

## **“Women Cooperatives for Medicinal and Innovative Nutritional Plants”**

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This paper propose on the basis of empirical study of Indian climate, culture, society and market requirements to create women cooperatives managed by women professionals for growing, processing and marketing plants of medicinal and nutritional value, that take care of individual health and expand economic and social health of society as well. This is an attempt to explore and coordinate un-exploited resources, natural and human, by creating viable cooperatives to run for fulfilling social needs.

According to WHO report, over 80% of the world population relies on traditional medicine largely plant based for their primary healthcare needs. The EXIM bank of India, in its report (1997) has reported the value of medicinal plants related trade in India of the order of 5.5 billion US dollars and is growing rapidly. According to WHO, the international market of herbal products is estimated to be US \$ 62 billion which is poised to grow to US \$ 5 trillion by the year 2050. India’s share in the global export market of medicinal plants related trade is just 0.5%.

India is seventh largest country in the world in terms of available land. Following table gives an over all idea about land held, cultivated and irrigated in the country. It is evident that 142 million hectare of land is available for growing medicinal and nutritional plants.

### **Statistics of Land in India**

<b>Sr. No.</b>	<b>Particulars</b>	<b>Area in Million Hectare</b>
1	Geographical area	329
2	Land utilization area	305
3	Cultivated area	190
4	Irrigated area	73
5	Area under forest	69
6	Potential area for medicinal and nutritional plants	142

The life of plants depends upon many climatic conditions like type of soil, humidity, wind, rain fall during the year, quality of water, temperature, and variation in temperature during the day and also during the year. India enjoys diverse conditions of soil and climate. It falls under the tropical parts, imbibe Cherapunji as highest rain fall in the world, many centers are one of the hottest in Rajsthan, A.P., Orissa and also collest part in Leh of Kashmir. Many Himalayan hills are one of highest mountain in the world. Southern part of the country has high temperature and humidity. As you go up in Central part, that is hot and dry, while in North it is cool and dry while in Eastern part heavy rain is witnessed. The western part, particularly Rajasthan and Kutch, part of Madhya Pradesh as well as few parts of Orissa, Karnataka, Andhra Pradesh faces short fall of rain and water. There are many part near the sea sore which are full of sweet water surrounded

throughout the year, whereas few parts import drinking water which are even closer to sea. North and East part, ranging Himalayas are coolest and full of water. Part of Tamil Nadu gets two rain season during the year, while large part of plain India observe rainy season only for two to three months during the year. This diversity is wealth for the nation as such.

Apart from climatic variety, soil in the country varies widely from plain to hilly land, sand dust to most fertile land and arid salty land to land full of stone are found in different part of the country. The nature has its own requirement to grow a plant; there are different varieties that get life only in one of the condition. It is only India or among only few country in the world, where some plants are grown, e.g. Sandal Wood or Saffron. Due to variety of soil, climate and other conditions India is capable to produce typical plants.

India has 15 Agroclimatic zones, 47000 different plant species and 15000 medicinal plants The Indian Systems of Medicine have identified 1500 medicinal plants, of which 500 species are mostly used in the preparation of drugs. The medicinal plants contribute to cater 80% of the raw materials used in the preparation of drugs. The effectiveness of these drugs mainly depends upon the proper use and sustained availability of genuine raw materials. The domestic market of Indian Systems of Medicine & Homoeopathy is of the order of Rs.4000 crores (2000), which is expanding day by day. The Ayurveda drug market alone is of the order of Rs. 3500 crores (2000). Besides this, there is also a growing demand for natural products including items of medicinal value/pharmaceuticals, food supplements and cosmetics in both domestic and international markets. Presently India's export from Medicinal and Herbal plants is Rs. 446 crores (2000) only which would be raised to Rs.3000 crores annually by 2005. India, with its diversified biodiversity has a tremendous potential and advantage in this emerging area. Nutritional plant market has not been systematically studied and it is even more potential pocket.

As per 'year 2001 census' population of India stands to be 1027 million where 496 million are female inhabitants, i.e. 48% of total population consist of women. For sustainable economic and social development to take place in any country, it is necessary that people participate in the necessary economic and social process. The process of participation is complex—and it is by no means clear that it is comprehensively inclusive. By this, we mean that it is not possible to assume that all sections of the population take part effectively in the economic, social and hence political and democratic processes of society. There are many reasons why people may not participate—from apathy to a sense of helplessness. Women are one side of a coin, half in every respect, then why not in socio-economic and political power?

