

## **AGRICULTURAL MARKETING IMPROVEMENT STRATEGIES PROJECT**

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### **U.S. Agency for International Development**

Assisting AID Missions and Developing Country Governments  
to Improve Agricultural Marketing Systems

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## **Marketing of High-Value Agricultural Commodities in Nepal**

### **Preliminary Findings**

**September 1988**

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**Marketing of High-Value Agricultural Commodities in Nepal**

**Preliminary Findings**

**John S. Holtzman**

**Abt Associates**

**Agricultural Marketing Improvement Strategies Project (AMIS)**

**Washington, D.C.**

**September 1988**

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## 1.0 Introduction

This report summarizes accomplishments during an August 10-September 2 mission to Nepal. During my TDY I did the following:

- 1) Reviewed relevant documentation on agricultural marketing,
- 2) Supervised the preparation of a bibliographic listing,
- 3) Visited knowledgeable government and donor agency officials and analysts, as well as private entrepreneurs involved in marketing of high-value crops,
- 4) Held numerous discussions with members of the No-Frills Consultancy Inc. team, and
- 5) Drafted and presented a proposal for a research program on high-value crops marketing to USAID/Nepal.

I will not discuss all of these accomplishments in detail in this trip report. Bibliographic annotations of several high-quality studies are appended as Annex 1. During Phase I of the research program (August-December 1988), the research team may wish to annotate in briefer form other studies in completing the bibliographic listing. The bibliographic listing, which is incomplete and needs to be better organized, is not attached, but will be completed and available for dissemination by the end of Phase I.

Section 2.0 lists officials and entrepreneurs visited during the TDY. Interviews and site visits are summarized briefly. The research proposal is available as a separate output and not reiterated in this report. Section 3.0 does summarize, however, comments made by USAID participants in the September 1 seminar discussion of the research proposal. Section 4.0 summarizes the results among research team members, with some thoughts on how the state-of-the-art marketing paper might be organized and what it might emphasize. The last section discusses how the team might go about selecting commodities for more in-depth study (during Phase II).

Several annexes are attached, including a review of the principal findings of an excellent APROSC study on ginger marketing, an attempt to distill significant lessons from the study that could be instructive for other commodities, and questions for further research (Annex 2). Annex 3 lists firms in Bangladesh that import vegetable seed. Annex 4 discusses agricultural development strategy in Nepal, per the original terms of reference for my TDY.

## 2.0 Officials and Entrepreneurs Interviewed During TDY and Field Trips<sup>1</sup>

### 2.1 Meetings with Officials and Entrepreneurs

Rajendra Shrestha and I met the following individuals during my August TDY. Mr. Shrestha has a wide range of personal and professional contacts; he was invaluable in arranging meetings with these very busy individuals.

1. Dr. S.S. Rekhi  
Chief Technical Advisor  
Fresh Vegetable & Vegetable Seed Production Project (HMG/N FAO)  
Khumaltar, Lalitpur (Kathmandu Valley), Nepal  
c/o UNDP, P.O. Box 107, Kathmandu Nepal  
Tel.: 523701
2. Dr. Ramon L.N. Nasol  
Chief Technical Advisor ( NEP/85/015 Project )  
Agricultural Market Information Project  
Dept of Food & Agril Marketing Services  
Harihar Bhavan, Pulchowk,  
Lalitpur, Nepal  
c/o P.O.Box 107, UNDP, Kathmandu, Nepal  
Tel.: 524227
3. Mr. Basudev Parajuli  
Deputy General Manager ( Seeds )  
Agricultural Inputs Corporation  
Head Office, Teku Kuleswar  
Kathmandu, Nepal
4. Dr. Asfaq Sheakh  
General Manager  
Herbal Production & Processing Co Ltd  
Koteswar, Kathmandu Nepal  
Tel.: 220342
5. Dr. Mahesh Banskota  
Programme Coordinator  
International Center for Integrated Mountain Development  
(ICIMOD)  
Jawalakhel, P.O. Box 3226  
Kathmandu, Nepal  
Tel.: 521575, 522969
6. Dr. M.S. Rathore  
Mountain Farming Systems Division, ICIMOD  
Kathmandu, Nepal

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<sup>1</sup>Rajendra Shrestha, agro-enterprise specialist of the No-Frills team, drafted this section. I have revised it somewhat and added further comments where appropriate.

Tel.: 521575

7. Mr. Krishna K. Gyawali  
 Managing Director  
 Nepal Seed Company Pvt Ltd  
 Pulchowk, Lalitpur, Nepal  
 Tel.: 521292

8. Raghu Adhikary  
 Senior Marketing Economist  
 Agricultural Projects Services Centre (APROSC)  
 GPO Box 1440  
 Kathmandu, Nepal  
 Tel.: 215971, 215095

**2.1.1 Mr. Rekki, FAO Expert, Vegetable Development Division, National Agricultural Research Center**

As an advisor to HMG since 1981, Mr. Rekki has been instrumental in the development of Nepali vegetable seed production. He spoke primarily of institutional, policy and promotional problems associated with vegetable seed production other than technical production issues, including:

1. Neither AIC nor the sajhas have any expertise in or actively promote vegetable seed distribution. Vegetable seed is not distributed to many farmers.
2. In addition to vegetable seed, farmers need but cannot get important complementary chemical inputs.
3. There is no extension effort or effective farmer training in vegetable production.
4. AIC sales prices are unrealistically low--either set at the same level as buying prices or only slightly above. Sales prices should be about twice procurement prices if costs and normal returns are accounted for.

FAO has entered a second phase Fresh Vegetable and Seed Production Project. The Vegetable Development Division is supplying seed to village nurserymen, who are supposed to develop as village seed entrepreneurs. They have the option of acting as commission agents for AIC or procuring seed independently from producers in their areas. This is designed to stimulate private seed trading, which would compete effectively with AIC.

SATA has provided \$700,000 for vegetable marketing studies in vegetable production pockets and key Nepali markets. Expansion of vegetable production is constrained by poor market development and coordination. An FAO Expert has been hired under a three-year contract, beginning in October 1988, to carry out studies in production zones, border areas and major urban markets. Surveys of off-season vegetable flows between the hills and the Terai (and vice-versa) and untapped market opportunities will be a high priority for study.

### 2.1.2 Krishna K. Gyawali, Nepal Seed Co.

Mr. Gyawali has a MSc in plant breeding and is one of the leading vegetable seed entrepreneurs in Nepal. He has contracts with seed growers in the Kathmandu valley (approx. 200), Bara District in the Terai (approx. 20), and Sarlahi District, also in the Terai (approx. 15). The number of contracts with growers more than doubled between 1987 and 1988.

Mr. Gyawali estimates that about 75% of the vegetable seed used by Nepali vegetable growers is imported from India. Much of this imported seed is of variable quality, although it is generally lower cost than Nepali seed, even after adjusting for transport costs to Nepal. Kathmandu valley seed is of generally high quality, as growers have been producing vegetable seed for 10-15 years, thus acquiring adequate experience and knowledge of proper production practices and quality requirements. Outside Kathmandu valley, vegetable seed is of generally poor quality. Seed produced by the government farm is also poor quality, and Mr. Gyawali claims that he would prefer to buy seed from India rather than from this farm.

Mr. Gyawali reports that the most vexing constraints to vegetable seed production and marketing in Nepal are as follows:

1. Costs of supervising seed production are high. He has three employees who supervise, but it is not enough. More thorough supervision is desirable from a technical standpoint but prohibitively costly; he would not be able to compete against Indian imports with higher costs. He feels that government should play an active role in providing vegetable seed extension that would help private entrepreneurs. He recognizes that this would be an indirect subsidy.
2. Small-scale of operation and inability to fill large orders. He spoke of a Dutch request for seed that was many times what he could satisfy.
3. Small, fragmented holdings make it difficult to use open-pollination seed production techniques. Cross-pollination is difficult to prevent, and it undermines seed purity.
4. India will not allow imports of open pollinated seed. Only certified foundation seed is acceptable.
5. Nepal lacks a network of vegetable seed dealers. Market channels are poorly developed.

