SPICES - POTENTIAL CROPS FOR EXPORT MARKET

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Abstract

In Nepal, spice crops have immensely contributed to raise the socio-economic status of the farmers, to export earning of the kingdom and to lessening the environmental degradation. But at present, export to overseas destinations has ceased and India is the only market available for our products. Imports have doubled but over all export volume is almost stagnant. Hence, the balance of trade in spices is depressive.

Despite its diverse eco-geography, climate, soil, production and export potential, Nepal has yet to make a dent in the international trade of spices and allied products. For this, research and development on marketing aspects need more efforts, commitments and investments from all sectors.

INTRODUCTION

The term spices covers a group of plants and vegetable products or their mixtures used in whole or ground form for imparting flavor, aroma, piquancy and also for seasoning of foods (Pruthi, 1993). The parts of the plants used as spice include Rhizomes, bulb, fruit, seed, leaf, root, unopened flower bud, bark, stigma, olegum resin, pericarp lobes, peel of fruit, berry, unripe fruit, aril, kernel, stem, pod and whole plant. These plant or plant parts give agreeable flavor and aroma to food that promote appetite and subsequently add to eating pleasure. How ever, spices are not classed as food due to lower total intake and calorific value. They are thus, food additives or conditioners (Tabinga and Gagni, 1970).

Spices are highly valued for volatile oils which are responsible for flavoring, preservative and antiseptic properties. In addition, appreciable amounts of protein, fiber, starch, mineral matter, tannins etc. are also found. Their use also varies greatly. In developed countries, most segments of food industries use spices but in developing countries, owing to lack of food processing industries they are mostly used in household sector. Apart from this, pharmaceutical, dyeing, cosmetic and perfumery industries also consume large quantity of spices.

Developmental overview

Since ancient times, spices have occupied important place in the lives of people. Their importance and use dates back to "Vedic" and "Biblic" times. Historically, spices are native crops of Indian sub-continent, especially India (called " home of spices") where spice trade was a prosperous business.

Hence, the nations of western Europe then fighting bloody sea wars to conquer the spice producing colonies made a fascinating story on spices. India enjoys the privilege of spice country to date. It ranks top in terms of production and export (12-14% of world demand) followed by other neighboring countries but in smaller quantities.

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In Nepal, crops like cardamom, ginger, garlic, chilly etc. might have been introduced more than a century ago, since many generations of our ancestors have grown and used them. How ever, in the early days these crops were under low profile as their commercial potentiality was not exploited.

Agriculture development activities in the government plans got top priority in the seventees only. As an outcome, fiscal year B.S.2032/33 was declared as "Agriculture Year 1975" and undoubtedly, it was a memorable event in the history of Ag. development in Nepal. The outcome was the introduction of new infrastructures, institutions, plants and animals. Apparently, economic potentiality of spice crops were also recognized and prioritized.

The research and developmental activities suffered great set back as these institutions and programs lacked stability and continuity as evident from table 1. The chronological events suggest that developmental plans still lack clear vision and stable policies for developing spice sector in the country.

Table 1. Chronology of developmental history in spice crops.

Year	Programme	Activities	Institutions
2033	Cardamom Dev. program Fikkal, Illam	Research, production training & extension	DOA (2033 - 2039) NTDC (2039 - 2045) DOA (2045 - to date)
2034	Ginger Resch. program Male patan, Pokhara	Research, training extension	DOA (2034 - 2047)
2049	Ginger Res. Program Kapurkot, Sallyan	Research & training	NARC (2048/49)
2049	Cardm.& Ginger Dev. Prgm. Khumaltar, Lalitpur	Planning, monitoring feasibility study, training and coordination	DOA (Struct. reform)
2052	Ginger & Cardm. Dev. Sect. Khumaltar, Lalitpur	Planning, monitoring coordination, feasibility study and training	DOA

At present, major institutions involved in research and developmental activities (either in low or high profile) of spice crops are presented in table 2 below.