It is pertinent to note that unless specific conditions are met, women face multiple hurdles and finds it difficult to participate in any activity that has hitherto been a male bastion. The reasons for this are gender specific. Women are less mobile than men are. They have domestic responsibilities, which puts limits on the time they can spend in such processes. There are historical prejudices. Consistent efforts will have to be made over a period of

time to engender the social and economic activities that are critical to this process. Someone has rightly said that woman is man with a womb, and as she carry womb, she need to nurture child in her womb and naturally she becomes weak and engaged in essential feminine activity that man does not require by natural reasons. At the same time, women have natural skill in certain activity where a man is unable to match her. They can do hand work in better and efficient way than her counterpart.

India is rural and agro based socio-economic domain. 54%of Indian work force is engaged in agriculture, where 37% of them are women workers.

India is substantially agriculture based society and its large number of habitants lives in rural area. India is tropical country in South, West and Central Part, while is cool in North and few Eastern parts ranging Himalayas. India is full of natural resources, many of them are unexploited. It ranges from mines and minerals to plants, herbs, fruits, vegetables, trees, flowers, seeds, roots, stems and bark.. that may be of important medicinal values and potential nutrients. Its ancient culture and tradition is familiar since Rig Veda. But as the upsurge of modern times these values and traditions are under or un-exploited.

Health is wealth, and as WHO defined health as ‘..state of complete mental, physical, social and spiritual well being and not merely absence of diseases or infirmity’. This is realized by use of various medicines following different systems, Indian Medicine System known as ‘Ayurveda’ is blessing for many health problems where other system fails or have side effects. It is cheaper and hence more affordable by poor section of the society. The medicinal plants as proposed by Indian system of medicine may be used as important element of health.

Indian climate and land is very rich and diversified that thousands of medicinal plant spices are spontaneously grown or categorically cultivated. It is estimated on the basis of different projections, India can supply such medicinal and nutritional plants to the tune of 120,000 Million INR per year. Indian farming and tribal community is traditionally cultivating few of the plants and are aware of its utility. If these plants are scientifically cultivated there is huge market potential that can serve needs of the society and may be a driver of growth.

### **Medicinal plants and their properties:**

The vegetable world comprises three main groups of plants: Superior, Intermediary and Inferior. These encompass bacteria, microscopic algae, mushrooms, ferns, brushes and trees, among others. Their identification is a task of specialists and the limit between the vegetal and animal world is not clear. To simplify matters, we consider plants those recognized as such by ordinary people. Books about medicinal properties of vegetables normally seem to treat differently herbs and medicinal plants. However, herbs are seed producing annual, biennial or perennial plants that do not develop a persistent woody tissue. Perhaps because herbs have such an important historical and tradition in healing,

sometimes they are treated as a special category of plants i.e., those particularly valued for their medicinal, savory or aromatic qualities.

Government of India has initiated action in this direction to promote and facilitate medicinal plant activities. By a Government Resolution the National Medicinal Plants Board was set up under the Chairpersonship of Union Health & Family Welfare Minister. Presently, various activities and programmes related to diverse issues concerning medicinal plants are being pursued independently by numerous Ministries. An appropriate mechanism for coordination and implementation of policies relating to medicinal plants both at the Central and State levels is necessary to facilitate inter-Ministry, inter-state and institutional collaboration and to avoid duplication of efforts.

Further, National Tree Growers Cooperative Federation is apex body under which Primary Tree Growers' Cooperative Society numbering 633 have total membership of approximately 50,000 may be used as grass root networking for promoting medicinal and nutritional plants growing blending with processing and other activities. The same can be further linked up with Primary Agriculture and Marketing Society Network (PACS) working throughout India. There are 95000 plus PACS having membership of 103 million. Women members in PACS are exceeding 3 million. The reason for small number compared to male membership is due to male dominant culture where properties are held by male member of the family, and ownership of land is basic criteria to be member of PACS. Tree Growers Cooperatives' main function include creation of common property forests that are diverse, ecological sound, and which cater to the range of survival needs and promoting & strengthening of village institutions for governance of common property forests. They are dealing in Neem Biocide plant, Neem is one of the widely used customary plant for cure of many diseases.

As per research prepared by National Medicinal Plants Board, there are 2205 flowering plants where 915 plants have medicinal value. There are 860 Indian System Medicine pharmacies using 270 such plants having medicinal value. More research is required to identify unorganized and traditional working with medicinal plants. The following table depicts brief idea of very few typical plants grow in different climatic conditions.