Mr. Gyawali also spoke of problems in promoting fresh vegetable exports. He spoke of Dubai demand for two tons of fresh vegetables, which would be properly cleaned and packed, per RNAC flight. This demand is impossible to satisfy at present, because RNAC has no air-cooled cargo containers, and customs procedures are so cumbersome that fresh vegetables would spoil or lose quality during lengthy customs processing. Even if these technical and procedural problems could be resolved, Nepali exports would need to benefit from export subsidies to compete effectively in competitive third country markets. Mr. Gyawali cited the case of India, which he claims provides a 20% or better export subsidy (rebate?) to exporters of most agricultural products. At a

minimum, he feels that government should play a more active role in promoting agricultural exports.

### 2.1.3 Asfaq Sheak, Herbs Production and Processing Co. Ltd.

This is a government company, which is reported to be highly subsidized. It acts as a collection, processing and marketing agency, but does not produce herbs or develop improved varieties. The Herbs Production and Processing Co. (HPPC) works primarily with relatively commercial, larger farmers. It is planning to expand from 450 to 800 contract producers, some of whom form informal farmer organizations. HPPC claims to provide extension support to growers, but technical staff are limited and HPPC must rely on MOA extension agents.

HPPC collects citronella, palmarosa grass and rauwolfia from the Eastern Terai, valeriana wallichii and piper longum from the hills near Dhading, and tumeric from hill areas in Rapti. Most of the HPPC's collected and processed products are exported to India (50%) or to third countries (unspecified percentage). There are about 15 perfume and fragrance manufacturers in India that buy from HPPC. France, the U.K. and Germany are third country markets. Pakistan has bought HPPC products on an irregular basis. Unfortunately, HPPC was unable to supply detailed data broken out by commodity and export market. Small-scale processing (distilling) technology has been introduced successfully in some production areas, but much more work remains to be done.

HPPC's main constraints are lack of planting material and extension supervision. Some planting material is imported from India. Crude processing, leading to low quality oils and essences, is also a problem.

### 2.1.4 B.D. Parajuli, Deputy Director, AIC Dilip Karki, Senior Agricultural Officer

AIC has individual production contracts with more than 3,000 growers for multiplication of vegetable seed. AIC has no vegetable seed farms or processing facilities. Farmers clean seeds using local methods, essentially winnowing, and also package the seed (to confirm). AIC sells multiplied seed directly at its district offices (based in district headquarters), <sup>and</sup> through private retail outlets primarily and through cooperatives secondarily. If retailers are unable to sell seed acquired on a cash basis from AIC, they are able to return the seed to an AIC outlet for reimbursement, provided packages have not been opened and quality has not deteriorated. It is not clear if AIC is able to assess objectively whether quality has deteriorated.

Several years ago multiplied vegetable seed was brought to Kathmandu and stored. AIC is in the process of establishing four temperature and humidity controlled cold stores in Nepalgunj, Bhairawa, Kaidari and Kathmandu. These cold storage facilities will depend upon locally available electricity, and there will be no backup generators. Three additional cold stores are proposed for Dang, Pokhara and Dangari.

AIC officials claim that it has regional specialists who visit contract growers up to three times during a production season to supervise production

and ensure quality, but this is doubtful given lack of transport and the dispersion of villages. Vegetable seed is collected during the April-June period and sold to vegetable producers in July and August.

AIC officials also report that they encourage foreign buyers to procure AIC multiplied seed, offering volume discounts. AIC needs lead time to satisfy orders, however. The volume and timing of both foreign and domestic AIC sales need to be confirmed.

AIC's biggest problem in multiplying vegetable seed are that contracts with farmers are not binding. Farmers are able to sell to whomever offers the best terms. AIC reports that private vegetable seed dealers offer slightly higher prices but bear none of the seed distribution and extension costs. The Deputy Director said that AIC hopes to use legal means to make the contracts binding.

AIC is not able to pay farmers immediately for their vegetable seed, because it must take samples of seed to laboratories for testing in distant, central locations such as Kathmandu and Pokhara. AIC claims that private dealers never test seed and offer cash to growers on the spot.

AIC is also lobbying the HMG for a national seed law that would require testing for seed purity and germination. The Deputy Director feels that this would put AIC and private buyers on a more equal footing. It might also facilitate larger volume exports of vegetable seed.

#### 2.1.5 Mahesh Banskota, ICIMOD

Dr. Banskota is designing and will manage a study of agricultural marketing in the Bagmati Zone or greater Kathmandu market shed. The study will use mainly rapid low cost surveys. He is a regional planner by training who spoke in terms of urban demand pull and rural-urban linkages. He also emphasized agroecological niches in the hills for a wide range of crops and market opportunities for hill producers in the Bagmati Zone who could harvest their produce 3-4 weeks before Terai produce arrives in Kathmandu. Finally, Dr. Banskota spoke of environmentally sustainable agriculture in the hills, a recurrent ICIMOD theme. In fact, ICIMOD is sponsoring an Expert Workshop on sustainable agriculture in Nepal in November 1988.

ICIMOD would like to influence HMG policy and sees the Horticulture Department in the Ministry of Agriculture as an entry point. Dr. Banskota claims that DFAMS (Department of Food and Agricultural Marketing Services) lacks vision. He recognizes that it is important to maintain a dialogue with the Planning Commission. ICIMOD also wants to influence the thinking (and investments) of donors.

## 2.2 Field Trips

Using his personal contacts and knowledge of vegetable and vegetable seed production in and around the Kathmandu valley, Rajendra Shrestha organized and led two one-day field trips to vegetable producing areas. Robert Thurston

(USAID/Nepal), Dr. Ramesh Mununkami, and I accompanied Mr. Shrestha to the field:

### 2.2.1 Trip to Bhaktapur, August 24

During the trip to Bhaktapur we visited farmers' vegetable fields in Timmi and Nagadesh, vegetable growing areas near the Bhaktapur Brick & Tile Factory and in Lokanthali village. We also visited one private agricultural inputs dealer in Nagadesh. In addition we stopped at the local district agriculture extension office and had a brief meeting with the district agricultural officer, Mr. Ram Prasad Sharma regarding the current situation on vegetable growing and vegetable seed production in the district.

The farmers in these areas grow vegetables for the Kathmandu market. Many were growing a hybrid Japanese variety of cauliflower, which they claimed was far superior to local open-pollinated varieties, whether distributed by AIC (the Agricultural Inputs Corporation) or private seed dealers. Farmers are willing to pay very high prices for the Japanese hybrids, since they are confident of superior germination and returns.

The eastern end of the Kathmandu valley produces large quantities of radish seed (oriental type) in the off-season (October/November-March/April) for sale to other farmers and export. It is estimated that farmers produced 24-25 metric tons of radish seed this past season. Buyers included the Nepal Seed Corporation (approx. six tons), New Frontier Seed Corporation (five tons), which is exporting radish seed to Bangladesh, G.M. Enterprises (Rajendra Shrestha's agricultural inputs firm, which bought 1.5 tons), and AIC (eight tons). Radish seed production will likely expand this coming season, as demand for export seed remains strong and as the Nepal Seed Corporation reports having negotiated contracts with larger numbers of growers relative to last year.

### 2.2.2 Field Trip to Dhading, August 28

Our first stop was at a private nursery in Khanikhola operated by a local entrepreneur, Mr. Brahma Lal Shrestha. We observed saplings of different types of sub-tropical fruits, including those of citrus saplings, mango and guava. He has been in the nursery business for the last 12 years, and he also deals in agricultural inputs. We were told that he cultivates vegetables on about two hectares. However, he pointed out the problem of gluts of locally produced vegetables in the Kathmandu market. Nevertheless, the local extension agent said that he is encouraging farmers to grow more vegetables to supply the recently opened Kalimanti market in Kathmandu. The extension agent was not instructing farmers to produce different varieties of vegetables for the early or late season vegetable market. Nor did he appear to be attempting to coordinate vegetable production and marketing for the village so as to avoid gluts and to maximize grower returns.

