.

Therefore, we have only to educate our farmers through actual field demonstration/ training and encourage them to take up organic farming and production of organic consumer products, making optimum use of their unique cow species Such education at field level will raise the confidence of Indian farmers, once they understand allround economic utility of their cow. The mass scale emergence of such economic activity in the Indian scene will spread a net-work of cottage industry at village level and generate mass scale employment too.

On the other hand, to keep pace with such development the Govt. of India should expand the infrastructural facility (spread all over India) for certification of these organic produce as per international marketing standards. This would ensure India's dominance in the emerging biotechnological market at international level. A simple logic will explain the advantageous position of India: we have 18,257 crore hectares of farm land which will require 18,257 crore of cows for organic farming. As against this requirement, the number of cow species in India was 29.17 crores in the year 2000 itself. Thus this surplus strength of our cow species (more than 10 crore) can be exclusively utilized for the export oriented production of organic: compost, pesticides and house hold products of daily use. The export potential of such organic products from India has already started emerging. A highly advance country like USA (where there is no shortage of cow family) is now seriously trying to import bio-compost\pesticides from India. Reason being that, the chemical analysis reveals that the dung and urine of Indian cows scores over the USA version by way of organic content and superior bio-fertility/ curative natural traits endocrine in them.

As a consequence of such interest shown by United States, the Municipal Corporation of New Delhi has initiated the rounding-up action of stray cattle on the streets of Delhi (estimated around 35,000). These can produce enough urine and dung to yield 1.6 lakh tones of vermicompost and 70,000 litres of biopesticide each day. These figures demonstrate the outstanding economic strength of Indian cow population.

However to take full advantage of this indigenous resource, Indian farmers have to be educated through vocational training at field level about its collection methods and its value addition. Besides in the wake of Global Warming (changing weather and rainfall pattern) the Indian farmers have to be provided information support in respect of farming practices they should adopt in their region during which part of the month or time in that particular year.

This is a huge task and the Indian government alone cannot create such infrastructural facility spread over the country. Indian citizens have to take initiative in such wide spread activity as a community service in form of NGO. In authors opinion the corporate Houses of India should dovetail this activity in their "Environment Management "Programme" (E.M.P.) which is now a statutory requirement for getting project clearance in India. Such extended part of the EMP could be called "Corporate

Social Development Programme" (C.S.D.P.) in the command area of a particular unit. The aerial extent of this command area could be defined on the basis of proposed investment at a particular location. The implementation of CSDP would also generate additional employment outside their project and simultaneously generate good will among the local population towards that industrial house. This would also help in maintaining industrial peace in the area. Therefore CSDP should also be made mandatory for the industries and for this liberal tax-rebate be provided by the Govt. of India, somewhat like earning carbon-credit for adopting Clean Development Management (CDM) technologies under Kyoto Protocol. Such initiative would make India a world leader in biotechnological business.

On the other hand, such widespread awareness regarding endocrine qualities of Gomata will inspire all Indians to provide it full protection, which law of the land has not been able to achieve.