**Table indicating Medicinal & Nutritional Plants**

Sr. No.	Traditional Name	Latin/Scientific Name	Geographical area	Climatic/Soil Conditions	Utility
1	Isabgool	Psyllium Husk	Gujarat	Tropical, Black soil	Purgative, weight reduction
2	Gooseberry	Emblica officinalis/ myrobalan	Western, Southern India	Hilly, stony land, tropical	Increase immunity
3	Myrobalan	Terminalia chebula/ Chebulic myrobalan	At high altitude	Hilly	Digestive
4	Guggul	Gum guggul/ Commiphora mukul	Rajsthan	-do-	-do-
5	Aloe	Aloe vera	Through country	Dry and stony land	Anticancer, healing
6	Swarnpatri	Cassia angustifolia/ Indian senna	South India	-do-	Anti allergic, digestice
7	Sandlwood	Santalum album	Karnataka, Tamil Nadu	Hilly	Oil is used for skin and nervous system
8	Holy Basil	Ocimum sanctum	All over country	House plant	Traditional cold, cough medicament
9	Cinchona	Cinchona officinalis	East India	Sand, humid land	Anti malarial
10	Opium	Papaver somniferum	U.P., Bihar, East India, West Bengal	-do-	Sadative
11	Chest nut	-	-do-, Gujarat	Water pits	Nutritional

Diseases like cancer, AIDS have no workable and successful remedies yet in allopathic system of medicine. Medicinal plants give sigh of relief in such incurable conditions, and without any damaging side effects. *THUMER* a plant grown in Uttaranchal Pradesh, with its Latin identity as *Texus Baccata* is known as anti cancer drug. It is highly valuable and its market price stands at INR 1800 million per kilogram. It contains Texol, particularly in leaves and bark, which is used as anti cancer in injectable form. The desired climate is available in India and USA, as it requires high altitude of 1800 – 3600 meter, other factor

like factor fertile land, humidity and temperature is suitable in Plain field south of Himalaya range. It is spontaneously grown and found in specified range in Uttaranchal Pradesh. Creation of awareness, scientific plantation, research and back up by government for development of its plantation and protection may give not only excellent opportunity for business but prove elixir of ailing cancer patients by providing new life.

Aloe barbadensis, popularly known as Aloe Vera is another medicinal plant spontaneously grown in part of Western, Southern and Central India that is used as traditional medicine. Vera components are found as booster to immunity, combat HIV, and treat certain type of cancer (particularly leukemia). European folk medicine advocates its juice for relieving heartburn and ulcers while the latex acts as a laxative. Nutritionists consider Aloe as effective to dry skin, useful to treat nervous disorder and arthritis. It also improves liver function and is good anti-ageing agent. Beauticians swear by its healing properties, used as soothing topical remedies for sunburns and wounds. Its antifungal and antibacterial properties are useful in skin irritation, reducing agent of psoriasis symptoms, to lessen the painful effects of shingles and shrink warts.

Nutritional plants that can be explored ranges from Soya (Glycine max), Algae (Spirulina), Wheatgrass, Mushroom, Alfalfa (Medicago sativa), Gooseberry and Chest nut are used as good nutritional agents.

For centuries, man is using Mushroom (*Lentinus edodes*, *Grifola frondosa*, *Ganoderma lucidum*) that bold yet delicate taste to the soups. It provides wealth of nutrition – protein, fiber, vitamin B & C, calcium and other minerals. There are many varieties, but Shiitake, Maitake and Reishi have demonstrated phenomenal healing potential too, which may be used as strengthening agent to immune system and promote longevity. These varieties are fit to the Indian climate. Maitake mushrooms are best known for their cancer fighting properties. It can block the growth of cancer tumors and boost immunity. Researcher suggests Maitake can even reduce insulin resistance among Type 2 diabetes patients. Shiitake lowers cholesterol and even appears to be effective against HIV and hepatitis B. Studies in Japan indicate that *Lentinula edodes mycelium* (LEM), an extract of Shiitake, is more lethal against HIV infected cells than AZT, a well known medication for AIDS. Reishi works best for asthma. The Chinese and Japanese have used it as a medicine for liver disorders, hypertension and arthritis.