We later spoke with an agricultural inputs dealer at Raktakali Center in Dharke Bazar along the Kathmandu-Pokhara highway. The store mainly sells chemical fertilizers, pesticides, and vegetable seeds. After a one-half hour drive from this place, we stopped at Mohantar to see a water turbine driven

beaten rice mill. This mill processes 500 kg. of roasted rice per shift of seven hours during the day time. Roasted rice is widely consumed as a snack in Nepal. 2.5 kilowatt power is produced during the night to light the mill as well as to sell power to others in the village.

At Malekhu, we visited one local entrepreneur who makes various products such as soap and hair shampoo and conditioner from a leguminous shrub, *Emblica Officinalis*. The products of this plant are widely used in the Ayurvedic therapy to treat ailments such as anaemia, diarrhoea, dysentery and jaundice. This shrub grows wild in the mid-hills of Nepal.

During our last stop to the Benighat area, we visited farmers' fields at Bahuntar. Thanks to a community-managed irrigation facility, funded by the Agriculture Development Bank of Nepal, the local farmers grow off-season vegetables such as early tropical type cauliflower, tomatoes, sweet pepper, eggplant, pole beans, cucumbers, and cowpeas in an area of about 5 hectares. Since the installation of the irrigation system about eight years ago, grain production has increased several fold as well. Local management of the irrigation scheme appears to be quite sophisticated and successful. The village is obviously quite prosperous.

### 2.2.3 Kalimati Vegetable Wholesale Market, Kathmandu

This market is managed by the Department of Food & Agriculture Marketing Services (DFAMS, HMG/Nepal) with support from the FAO/HMGN Fresh Vegetable & Vegetable Seed Production Project. The market support services, which are provided virtually free-of-cost at the moment, include market information, sheds, scales and a warehouse to store unsold stock. Most of the produce was being sold in a large open and very muddy area, rather than under the sheds. The entrance to the market is steeply sloping downward and quite treacherous, particularly during the monsoon season when it is muddy and slippery. FAO plans to provide funds to improve the marketplace.

During the visit to the market we observed different types of products such as radish (three truckloads), tomatoes, beans, garlic, pears, pomegranates, eggplant, etc. being brought to the market. Depending on the season the products are brought here from various production centers like Dhading, Palung, Sarlahi, Dhanusha, Jhapa and also from some places in India.

Most of the vegetables were being sold by farmers to retailers and "contracters," buyers who supply hotels and restaurants. These contracters buy a large but unknown proportion of their fresh vegetables from India in order to satisfy their institutional clients. Farmers from Kathmandu valley and neighboring villages bring one or more basket (doku) loads to the market on foot or by bus or van early in the morning. The market opens about 5:00 a.m. Three truckloads of radishes were brought to the market by groups of farmers. One group from Palung, about three to three and one half hours from Kathmandu over a steeply pitched and difficult road, prefers to organize their own transport to Kathmandu and sell vegetables directly to buyers in Kalimanti. They complained of police harassment en route. The Palung farmers report that they ship about 75% of their vegetable production to Kathmandu, 15% to Pokhara, 5% to Birganj (Nepal-India border) and 5% elsewhere.

Another group of Terai producers was being represented by a farmer turned vegetable dealer. He comes from the same village as those he represents but resides in Kathmandu to take delivery of transported vegetables and sell them at favorable prices. Using public telephones (at the post office), he advises Terai producers of market conditions in Kathmandu (prices, volume of arrivals), and tells them when and how much to ship to Kathmandu on any given day. This is an excellent example of how improved market information can help coordinate supply and demand and enhance grower returns.

### 3.0 USAID Comments on the Proposed Research Program

I presented the proposal for the research program at a two-hour seminar organized by USAID on September 1. The No-Frills team and representatives of all USAID offices attended. The discussion was lively and useful for the research team. USAID officers in attendance were not in complete agreement. Their comments are summarized below.

1. There was disagreement over what types of markets should be targetted for export of Nepalese high-value commodities. One USAID official suggested that we should explore export possibilities to markets such as Singapore, Bangkok, Hong Kong and Dubai, which have recently or will soon be connected to Kathmandu by Royal Air Nepal flights. The disadvantage of this strategy is that these markets are very competitive and quality requirements are stringent; it is doubtful whether Nepal could effectively compete in these markets with the U.S., Japan, and Europe.

Others in the Mission argued that India is the major current and potential market for Nepalese products and that exports should be more vigorously promoted. Transport costs are lower, quality standards are not as high (with the exception of seed), trade restrictions have been progressively removed through treaties, and trade links are well-established.

2. Discussion over the role of the HMG in marketing of high-value crops was quite lively. One USAID officer argued that the research team should not examine any commodity subsystem where there was HMG intervention in the marketing system, particularly in buying and selling commodities. In such cases the HMG will stifle incentives for private entrepreneurs through subsidies of public enterprises or regulations that restrict opportunities and add costs to private sector activities.

Other USAID officers argued that the HMG would have to condone the thrust of the marketing research program and approve of any strategy designed to identify and promote private sector opportunities. It is likely that policy reforms or measures would be necessary to assist private entrepreneurs in exploiting market opportunities.

3. The geographic focus of the research program received some attention. The initial terms of reference limit the research focus to commodities that can be grown in the hills. This excludes traditional Terai cash crops such as jute, sugarcane, tobacco, and cotton. Secondly, areas for field research

could be further limited by concentrating on zones such as Rapti, where USAID has funded a project since the early 1980s, and where experiments in promoting production and marketing of high-value commodities are already underway. This provides an opportunity to monitor ongoing investments and programs. Third, although the Kathmandu valley and surrounding hill areas represent a dynamic and market-responsive zone, ICIMOD plans to study the Bagmati production zone or greater Kathmandu food shed. No-Frills field work in this zone might be a duplication of ICIMOD efforts.

4. Forestry officers in USAID argued strongly for examining market opportunities for medicinal plants and herbs. They claim that the Indian market for such products used in Ayurvedic therapy is enormous and expanding. The research team initially thought that it might exclude any agro-forestry products not cultivated within the boundaries of farmers' holdings. Since many medicinal plants and herbs grow wild and are collected rather than cultivated, the team was considering eliminating these high-value crops.
5. Another issue raised during the seminar was how broadly based the benefits of producing and marketing a high-value crop should be. The USAID consensus that emerged was that commodities considered for intensive study should be those produced by a broad spectrum of small farmers, including women, and not those grown by a minority of large, commercially oriented producers.
6. Another suggestion was that the research team should examine commodities (or areas) which have been promoted by the Agricultural Development Bank of Nepal, particularly the Small Farmer Development program. Initially, the team should examine the loan portfolios of these institutions to see if further in-depth examination is merited.

#### 4.0 Additional Ideas of the No-Frills Team

The team felt that it was important to restrict the scope of high value crops or cash crops studied, but broaden consideration of commodities, at least initially, to include coffee, pulses (lentils, pigeonpeas, chickpeas, cowpeas), oilseeds (soybeans, groundnuts, rape, mustard), secondary grains (amaranth, buckwheat, finger millet), and seed potatoes. Coffee is an especially promising cash crop in Western Region. "Secondary crops" such as pulses, oilseeds and minor grains are becoming increasingly important in hill farming systems. The team claims, for example, that mustard is replacing wheat in the cropping pattern of many hill farmers. Lentils, which are grown mainly in the Terai, are exported to neighboring countries, although Turkey is the dominant supplier.

The team discussed livestock products such as sheep, wool, ghee and cheese. Urban, commercial poultry production was also mentioned as an enterprise fostered by the government but now entirely private. This might be a success story worth documenting. There is also some interest in rabbit production, particularly in Rapti Zone and around the British supported research stations of LAC and Patribas, but consumer resistance to rabbit meat was judged to be strong.

In preparing the state-of-the-art marketing paper, the team discussed organizing the paper along institutional, commodity and regional lines. An institutional breakdown would likely mirror current government and donor programs and activities. A commodity focus would best fit the AMIS model and mandate. Discussing current activities and opportunities along regional lines would be practical, given the resource limitations of the research program and the logistical difficulties in working in more than one or two areas in Nepal.