Table 2. - List of institutions involved in spice crops

S. No.	Institution	Under	Major Crops
1.	Ginger and Cardamom Dev. Section Khumaltar, Lalitpur	DOA seed spices*	Cardamom, ginger
2.	Cardamom Development Center Fikkal, Illam	"	Cardamom, Ginger*
3.	Ginger Research Center Kapurkot, Sallyan	NARC cumin*	Ginger, Turmeric
4.	Pakhribas Ag. Resch. Center Pakhribas, Dhankuta	ODA	Cardamom, chilly
5.	Lumle Ag. Resch. Center Lumle, Kaski	"	Garlic, Leek
6.	Horticulture Research Division Khumaltar, Lalitpur	NARC	Garlic
7.	Horticulture Farm Panchkhal, Kavre	DOA	Ginger, seed spices*
8.	Horticulture center Trisuli, Nuwakot	"	Seed spices*
9.	Horticulture Farm Tansen, Palpa	DOA	Ginger
10.	Horticulture Farm Godawari, Lalitpur	"	Saffron*
11.	Kankai Agricultural Farm Shivagunj, Jhapa	Autonomous	Black pepper*

* indicates recent initiatives

PRESENT STATUS

Major Spices: Even though different species and varieties of underutilized spices exist in many countries, ISO (International Standardization Organization) has so far recognized 70 commercially cultivated spices for general trade. How ever, number of popular spices grown in Nepal is limited but preference and use, in general, is larger. Hence, the national demand is fulfilled through importation and domestic production. List of major spices in demand and sources of supply are presented in table 3.

Area, Production and Productivity: With a view to increase export and farmers income, the Eighth plan (1992-97) gave priority to high value crops like Cardamom, Ginger, Turmeric, Garlic and Chilly. It emphasized to expand the acreage rather than productivity and also mentioned of introducing and exploring potentiality of new crops like Betal leaf , cumin and Black pepper.

The area and production, especially in cardamom and ginger has drastically increased which itself explains the promising potentiality of these crops. Undoubtedly, it is also same for garlic and chilly but authentic data are not available. How ever, in case of black pepper and cumin, there is nothing much to be reported.

Table 3: Popular spices in Nepal and their sources of supplies.

S.N.	Spices	Nep. Name	Botanical Name	Sources of supply		
				Clt	Impt.	Expt.
1.	Cumin	Zeera	*Cuminum cyminum* L.	-	+	-
2.	Coriander	Dhaniya	*Coriandrum sativum* L.	+	+	-
3.	Fenugreek	Methi	*Trigonella feonum- graecum* L.	+	+	-
4.	Ginger (fresh)	Aaduwa	*Zinzibar officinale* Rosc.	+	-	+
5.	Ginger (dry)	Sutho/sonth	" " " "	+	-	+
6.	Garlic	Lahsun	*Allium sativum* L.	+	-	+
7.	Chillies (hot)	Khorsani	*Capsicum sps.*	+	+	+
8.	Turmeric	Besar/Haldi	*Curcuma longa* L.	+	-	+
9.	Cardamom (L)	Aalainchi	*Amomum subulatum* Roxb.	+	-	+
10.	Cardamom (S)	Sukumel	*Elettaria cardamomum* L.	-	+	-
11.	Black pepper	Marich	*Piper nigrum* L.	-	+	-
12.	Bishops weed	Juano	*Trachyspermum ammi* L.	-	+	-
13.	Clove	Luang	*Eugenia caryophyllus*	-	+	-
14.	Nutmeg (kernel)	Jaiphal	*Myristica fragrans* Houtt.	-	+	-
15.	Mace (Aril)	Jaipatri	" " " "	-	+	-
16.	Cinnamom	Jungli Dalchini	*C. aromaticum* Nees	+	-	+
17.	" "	Dalchini	" zeylanicum Blm.	-	+	+
18.	" "	Tejpat	" *tamala* N & E	+	-	-
19.	Asafoetida	Hing	*Ferula alliacea* Boiss	-	+	-
20.	Long pepper	Pipla	*Piper longum* L.	-	+	-
21.	Aniseed	Saunf	*Pimpinella anisum* L.	+	+	-
22.	Fennel	Thulo saunf	*Foeniculum vulgare* Mill	+	+	-
23.	Saffron	Kesar	*Crocus sativus* L.	-	+	-