From the humble *neem* leaf to garlic pods, Indian food ingredients have long been valued for their medicinal properties. Turmeric is found having anti cancer properties. Turmeric is cultivated and used in kitchen widely since time immemorial. In a recently presented research paper by a US based Indian American nutritionist proclaimed presence of curcumin in turmeric possess' strong antioxidant properties. It is claimed that curcumin protect against environmental chemicals that damages DNA. Turmeric is traditionally used as kitchen ingredient in India, as boosting metabolism, correcting digestive proves, treatment of wounds, as an antidote to arthritis and as cosmetic.

Another natural product, called super food, Algae (*Arthrospira plantensis*) is developed as the “food of the future”. It contains 65% protein and beta carotene, cynocobalamine, essential amino acids, calcium, other minerals and rare essential fatty acid GLA. Apart from its nutritional value, it is considered as anti-cancer that generates new blood cells. In Russis, it was used for treating radiation sickness after Chernobyl episode.

Indian cooperative movement has its root in every sphere of life, it is omnibus and can be used as networking for training, cultivating, transporting and marketing these plants of medicinal value. Indian cooperatives are found in every village, credit and non-credit, farm and non-farm, marketing, processing, milk and dairy, fertilizer and sugar, fruits and vegetable cooperatives and housing cooperatives all over India. These well existed institutions can be adopted for engaging rural and tribal women in their routine activity of farming with a little training and change.

**Following table depicts statistics and growth of women cooperatives in India**

Particulars/Year	1990	1995	2000	2002
No. of Women Society	5478	7195	8393	8500
Turnover (Million INR)	287	593	884	960
Membership	539000	591700	842300	850000
Working Capital (Million INR)	596	1479	1160	1200
Share Capital (Million INR)			161	
Government Participation			21%	
Sale (Million INR)			429	
Society earned profit			37%	
Women Education Programme (Trained)			109000	110000

Setting up medicinal plant cooperatives may be the way out to preserve important medicinal plants. As demand for herbal medicine shoots through the roof and over exploitation of herbs becomes a major concern, researchers and experts with help of government and agriculture universities may assist in promoting medicinal plants cooperatives. Union Government of India has banned 29 endangered medicinal plants and is providing cent per cent subsidy to farmers for farming such plants through National Medicinal Plants Board (NMPB). NMPB was set up by Government of India in June 2002, to preserve, promote and assist activities related to medicinal plants. These

activities range from research, growing, financial assistance, subsidy and grants, educating, processing, marketing and related business processes. It is also advisory authority to government in enacting legislation in this regard. 915 plants have been identified with medicinal value, from different agro-climatic zones. These plants are used by Ayurvedic and Homeopathic system of medicines. In one WHO forecast, it is anticipated that global market for herbal products is expected to be US\$ 5 trillion by the year 2050. This optimistic and scientific view provides high potential for business opportunity in medicinal plants.

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Women in India play an important role in social life, since time immemorial women are not merely managing their houses but have shown their interest and ability to work for whole society, all segment and sectors of society. Their role in economy is silent, but sounds well and remarkable as their invisible contribution in all economic activities can not be neglected. Indian old Sanskrit literature quotes "...*Nari sarvatra pujuryate...*" – women be worshiped everywhere. It gives a place to women to a respectable position. On the other hand women are ignored, and considered as ordinary household who can only work in house and farm, cook, wash and deliver child. But, thanks to large pool of women, whose participation in social activities, science and technology, political, and economy and so forth; and where not women worked at par with men and in many case they outraged men.

Again, women's role in any particular field cannot be seen as isolated subject, women's role in other field like technology, market and industry make an impact on negotiating politics, cooperative is one of such platform. There is cyclical and cascading effect of role of women in different field that empower women to contribute more to the society. Women in business, science and technology, art and craft, management and administration, employment in government and private sector, professional service and sports, do make an impact on over all political achievement. The overall development of the society is seen in all important activity, sector and segments of the society. Cooperatives in India, gives an example to the rest of world, empower women to achieve objectives of cooperatives and hence over all social and economic development of the society.

The need for greater participation of women in cooperatives especially in areas where they have a natural advantage is accepted by all. It is known that under the system of adult franchise prevailing in India, women have equal opportunities for voting and electing their representatives in legislatures as also in Local Bodies, constitution amendments in India confers right to women candidates for  $\frac{1}{3}$  of total seats to be reserved where a male candidate can not contest. Similar provisions are necessary in governing

bodies of cooperatives, or alternatively a privilege should be conferred to cooperatives having this type of provision. Government is also extending various concessions for promoting education among girls and women. However, despite of these favourable developments, a majority of women are still illiterate and do not have access to various resources. For upliftment and economic independence of women and to encourage them to participate in economic activity, privileges to women cooperative can be of great value.