Clearly, summarizing and evaluating what other researchers, projects, government programs, and private entrepreneurs are doing will be desirable and necessary. Reviewing others' experience will help in identifying knowledge gaps or underexploited opportunities. Identifying success stories and analyzing factors contributing to success will also be a high priority. This will help in distilling significant lessons or principles which might be transferable to or replicated for other commodities or areas.

It might also be useful to examine successful experiences in neighboring countries, such as the development of the apple subsector in Himachal Pradesh, India. As part of the second phase, the team could identify analysts in neighboring countries who are intimately familiar with these projects or programs, and who could be paid an honorarium to write in-depth case studies that would be instructive for Nepal.<sup>2</sup>

## 5.0 Thoughts on Criteria for Selecting Commodities for In-Depth Study

### 5.1 Preliminary Selection Criteria

1. Examining crops that can be produced only in hill areas. Terai cash crops excluded (tobacco, cotton, jute, sugarcane).
2. Limit study to crops that can be grown within the boundaries of the farm (or various household plots). Exclude crops that must be gathered (most herbs and medicinal crops).

### 5.2 Additional Selection Criteria

1. Contribution to Agricultural GDP.
2. Foreign exchange earnings/savings.
3. Income generation for small farms.
4. Broad distribution of benefits (small farms, women).
5. Agronomic potential.

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<sup>2</sup>The team estimates that the regional researchers would require honoraria of about \$1,000 per month.

6. Availability of improved varieties, cultivars.
7. Consistency with government priorities.
8. Potential for private sector.

### 5.3 Ideas for Matrices

1. Array selection criteria as rows and various actors in the food system (HMG, donors, private entrepreneurs, producers) as columns.
2. Develop a grading system (1-5) and an explicit weighting scheme for alternative actors. Whose preferences should count? Should we give HMG more weight? Donors, as USAID is funding the research? Private sector, which has demonstrated the capacity to respond to opportunities in selected commodity subsystems (e.g., poultry, vegetable seed)?
3. Weight different selection criteria more heavily than others. For example, small farmer income generation and broad distribution of benefits might receive higher weights than consistency with government priorities. Although this is not done in Commodity Selection Criteria and Weighting Matrix on the following page, selection criteria weights could be added as a first column.

Selection Criteria Matrix : High-Value Crops Marketing Research Program

Worksheet No. 1 - Ginger

Criterion \ Actor	BHG Planners	BHG Companies	USAID	Other Donors	Private Sector	Producers	Women	No Prills	AMIS
Contribution to Agricultural GDP	5		4						
Foreign Exchange Earnings/Savings	5		5						
Agronomic Potent- tial	3		2						
Improved Varieties	3		3						
Income Generation for Small Farmers	3		5						
Competitiveness/ Complementarity With Grain Prod.	3		3						
Contribution to Private Sector Development	1		5						
Broad Distribution of Benefits	3		4						
Resource Conser- vation	3		3						
Relative Ease in Exporting	2		4						
Consistency with BHG Priorities	5		2						
Degree of Direct BHG Involvement in Marketing	4		1						
<b>TOTAL</b>	<b>40</b>		<b>41</b>						
<b>WEIGHT</b>									
<b>GRAND TOTAL</b>									

J.S. Holtzman, CRITERIA.WKS, 9/1/88

Notes: Each selection criterion receives a score of 1-5. Weights are set in accordance with the team's judgements. The highest possible weight is 1.0. The lowest possible weight is 0.0.

In other spreadsheet programs, spreadsheets can be linked to add a third dimension. In this case, it would be a commodity dimension.

## Annex 1 Selected Annotations

### I. Horticultural Marketing Studies of Lumle Agricultural Centre, 1986

Margaret Buchanan-Smith, in collaboration with Shree Prasad Gurung (on one of three papers), conducted three horticultural marketing studies in LAC's target area in 1985-86. Three excellent and informative reports were released in April 1986, which are summarized below.

Horticultural Marketing Study in Pokhara. This paper describes well-developed marketing channels for fresh vegetables and fruits in Pokhara, a town of over 30,000 people and a major tourist center. Most horticultural crops are shipped into Pokhara from India, the Terai and the Kathmandu valley and environs. Roads leading to Pokhara are motorable year-round, communications with supplying areas are good, and transport costs are low. Local vegetable producers in Malepetan and neighboring villages supply some produce during the Terai off-season, but cannot compete with main season Terai produce. The greatest opportunities for local off-season production are for tomatoes, cauliflower and cabbage. As an example, mules descend from Thakkhola, which is on the trek route from Jomsom to Pokhara, with no backhaul, although high-quality cabbages are available during the Terai off-season. Supplying Pokhara with greater volumes of Thakkhola cabbage would require coordination between producers and Pokhara traders to avoid gluts and shortages in supply.

Ms. Buchanan-Smith argues that permanent stall vegetable retailers offer the highest potential for expanding local supplies of vegetables in Pokhara. Presently, they are supplied almost entirely by "contact" traders in the Kathmandu area. Locally produced supplies have the advantage of not being taxed in transport, as are supplies coming by road from Kathmandu, the Terai and India. Given the shorter distances, bruising and spoilage are also generally lower. Pokhara traders complain of frequent damage of produce shipped from India. Yet they also stressed the need for reliable and regular supplies, which are usually not forthcoming from local production zones. Nevertheless, short Terai off-season supplies and attendant high prices create a window of opportunity for local producers, generally during the Shrawan - Mangsir period (April-May).

While permanent stall retailers offer a potential outlet for local produce, vegetable and fruit wholesalers offer less promise. They supply local hotels and lodges, and rely heavily on large volume shipments from India. Local producers are unable to supply adequate quantities of produce on a steady basis to meet their needs.

The paper analyzes the supply and demand situation in Pokhara, price seasonality, current marketing channels, and market potential for locally produced horticultural crops on a commodity by commodity basis. For most commodities prices are plotted over the course of one year and sources of supply are indicated by month.

Horticultural Marketing Study in Kusma, Baglung and Beni. This study assesses the probable impact of the construction of the Pokhara-Kusma-Baglung

road on horticultural production and marketing opportunities for farmers in the LAC target area. The authors attempt to predict whether increased local production or increasing supplies from Pokhara will satisfy growing demand for horticultural crops in Kusma, Baglung and Beni, three rapidly growing towns in the Kali Gandaki River valley. Lodges (for tourists and better off Nepalese), restaurants and bhatti (places where most local travellers and porters stay) were enumerated in the three towns and small subsamples of each were selected for in-depth, year-long case studies. Horticultural produce buyers, generally managers, reported quantities purchased, sources of supply, and prices paid each month. As in the Pokhara study, the report summarizes supply and demand conditions, current marketing channels and prices of alternative produce supplies on a commodity by commodity basis.

Presently hotel owners depend heavily on local supplies of horticultural crops to meet growing demand. The rapid growth of bhattis appears not to be related to seasonal lodging requirements, unlike the tourist trade along popular trek routes, such as the Pokhara-Jomsom trail. Transport costs from Pokhara, the Terai and Kathmandu are currently too high for horticultural crops grown outside the Kali Gandaki to be competitive with local produce. As a result, produce prices are higher in Kusma, Baglung and Beni than in Pokhara. Villages on the western side of the Kali Gandaki supply most of the vegetables to the town bazaars and hotels. Demand for fruit is low, as fruit is a luxury good, while vegetables are required in cooking everyday meals.

While this study provides a good overview of current supply and demand conditions, price seasonality and competitiveness relative to Pokhara supplies, and marketing channels, it does not rigorously examine the likely impact of road construction. The authors estimate that the road will cut transport costs from Pokhara by 90% over present levels. This will increase trader opportunities for spatial arbitrage and doubtlessly expand vegetable supplies from Pokhara, especially to Kusma and Baglung, the closer towns to Pokhara. The authors recognize the need for further sensitivity analysis of the impact of price declines on crop by crop profitability facing local farmers. Exactly how much vegetable prices could decline and still create profitable opportunities for local farmers is unknown.