Clt.= cultivated, Impt.= Imported, Expt.= Exported

Table 4: Achievement of the eighth plan

Crops	8th plans end estimation.		Achievments (F.Y.052/53)*	
	Area	Production	Area	Production
1. Cardamom	7411 -	3540 (0.48)	9253 -	3622 (0.39)
2. Ginger	4226 -	32500 (7.7)	6239 -	63292 (10.2)
3. Turmeric	1650 -	8300 (5)	na	na
4. Garlic	2260 -	9036 (4)	na	na
5. Chilly	1850 -	5556 (3)	na	na

Area in Ha, Production in Mt/ha in ( ) indicate productivity in Mt/ha

*Figures for 053/54 not yet compiled,

Varieties and attributes: Yield and quality attributes of the commercial varieties of cardamom, ginger and cumin are presented below;

Cardamom: The commercial varieties of cardamom like Ramsay, Golsay and Sawaney are popular. New variety "Dambersay" (possibly natural cross between Ramsay and Golsay) having bigger capsules is popular in Dhankutta and Sankhuwasabha.

Table 5: Characteristics of some popular large cardamom varieties

Cultivars	Altitude (mts.)	Maturity	Capsules (# of seeds)	Ess. oil (%)	Shade	Remarks
1. Ramsay	1500-2000	Asoj 3rd week	smaller (16-30)	1 - 1.8	Deep	susceptible to chirkey and foorkey at lower elevations.
2. Golsay	1200-1600	Asoj 1st week	Bold to round (40-50)	2.3 - 5	Less	Tol. to Chirkey & Forkey, Sucp. to Leaf spot
3. Dambersay	700-1200	Bhadra last week	Bold	-	-	
4. Sawaney	700-2000	Srawan 2nd week	medium bold	1.8 - 2.5	moderate to deep	Susp. to viral Diseases

Some of the varieties like "Kopringey", Rangbhang and even Sawaney that were introduced in the "Agriculture year 1975" have degenerated. How ever, after a gap of two decades, Ginger and Cardamom Development section is importing two promising varieties (i.e. Jung Golsai for midhills and Bharlangay for higher altitudes) of cardamom from Sikkim this year.

Feasibility surveys conducted by this section and cardamom Development center has identified 2291 Ha. suitable for expanding cardamom cultivation in 27 districts of the kingdom.

Ginger : Most of the ginger varieties grown in commercial scale Nepal are indigenous land races/cultivars. Remains of the alien varieties imported during the "Agriculture year 1975" do not exist. Nevertheless, the yield and quality attributes of indigenous varieties are satisfactory and superior (Table 6).

Cumin : The short duration, highly valued and potential crop much prized for oriental cuisine seems rather neglected eventhough it was mentioned in the pages of the 8th plan. However, preliminary trials conducted (Table 7) by the farmers showed its possibility and potentiality. Farmers showed great interest in this crop.

Table 6: Yield and quality attributes of local cultivars

Cultivars	Tillers/clump (#)	Fresh yield (t/ha)	Ess. oil (%)	crude fibre (%)	oleoresin (%)
1. Illam Local	10.5	38.2	2.5	4.66	7.65
2. Bhojpur "	8.7	34.6	2.5	4.60	7.83
3. Bhaktapur "	10.6	28.9	1.5	4.64	7.00
4. Syanza "	10.2	39.1	2.5	3.40	6.40
5. Palpa "	13.3	43.5	3.0	3.97	7.85
6. Nawalparasi	10.4	43.1	2.0	5.16	9.40
7. Doti "	-	-	1.7	4.23	6.85
8. Tanahu "	9.9	36.2	1.5	3.96	9.50
9. Sallyan "	10.2	47.4	1.5	4.13	5.90
10. Dailekh "	9.5	50.6	1.5	6.89	5.71
11. Kailali "	9.3	48.5	2.0	5.15	7.00