To exploit the huge market of thousands of crores of rupees world wide, and to empower women, it is always desirable, feasible and viable that women cooperatives managed by women professionals, made up of farm and tribal women members to plant, grow, process and market medicinal and nutritional valuable plants and its product, there is ample scope of business opportunity. It is not only driver of economic growth, but an instrument to make the healthy society, balanced society and happy society.

According to the World Health Organisation estimates, the present demand for medicinal plants is about US \$14 billion a year and projected and by the year 2050 is US\$5 trillion. Medicinal plant related trade in India is estimated to be around Rs.550 crores per year. While the value of global trade in medicinal plants has been put at over \$60 billion per year, Indians total turnover of Rs. 2300 crores of Ayurvedic and herbal products, major over-the-counter (OTC) products contribute around Rs.1200 crores. Other formulations fetch around Rs.650 crores. And classical Ayurvedic formulations contribute the remaining Rs. 450 crores. With world demand growing at 1% annually, the export market for medicinal plants appears to be growing faster than the Indian domestic market.

An earlier Exim bank study, finds renewed world wide interest in natural medicines and newer cases in food and cosmetic industries, with good prospects for exports of medicinal plants from India. A favourable policy framework is required to promote commercial cultivation, research and development, and increased exports of medicinal plants. The study adds that exports of finished products, rather than of crude material, should be encouraged.

The cosmetics industry as well as aroma therapy are two important areas where Indian medicinal plants or their value-added extracts or essential oils can contribute a lot globally. India will have to hone its marketing skills with suitable strategies capable of catering to the dynamic market requirements, supported by an appropriate policy framework.

The study also advocates an integrated approach to promote export of medicinal plants from India, right from the stage of research, cultivation, collection, storage, processing and marketing in an organized manner, with the help of leading Indian pharmaceutical companies. It adds that it is imperative to evolve a national policy in medicinal plant conservation, a nationwide network of medicinal plant nurseries.

For long-term conservation and management of medicinal plants, an in situ network would have to be integrated with regular forestry and wild life management in the country. Illustrated manuals and comprehensive lists correlating local and trade names, with botanical names need to be prepared to help international and national efforts to manage trade in wild medicinal plants.

It finds India in an advantageous position for cultivation, on account of many types of climatic and soil conditions. To maintain standards of quality, safety and move for harmonisation and standardisation with scientific data, other measures include the training of pharmacologists in medicinal plants research.

This paper makes an attempt to create a model for women cooperatives that grow process and market medicinal and nutritional valued plants networked and assisted financially by credit cooperatives, networking other cooperatives for marketing and to create employment for thousands of rural women. The paper foresees percolation and replication of the model society proposed here in other part of India and rest of the world, like that in Japan where Japan Consumer Cooperatives are dealing in medicinal plants may be set as an example for Indian women professional to join hands with their farmer fraternity.

Grass root level cooperatives may be either existing cooperatives working in agriculture, forest, marketing rural and agriculture product or new primary cooperatives may be framed consisting of women members engaged in such activities. Similarly existing or new cooperatives engaged in urban area like consumer or housing cooperatives may be used in assistance of marketing. While cooperatives engaged in scientific, health care, processing, storage etc. may be used for activities concerning with medicinal plants diagnostic, health, research and development, drying, processing, storing and marketing. The cooperatives may include other cooperatives as member for delivering medical services, obtaining credit and insurance of member of cooperatives. Three tier structure may be relevant where primary district level cooperatives may be assisted by State level cooperatives for research, marketing and credit assistance. Apex level national cooperative comprised of State level cooperatives may assist at strategic and central level political issues. Looking to the international scenario, National Medicinal Cooperative may also act as an agent with global agencies, that can propagate our marketing strength and keep abreast latest development to Indian cooperatives.

In conclusion, women cooperatives may be an instrument in carrying out the business activities as mentioned in medicinal plants and nutritional plants, to capture the advantageous position of India in world market. India's present share in the global export market of medicinal plants related trade is just 0.5%. By well planned and coordinated effort, India can raise its stake in world market to more than 10%. This may have far reaching effect in social and economic status of the country.

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