Horticultural Marketing Study Along the Main Tourist Trekking Routes in Lumle Agricultural Centre's Target Area. This study examines the seasonal but significant demand for horticultural products created by the tourist trade. Ms. Buchanan-Smith estimates that approximately one-third of all tourists coming to Pokhara go trekking on one of three important trails (Pokhara-Biretmanti-Ghorepani-Tatopani-Jomsom; Pokhara-Dnampus-Pothara-Landruk-Chhomro; Pokhara-Base Camps for Annapurna and Machhapuchchri). About 80% of the tourists come in the March-May and October-December periods. Recorded tourist arrivals in Pokhara were greater than 32,000 per year from 1980 to 1986, but essentially stagnant (no discernible upward trend).

Trekker arrivals and lodging in villages along key trek routes were estimated, and a sample of lodge owners were selected for in-depth, year-long surveys. As in the other two studies, Buchanan-Smith assesses supply, demand, price and marketing channels on a commodity by commodity basis. Formal market channels and retail shops are generally lacking in the hills, although Thakahi

traders and lodge owners along the Pokhara-Jomsom trail buy vegetables and fruit from their kin in Thakkhola. Local and Pokhara based small-scale doke traders and local farmers sell directly to lodge owners. Supplies of several horticultural crops are in short supply during peak tourist periods. The crops with the greatest local production and market potential are cabbage, cauliflower, potatoes, and tomatoes. Jam made from locally produced peaches, plums, and pears, which are harvested at the beginning of the monsoon, also represents a market opportunity.

Buchanan-Smith discusses opportunities for local producers along each major trail. Empty returning mule trains from Jomsom to Pokhara present untapped potential for supplying lodges with vegetables (especially cabbage) and fruits (especially apples) produced in Mustang District. There is scope for increasing local production of horticultural crops along the route to the Annapurna base camp and to Ghandruk. Lodges along the eastern trek routes present fewer opportunities, as they are currently supplied by doke traders coming up from Pokhara, and lodge owners often send porters down to Pokhara to procure supplies. Cheaper, more reliable produce from Pokhara competes with hill produce along the eastern trails. The April-May peak trekking period represents the best opportunity for off-season production. Trekking groups bring in vegetables bought in Kathmandu or Pokhara, but they typically exhaust their supplies on the trek back. Finally, fruits are in short supply during both tourist peak periods.

Concluding Observations. The excellent descriptive and analytical work done by Buchanan-Smith and colleagues at LAC suggest opportunities for expanding local, generally off-season production (relative to the Terai) of horticultural crops along trade and trek routes far enough from Pokhara so that higher cost, local produce is competitive. The reports imply that local entrepreneurs (traders, lodge and bhatti owners) will need to play an important leadership and coordinating role in the horticultural crops subsystems. That is, these entrepreneurs will need to establish stronger ties with producing areas, which vary by crop and season, assure hill farmers a reliable and predictable (price) market outlet, and perhaps provide key inputs (seed, chemicals, tools) and extension advice to producers. Alternatively, government will need to provide greater support and training to extension agents, who can coordinate timely delivery and proper use of inputs, production schedules (to avoid gluts, assure reliable supplies and maximize returns to producers), and marketing activities. Needless to say, such skills are in short supply in Nepal, but they are needed to provide hill farmers with horticultural crop production and marketing opportunities.

An obvious strength of the LAC studies is their attempt to anticipate the impact of road construction and trail improvements on supply and demand for horticultural crops in selected areas of the LAC target zone. This type of forward-looking, predictive research is helpful to research stations and donors in guiding varietal research and extension efforts. It leads to more responsible use of limited resources in promoting FVC (fruit, vegetable and cash crop) production. The key is to stimulate FVC production in areas where and during periods when it is likely to be competitive with Terai, Kathmandu and Indian supplies. Tree crop decisions are long-range decisions, as production does not come on stream for 5-10 years. Hence, it is imperative to

analyze market trends, future infrastructural developments (including roads and communications), and current and likely future temporal and spatial price relationships.

A last point is that marketing research on horticultural crops needs to be crop- and area-specific. Production calendars and hence marketing opportunities need to be established for present (and prospective) hill production zones as well as for competing hill (e.g., Kathmandu), Terai and Indian areas. This type of research is time-consuming and skilled researcher-intensive. As such, initial efforts should be directed to a handful of what appear to be, on the basis of reviews of the current state of knowledge about horticultural products and selective field reconnaissance surveys, the most promising crops.

II. CIP Potato Study. Traditional Potato Production and Farmers' Selection of Varieties in Eastern Nepal, Potatoes in Food Systems Research Series Report No. 2, Robert E. Rhoades, International Potato Center, Lima, Peru, 1985.

This report describes in considerable detail potato production practices in both the Terai and hills of Eastern Nepal, and discusses some aspects of potato marketing and storage. Rhoades reports that commercial farmers in the Terai sell potatoes before the summer season to get cash for the upcoming paddy planting. Some of these commercial farmers provide informal credit to small, poor farmers, charging an annualized 100% interest rate. This strategy of selling at harvest and using the funds to provide cash loans to small farmers is more profitable than putting potatoes in storage and waiting for higher prices.

Potato prices are highest during the September-November period. Demand for seed, which is scarce, is very strong. Indian traders supply much of this seed to Terai farmers. They have superior information and trading networks (alternative sources of supply). Many Terai farmers, particularly smaller and poorer producers, receive potato seed from Indian traders in exchange for agreeing to sell their potato harvest at pre-determined prices. Indian traders supply table potatoes to Nepal during the monsoon season from as far away as Bhutan.

The market for potatoes in the hills is primarily a seed potato market. Potato seed is often bartered for rice. Nepalese traders come to the hills to buy seed for sale in India. Potatoes are graded by size, with the largest, highest quality potatoes destined for local consumption, medium potatoes reserved for seed in the higher hills, and small potatoes exchanged for grain with lower hill and Terai areas. Small potatoes are preferred for the seed potato trade, because a greater volume (and density) of potatoes can be packed into limited space. High trekking costs dictate this strategy. Unfortunately, it represents a form of negative selection, as inferior potatoes are used for seed. While potato seed generally moves downhill in stepwise fashion from higher to lower altitude zones, Indian germplasm is integrated into this system. This probably helps in retaining seed quality.

III. Nepal Rastra Bank, Multi-Purpose Household Budget Survey, A Study on Income Distribution, Employment and Consumption Patterns in Nepal. Draft Main Report, Volume 1, January 1988.

This report summarizes findings from a rural and urban household budget, expenditure and consumption survey, conducted from mid-March 1984 to mid-February 1985. The data were collected from a two-stage stratified random sample, stratified by urban-rural and terai-hill-mountain categories. Urban and rural panchayats were first selected and then wards and clusters within each panchayat were chosen. Households were listed in these secondary sampling units and selected at constant intervals from the listings, beginning with a randomly chosen base number. Data were collected during two one-month periods in each secondary sampling unit, approximately six months apart to capture seasonal differences. Enumerators collected data on household composition and characteristics, monthly income and expenditure, enterprise income, detailed food consumption and expenditure over a seven-day period, time use of household members and employment.

The survey findings are instructive even though preliminary. Average urban household income (Rs 1785) exceeds rural household income (Rs. 1192) by 49.7%. Agricultural income, both cash and in kind, comprised 60.8% of rural household income on average. Household agricultural cash income was greater on average in terai rural areas than in hill and mountain rural areas, where it was essentially equal. In urban areas average household agricultural income, largely in-kind or imputed income, was a surprisingly high 25.1% of total household income in the terai and 14.8% in the hills. In rural areas both cash and in-kind agricultural income comprised a higher percentage of total household income (on average) as farm size increased. The smaller the farm size, the greater the proportion of income contributed by labor payments ("wages and salaries") and received in-kind. This labor income represented the largest portion of household income (31.2%) for non-cultivators, who are probably mainly landless laborers but may also include shop-keepers and artisans.<sup>3</sup>

Household income is unequally distributed in Nepal, particularly strikingly in urban areas. Gini coefficients, calculated on a household basis, are first reported as 0.57, 0.85 and 0.55 for all of Nepal, urban Nepal and rural Nepal respectively. In rural Nepal, income is likely to be highly correlated with size of land holdings, which is also reported to be unequal. The land-income relationship is not examined in this report. The authors also analyze rural income distribution per capita by decile and by geographical region. They report Gini coefficients of 0.26, 0.26 and 0.11 for the terai, hills and mountain regions respectively. These figures do not suggest a high degree of inequality in per capita income distribution, which is at variance with casual empirical observation. The differences in reported Gini coefficients stem from the way in which the figures are calculated. Household size varies greatly

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<sup>3</sup>The exact definition of this category of household is not clear from the report.

across income levels, increasing by a factor of four from the lowest to the highest of eight household income groups in rural areas.