Source: Ginger Research Center, Kapurkot, Sallyan

Table .7- Yield of Cumin obtained from on farm trail

Variety	Year	Area	Yield (Kg/Ropni)	References
RZ-19 & RS-1	1992/93	Rapti	28	Chaudhary, S.K.,1994
Karnal Local	2051-53	Kavre	29 - 33	Niroula, G.S., 1995/96
RZ -19	2053/54	Kavre and Dhading	24 - 31	" " " 1996/97

Nepal's share in the global trade: Pruthi (1993) reported that world trade in 1990 (based on ITC's 1991 survey) was more than 40,000 tons valued at more than 1500 million Dollars. ITC also reported that the global demand for spices was increasing . India's contribution to world trade is 10-12% and brings more than 3000 million Indian Rupees annually. How ever, Nepal's share in the world market is negligible. The volume and value of spices exported from Nepal is small and therefore it's share is less than 0.50 percent.

Table 8. - List of major items on export and import

Export Items	Import Items
A. Regular: Cardamom, Ginger, Dry Ginger, Garlic	**A. Regular**: Cumin , coriander, Fenugreek, Black pepper, Bishop's weed, Long pepper, Cinnamom, small cardamom,Nutmeg, ace, saffron and mixed spices etc.
B. Irregular:	
B. Irregular: Garlic, chilly, dry coriander, chilly, cinnamon turmeric etc. turmeric etc.ginger,	

It is rather ironic that Nepal's overseas export has ceased since 1990. Hence, at present India is the single largest importer of spices produced and exported from Nepal. On the other hand, import has been steadily increasing due to growth in population, food habits and re-export opportunities. The trade balance (Table 8) therefore, is negative due to contrasting import and export.

Table 8: Trade balance on spices (Rs thousand)

	Fiscal Years				
	1992/93	1993/94	1994/95	1995/96	1996/97
Total Export	22,98,24	22,72,39	41,55,11	41,40,55	43,42,26
Total import	18,37, 34	49,36,35	90,31,23	72,04,79	1,42,53,01
Balance	+ 4,60,90	- 26,63,96	- 48,76,12	- 30,64,24	- 99,10,75

Present Approach

The 8th plan laid emphasis on diversification and commercialization of high value crops that have comparative advantages over cereals like fruits, vegetables and industrial spice crops. The vision and concept of APP is also not very different then the commitments of the 8th plan.

Objectives

1. Increase production and productivity of cardamom and ginger,
2. Increase farmer's incomes,
3. Substitute import to attain self sufficiency,
4. Promote the development of spice based industries,
5. Help promote to regularize export

Policies

1. Encourage and provide support for healthy & quality planting materials,
2. Upgrade the technical capabilities of the farmers and technicians,
3. Identify suitable production areas for production expansion,
4. Identify, introduce and encourage new potential crops

Strategies

1. Encourage "cardamom seed nursery" for healthy planting material,
2. Establish "model cardamom orchards" to demonstrate good management practices to attain higher yields,
3. Diffuse production techniques and superior varieties through "production demonstration" packages,
4. Involve Government farms and community groups to develop resource
5. Base in seed spices and ginger,
6. Introduce new crop species & varieties to explore production potential,
7. Conduct feasibility surveys for expansion,
8. Import high yielding superior varieties,
9. Organize, supervise and monitor community based "resource groups"
10. For efficient and self sustaining production, seed supply and marketing
11. Of ginger.
12. Organize training, study tours and workshops.

IMPORTANCE AND OPPORTUNITIES:

Spices are high valued, environmental friendly and exportable crops important to our country. The contribution of spices, to over all socio-economic development of our society is obvious and very significant viz.;

Export / market oriented : There has never been any glut of spices, all finds market and are exported,

Foreign exchange : A source of earning scarce foreign exchange

Environmental protection: Cardamom farming allows regeneration and greening; Agro-forestry, intercropping, multi-tyre cropping also helps conservation.

Additional incomes : Unproductive, marginal lands yield production.

Reduce population migration: Cardamom, for instance, to some extent has helped to check human migration from hills to terai and urban areas.

Gainful rural employment: serise of related activities has increased employment opportunities in rural areas.

The domestic demand for spices is escalating. On the other hand, diverse and increasing use of spices in the industrial sector has led to increased global demand. Mother nature has bestowed Nepal with diverse eco-geography, fertile soil, ample water and laborious human resource.As potential and scope awaits in our doorsteps, it is the Nepalese who must come out to exploit it, and We, the scientists, academicians and policy level bureaucrats have the first line responsibility. Hence, right away, we must not lag behind to expand our share in the global market by increasing our domestic production, quantity and export volume.

MAJOR CONSTRAINTS

1. Research in spice sector is very weak or almost nil. Development, production and productivity increment cannot be achieved without dynamic and progressive research activities.
2. Experienced and academically qualified human resource is very scarce in the spice sector. On the other hand, frequent adjustments, reorganization and transfers of structures and staffs has disrupted institutional growth, technical capabilities and service delivery.
3. Financial, human and infrastructural resources allocated and available to spice sector is very small.
4. Present initiative for organized marketing, market promotion and exploration is insufficient as well as obsolete.
5. Initiatives to improve post harvest quality aspects are totally lacking .
6. Economically important spice crops have been neglected and kept out of scope of research and developmental activities.
7. Growth of spice based industries (except small masala udyogs) are not encouraged.

SUGGESTIONS AND RECOMMENDATIONS

Despite the fact that notable progress has been made in cardamom and ginger, some functional, structural and strategical shortfalls have distorted the development of spice sector in right direction. In this context, a number of major initiatives urgently needed are;

1. While the government must provide effective and purposeful policies in support of the programs, an essential element that it can never provide is the commitment of all those involved in the advancement of this sector. Nevertheless, policies as such, generate encouragement, participation and favorable environment. Hence, for spice sector, the government must develop clear vision and stable policies and allow continuity. At the same time, bureaucratic and structural adjustments / readjustments and merger "mania" that bring distortions to smooth functioning must be discouraged.

2. Research in spice sector is in its early infancy in ginger and almost nil in cardamom and other crops. Problems are cropping up very fast. These problems have contributed to decline in production, inferior quality produce and decreasing volume of export. There is urgent and immediate need to reinforce production for sustained growth. Hence, solving the research dilemma and expediting dynamic research activities are the urgent need of the present day.

3. Marketing is an integral part of agriculture development process and is the last function after research and development. It is a especial function carried out by economists and marketing experts. How ever, at present, agricultural scientists (Horticulturists, Agronomists, Extensionist etc.) are assigned to carry out this job which is felt by many as not appropriate and encouraging, since the job of Ag. scientists is to increase production and quality, so should it end in production. The government should seriously consider this aspect positively. Hence, it is suggested to constitute "Spices Development Board" to address the problems of marketing and export,and be entrusted following responsibilities;

- Develop, promote and regulate export of spices,
- Assist and encourage to improve processing & quality,
- Stabilize the prices of spices,
- Exercise quality control of spices for export,
- Provide facilities for assembling, processing & storage,
- Promote co-operative efforts,
- Promote enterprenual and industrial growth,

4. It is rather unfortunate that no healthy reawakening of interest is shown by some of the trading firms/corporations towards attempting to exploit overseas markets. These corporations getting government subsidy from the revenue,certainly should have social obligations towards farmers who are also their clients. Hence, these import based corporations/firms must be encouraged for export functions to add more to nations wealth.

5. Important crops (garlic, turmeric,coriander, juano etc.) are being neglected. They are neither taken in to the programs nor fall under the scope (**whose responsibility?)** of institutions. These crops can substitute import, fulfill domestic demand, save foreign exchange and have good export market. Therefore, it is suggested that the responsibility for developing spice crops be entrusted to Ginger and Cardamom Development Section. Its name and functions be changed to "Spice Crops Development Section" so that all spice crops fall under its scope.

6. New crops that have high demands and very big domestic and international markets, have not yet been introduced. Serious attempts to explore production potentials are lacking. It is therefore suggested that following crops be immediately introduced, studies and trials be initiated,

1	Black pepper,	3	Betal leaf (Vine)
2	Saffron	4	Paprika's (sweet chilies)

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