The section of the report on monthly household expenditure and consumption is especially interesting for the FVC marketing study. Consumption expenditure is defined as actual cash purchases plus goods and services produced at home or received from other sources. Households in Nepal consume and spend on average 62.2%, 51.0% and 61.2% of their income on food, beverages and tobacco in rural areas, urban areas and across both respectively. Households consume and spend about the same level of absolute income on grains, pulses and cereal products in rural and urban areas, but this consumption-expenditure represents a much higher proportion of total rural expenditures. Consumption and expenditures on fruits, vegetables and spices represent essentially the same proportion of total expenditure in rural and urban areas, though absolute levels of consumption-expenditure average nearly 50% higher in urban areas.

Disaggregating households by per capita income level reveals food consumption and expenditure patterns in rural areas of Nepal that do not always conform to a priori expectations. Consumption-expenditure on grain, cereal products and pulses declines from 49.6% of total monthly per capita expenditure for the lowest income decile to 29.1% for the highest decile, although absolute per capita consumption-expenditures increase by 62.7% over this same range. As income increases in rural areas, households spend absolutely more on basic grains and pulses but relatively (or proportionally) less. Absolute per capita consumption-expenditure on vegetables, fruits and spices increase by 83.6% from the lowest household decile to the highest, but decline in relative terms from 8.6% to 5.7% of total monthly expenditure. This relative decline is counterintuitive, but it can perhaps be explained by inclusion of a starchy staple such as potatoes in the vegetable, fruit and spice category, as well as consumption of locally produced vegetables in common dishes prepared by a wide range of Nepali households, regardless of income.<sup>4</sup> As expected, both absolute and relative per capita expenditures on meat, fish, eggs and milk increase as per capita household income increases in rural Nepal. Across the ten income deciles in rural areas the arc consumption-expenditure elasticities are 0.35 for grains and pulses, 0.47 for fruits, vegetables and spices, and 2.12 for meat, fish, eggs and milk.

The consumption-expenditure data are highly aggregated by food group and hence should be treated with caution. Furthermore, data were collected over only two one-month periods, rather than for an entire year. Nonetheless, the preliminary policy implication of these consumption-expenditure elasticities may be that livestock and fish production represent more attractive marketing opportunities for many rural households than production of vegetables, fruits and spices. Several caveats are necessary to add, however. First, the

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<sup>4</sup>Demand for starchy staples like potatoes, cassava and other tuber crops is quite income inelastic in most parts of the world, although not necessarily so over the range of incomes found in a low-income country such as Nepal. In Nepal demand for potatoes is likely to be income inelastic in rural areas where potatoes are produced, but it may be quite income elastic in urban areas. This is an issue for further research.

absolute level of rural household expenditures on vegetables, fruits and spices are higher than those for meat, fish, eggs and milk for all but the highest two income deciles. Second, per capita incomes have stagnated in Nepal in recent years, which may not continue into the 1990s, but which has prevented the income elasticity of demand pull for higher value livestock and fish products from having much effect. Third, arc expenditure elasticities appear to be strongest for non-food items, such as clothing, housing and furnishings, and education, purchased or produced by rural households.

Fourth, combining cash expenditure and in-kind production/consumption of goods and services in the category consumption expenditure could bias the findings. First, it is not clear how own production and consumption of own production were valued in this study. Are average national prices employed for each crop? Retail, wholesale or farmgate prices by region? Are seasonal variations in prices taken into account? Is own consumption valued differently for different households within a region? That is, are sales prices received, which are likely to vary from household to household, used to value own consumption?

In addition to possible crop valuation problems, actual expenditure elasticities are likely to be higher than "consumption expenditure" elasticities estimated from these data for vegetables, fruits and spices, because virtually all rural households produce significant quantities of these crops. If consumption of own production is netted out to arrive at actual expenditure, both relative and absolute expenditures are likely to increase over the household income range. This may not be the case for livestock and fish products, to the extent that there is greater specialization in production and consequent higher degree of monetization of these subsectors.

The preliminary results of the Nepal Rastra Bank household survey are useful and thought-provoking. Further analysis of expenditure patterns by household income decile would be very useful, however, and could usefully inform government policy and investment decisions. Disaggregation of household consumption expenditure and pure or actual expenditure by rural and urban zones and also by geographic strata is strongly recommended. Finally, it would be fascinating if agricultural sales data could be analyzed in disaggregated fashion for rural areas of Nepal by geographic region. Determining which groups (income level or geographic location) of households sell the largest proportion of marketed surplus would be instructive for policy. In other parts of the world, disaggregated analysis of crop transactions has shown that relatively small proportions of households are net sellers of grain and cash crops, and that incentive price policies (floor prices) are likely to have a limited and partial impact.<sup>5</sup> Sales of higher value fruits, vegetables, spices,

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<sup>5</sup>See Weber, Staatz, Holtzman, Crawford and Bernstein, "Informing Food Security Policy Decisions in Africa," American Journal of Agricultural Economics, December 1988 (forthcoming). Disaggregated micro-level analysis of crop transactions would be useful in Nepal as well as African countries. Nepal's per capita levels of income are as low or lower than African levels in rural areas, and grain production deficits appear to be as severe and chronic (or worse) than those of many African countries.

nuts, herbs and medicinal plants may also be highly skewed in favor of large farmers. These larger farmers are likely better able to produce enough grain to satisfy household consumption requirements and hence do not need to allocate proportionally more land to grain production, as do small, food insecure farmers.

Crop transactions, particularly sales, data were not collected in this household budget and expenditure survey over an entire agricultural production and marketing cycle (i.e., one year or more). As a result, income data, including crop sales, are available for two one-month periods. Analysis of these data would be useful for agricultural policy purposes, but the two one-month snapshots of household income, expenditures and consumption are no substitute for a year or longer survey of a much smaller sample of households in purposively selected and representative villages. There is need for a smaller scale yet more in-depth rural household survey that covers a full agricultural production and marketing cycle. This is recommended for future research. This is not to fault the Nepal Rastra Bank survey, which was designed for another purpose, that of reconstructing urban consumer price indices in Nepal.

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See Lehman B. Fletcher and Louis Connick, "Food Aid as a Development Resource in Nepal: A Reassessment," Development Associates, Inc., June 1988 for a lucid analysis of the magnitude of and trends in foodgrain deficits in different regions of Nepal.

IV. Nepal Hill Fruit Development Project: Final Feasibility Study Report, in three volumes, Agricultural Finance Corporation Ltd., Bombay, India in association with APROSC, Kathmandu, Nepal, Prepared for HMG/Nepal and Asian Development Bank, May 1987.

This feasibility study examines market prospects for fruit produced in the eleven hill districts of Nepal's Eastern Development Region and proposes a project that would exploit market opportunities. While admitting that the data base on fruit area, production and yield is weak in Nepal, the study team estimates current production and demand and projects demand for fresh fruit in Nepal for 1990, 1995, 2000 and 2005. Current (1985) consumption of fresh fruit in Nepal attains 15 kg. per annum in urban areas and 10 kg./year in rural areas. The team identifies market opportunities for export of mandarin oranges to India towns near the Nepali border and during periods of Indian off-season production. There is also scope for import substituting production of pineapple, bananas, apples and mangoes.

The report describes ongoing research programs for fruit crops in Nepal, the project area, and project components. Areas selected for the fruit development program lie within one day's walking distance of roads and have favorable agroclimatic conditions for fruit production.

The feasibility study proposes that the project finance the construction of a 6.0 km. road in Dhankuta District in order to link the Dhankuta Agricultural Station and the National Citrus Development Programme with the Dhankuta-Hile road. The study also proposes that an ADB feeder road project include the Patale-Salleri-Phaplu section as well.

Annexure III - Marketing, 181 pg. This contains a lot of useful information on fruit marketing, as well as raising several interesting, unanswered questions.

1. p. 9, para. 40. Air-freight charges for perishables are double those for non-perishables. Is there any economic justification for this? Do rates for perishables reflect real economic costs of air transport, implying that other commodity transport is subsidized? Could these rates be negotiated lower?
2. p. 12, para. 62. UNDP funded a feasibility study of the proposed HMG Pokhara fruit processing plant. Get a copy and review. Have plant operations begun? If so, at what capacity is the plant being utilized? Have processed products been marketed successfully? Where, to whom, in what form, at what price? Is HMG subsidizing the operation of this plant?
3. p. 22, para. 102. Setting up daily fruit price collection, compilation, transmission of prices to Kathmandu (DFAMS) and radio broadcast to the project area is recommended. This is very difficult to do successfully, even when precise, widely accepted grades of different fruits are well-established. Daily price collection is human-resource intensive and can become quite onerous. If price collection and dissemination are implemented, weekly or biweekly collection and price reporting should be satisfactory initially.

The study team states that price data collected fortnightly by DFAMS and published in monthly bulletins do not help producers. While this is presently true, analysis of several years of detailed fortnightly data could be quite helpful to producers if the results (typical seasonal trends and price behavior during poor harvests) were extended orally to producer groups by extension agents. Historical price data could also be useful in forecasting prices during the coming months. These prices would have to be related to expected harvested supplies, and particularly to anticipated fruit production coming on stream. One reason why government price reports are not very useful, besides delays in publication, is that so little analysis is done with the data. Often data are presented in complex and confusing tables, and few plots are produced.

4. p. 30, para. 142. Domestic taxes on the transport of fruit between districts/panchayats are reported to be 1-2% per exit. If several borders are crossed, these taxes could add up to a considerable burden. Buchanan-Smith mentions taxes paid by fresh produce traders along the Pokhara-Kathmandu road and the road from India to Pokhara. Although never stated explicitly, it is implied that harassment and payoffs to local police add to costs, and may make produce trekked into Pokhara from the surrounding hill villages competitive with trucked in produce during certain periods of the year. Traders are usually more than willing to report the magnitude and frequency of payoffs. These should be added to transport costs and marketing margins, as they are paid out of pocket by traders/transporters.

5. Appendix 3, Supply and Demand Analysis, pp. 33-49. The analysis is carried out at too highly aggregated a level. Production of all types of fruits are lumped together. Import and export data are also aggregated. There appears to be an error in Table 5, p. 37 for 1985/86. The demand projections assume real GDP growth of 4.5% per annum from 1985 to 2005, which may be too optimistic. Some sensitivity analysis using different income growth rates may be warranted.

6. p. 46, para. 3.2.2.3 The 1982 survey conducted by the Industrial Services Center on fruit processing, particularly by cottage level industries, should be acquired and reviewed.

7. p. 48, para. 3.3.1 The 1982 Feasibility Study of High Value Cash Crops Projects, Nepal (Vol. 2) is cited in stating that Nepalese oranges can be sold at a competitive price in North Indian towns lying within 200-250 km. of the border. This needs to be confirmed for the past year or two. Obtaining monthly average prices from key Indian towns near the Nepalese border and plotting them on the same graph as Nepalese prices (at border towns or major consumption-redistribution markets) would be useful.

8. pp. 51-53. It is not clear whether the comparison of economic prices of various fruits at Kathmandu produced domestically and imported from India include border and local transit taxes and payoffs to police in transport. It is also not clear how transport charges were determined. Were they obtained for truckloads of fruit? Or were rates per basket or other shipping container used?

9. pp. 53-55. The report discusses Nepal's comparative advantage as an off-season supplier to the India market. India has hilly areas which probably have

similar production cycles and seasonal availability of fruit as Nepal. In addition, other countries (Bhutan and Pakistan) may supply the India market during the off-season. It would be useful to analyze fresh fruit supply and demand in a regional context. Showing principal production areas for key crops (fruits, vegetables, spices) in South Asia on a regional map would be useful. Harvest and marketing season information could be appended.

10. p. 65. In projecting fruit demand, per capita income is assumed to increase at a rate of 1.8% per annum from 1985 to 2005. Again, sensitivity analysis needs to be done, which would show fruit demand under lower income growth scenarios. Although it is not clear from the study, it seems as if the same real per capita GDP growth rates are used in projecting urban as well as rural demand. Hence, it is assumed that per capita income will grow at equal rates in both urban and rural areas. It is more likely that urban per capita income growth rates will be much higher. Rural rates may fall with outmigration of able-bodied males, decreased soil fertility, and environmental degradation.

11. pp. 75-83. Reference to DFAMS study on orange marketing. Obtain and incorporate in annotated bibliography.

12. p. 94. Transport charges between major points in Nepal and India. Update. This should be expanded to show transport costs within Nepal (include important trek routes) and to towns near the Indian border. Show on a high quality map that includes only most important information. Hire professional cartographer.

13. p. 106. Air freight rates from Kathmandu to key international markets. Update and assess whether current rates are justifiable (still twice as high for perishables as for other freight?) and how determined? Are they set arbitrarily or on an economic basis? p. 107. Domestic air freight rates. Update and same assessment as above.

14. pp. 111-114. Useful tables of prices of fruits used in processing, retail processed product prices and competing imported products. Verify and update.

15. pp. 128-140. Apple grading and packing guidelines. Is grading scheme similar in Nepal to that described for India?

16. pp. 24-26; 161-178. Technical proposals for plastic retail packing (for upper income market in Kathmandu), dispensers/vending machines, and tetra-brick aseptic pack for fruit based beverages are interesting but not convincing. How well have the four vending machines installed in Kathmandu done? Report asserts that Nepalese processed aseptic packed fruit beverages will compete well against Indian products in Eastern India, as Indian processing plants are located in Western and North India. Transport costs would be lower for Nepal plant in Eastern Nepal, but raw material and processing costs per unit may not be. Indian plants likely to achieve economies of scale. Sensitivity analysis needs to be done showing processing costs at different rates of capacity utilization.

18. p. 14. Report asserts that consumers worldwide are shifting from carbonated, artificially flavored soft drinks to fruit drinks or to carbonated

drinks with fruit concentrate added. No data are presented in support of this. I doubt that it is true for the U.S., where soft drink consumption exceeds water consumption in young people's diets.

19. Although I can't find the section and an accompanying table, I do not find that the success of soft drink bottlers in Kathmandu (Coca-Cola and Pepsi distributors) to be especially encouraging. Soft drinks can be sold more cheaply than fruit drinks for comparable volumes. Unfortunately, there may also be a certain allure (modernity, sophistication) to drinking a western type soft drink than a local fruit drink. Advertising for soft drinks is also likely to be stronger. Established bottlers of soft drinks may have considerable market power, which they could use to discourage consumption of fruit drinks (through price cuts, increased advertising).

V. Secondary Crops Development in Nepal, Phase I Report, Prepared for ADB and HMG, Experience Inc. and Integrated Development Systems, Minneapolis, Minnesota and Kathmandu, Nepal, March 1988.

This report provides a broad overview of secondary crops production, marketing, processing and research in Nepal. Secondary crops include secondary grains such as finger millet, barley, buckwheat and amaranth, pulses such as blackgram, pigeon peas, lentils, and chickpeas, and oilseeds such as mustard, rape, soybeans, niger, sesame and groundnuts. The authors choose the hill and terai areas of the Mid-Western Region as priority zones for secondary crops research and development. On-station research, outreach and adaptive research programs are described in considerable depth.

Many, if not most, of the pulses produced in the terai are exported to India. Demand for rape is also strong in India, particularly during poor production years.

The authors describe ginger post-harvest technology and marketing and state that export potential is constrained by poor cultivars. Smoke-dried ginger has an export market niche in India, but labor and fuel input requirements are high and costly. Marketing problems are reported to force farmers to accept low prices. Prices in Nepal are dependent upon price levels in India.

AIC has begun multiplication of mustard and groundnut seeds of recommended varieties and expects to collect 25-30 tons for distribution in 1989. AIC has also planned multiplication of pulse seeds (mungbeans, chickpeas and field peas) on about 80 ha. by contract farmers. It is also planning on collecting finger millet for multiplication.

## Annex 2

### Fresh and Dried Ginger Marketing Constraints, Knowledge Gaps, Opportunities and Significant Lessons

#### 1.0 Introduction

The objectives of this section are to:

1. Summarize current knowledge of ginger marketing and exports from Nepal.
2. Identify constraints to expanding ginger marketing and exports.
3. Identify knowledge gaps and questions/issues for further research.
4. Identify possible opportunities for improving ginger marketing and expanding exports.
5. Discuss significant lessons for policy and investment priorities of the ginger experience.

This note is based on a careful reading of A Study on Ginger Marketing in Nepal, prepared by APROSC in April 1986 for the Office of the Project Coordinator, Cash Crop Development Project, Ministry of Agriculture, HMG, Nepal.

#### 2.0 Brief Summary of Current Knowledge

Both fresh and dried ginger are important high-value export crops produced on small farms in Nepal. The middle altitude hills of the Rapti Zone are an important producing area (especially Salyan, Pyuthan and Dang Districts). Palpa, Nawalparasi, Syangja, Tanahun and Kaski Districts of Western Region produce ginger, as do Jhapa, Illam and Bhojpur Districts in Eastern Development Region. Average area cultivated to ginger per producing household generally falls in the 0.05-0.13 hectare range. An exception is Jhapa District, where farmers cultivated an average of 0.583 to 0.918 hectares over a three-year period (1983/84 to 1985/86).

Most ginger is sold fresh shortly after the harvest to rural assemblers in the hills, who are typically financed by larger volume wholesalers based in the Terai, or directly to the wholesalers. The Trade Promotion Centre reports average exports of 4175 metric tons of fresh ginger from Nepal to India over the 1980/81 to 1983/84 period. Over a seven year period (1978/79 - 1984/85), customs records show average annual exports of 3175 metric tons of fresh ginger, with a significant decline in 1984/85.

Some ginger is dried in a very labor-intensive process for sale during the dry season. Dried ginger commands far higher prices per unit, even after accounting for processing costs. Customs records for the 1978/79 to 1984/85 period show average reported exports of 1100 metric tons of dried ginger from Nepal. Nepal Rastra Bank and Trade Promotion Centre statistics indicate that

dried ginger exports averaged 1225 metric tons from 1976/77 to 1983/84, with India absorbing 92% of total exports over the entire period. Exports trended downward from a high of 2019 metric tons in 1975/76 to 879 metric tons in 1983/84.

Most recorded exports of fresh ginger pass through Bhairahawa and Kakarbhitta. Nepalgunj and Bhairahawa report the largest volume of dried ginger exports.

APROSC reports that wholesale traders based in terminal markets of the Terai "manipulate prices" to the detriment of producers. Producers are often forced to sell fresh ginger shortly after the harvest in order to earn cash for purchases of foodgrains and other "necessary goods." Consequently, they sell their ginger during the period of lowest prices to traders in the Terai. One might also note, however, that grain prices are also seasonally lowest in the Terai at this time, so farmers are able to buy more grain for their Rupees. APROSC states that farmers who bring their fresh ginger down from the hills to sell to Terai-based traders have no bargaining power, as they must sell quickly to minimize lodging costs while away from home. This suggests that there is scope for better organization of hill farmer marketing of ginger.

Nepalese ginger is apparently inferior to Indian Cochin and Calicut gingers, which are often exported. It appears as if Nepalese ginger may substitute in part for higher quality Indian ginger that is exported. Or it may be that Nepalese ginger, which enjoys a considerable price advantage, is consumed by lower-income households in India. Smoke-dried ginger produced in Rapti Zone is demanded by households in Bihar and Uttar Pradesh states of India, where it is used to flavor drinks and by mothers convalescing after child birth.

Given the strong integration of the Nepalese and Indian markets, ginger prices in Nepal are highly correlated with prices in neighboring Indian towns near the border. In contrast, the domestic market for ginger in Nepal is poorly integrated.

Fresh ginger prices vary greatly over the course of the year, as expected given seasonal production and availability. Prices are seasonally lowest in the November-February period, and reach seasonal highs during June, July and August. Prices nearly quadruple from harvest to the period of peak prices. Dried ginger prices are far more stable across seasons, given the storable nature of the dried product and farmers' tendency to hold ginger for sale well after the harvest. An interesting empirical question is what are the characteristics of farmers who dry ginger for sale after the peak marketing season (for fresh ginger)? One hypothesis is that larger, wealthier farmers can afford to hold their ginger longer before sale and pay others to assist in the processing. In contrast, smaller producers are compelled to sell fresh ginger at harvest time in order to meet pressing cash needs.

Using price data available at the Nepal Rastra Bank, annual retail fresh ginger prices have increased in real terms over the 1972/73 to 1984/85 period in Nepalgunj and Biratnagar, while declining in Pokhara and Illam. Shorter time-series for Bhairahawa and Kathmandu show declines in real fresh ginger prices from 1981/82 to 1984/85. Dried ginger real wholesale prices increased

steadily over the 1978/79 to 1983/84 period in Nepalgunj and Bhairahawa, then declined in 1984/85. These time-series should be updated to show recent trends in wholesale and retail prices. Domestic price trends are at least partial evidence of export demand for ginger products. When compared to price trends in Indian markets, they should also provide insights into whether Nepal's comparative advantage has shifted over time.

### 3.0 Constraints to Expanding Marketing and Exports of Ginger

Ginger is a classic high-value, low-weight cash crop, which appears ideally suited to Nepal's hill regions. Yet production and exports of ginger appear to be constrained by at least some of the following factors:

1. Hill farmers, particularly farmers with smaller holdings and in isolated areas far from roads and markets, may prefer to cultivate as much of their land as possible to cereals in order to satisfy food consumption requirements. No matter how profitable ginger production is, these farmers cannot rely on the market to supply them with cereals.
2. The ginger market is uncompetitive, as a small number of wholesale traders based in the Terai and larger hill towns offer low prices, particularly for fresh ginger. This is a disincentive to ginger production for the market.
3. Dried ginger marketing and exports are probably constrained by the pressing cash needs of rural hill households after the harvest. Many producers desperately need cash, so they sell their ginger fresh shortly after the harvest. They cannot wait to dry and process the ginger for later sale.
4. Exports of both fresh and dried ginger to India may be constrained by domestic Indian production. Indian varieties are generally preferred, so export market potential is limited.

The extent to which these constraints are apparent or real is unknown, as is their rank order of importance. Further applied research would be useful in learning about farm, market and export demand constraints. There may be considerable scope for expanding hill farmer production and sales of ginger and Nepalese exports to India and third countries.

### 4.0 Knowledge Gaps in Ginger Production, Marketing and Export

As excellent as the 1986 APROSC study of ginger marketing is, it leaves several important questions unanswered. These are listed below:

1. Which farmers are currently producing most of the fresh and dried ginger for the market? Do larger, wealthier farmers predominate? Are smaller, poorer farmers more likely to produce and sell fresh ginger than larger farmers? Are larger farmers selling most of the dried ginger?
2. What are hill producers' perceptions of market opportunities for ginger? Do they view ginger as more profitable than competing high value crops?

3. Are hill producers likely to specialize more in ginger production as foodgrain deficits get progressively worse?
4. Are ginger producers able to find attractive market outlets? Do they prefer to sell their ginger in the hills near their farms, or do they prefer to trek to larger Terai markets in order to sell?
5. Are official trade statistics accurate? Even if they understate ginger exports, are the stagnant or declining export trends apparent from the official statistics an accurate reflection of reality? What has been the volume of official ginger exports since 1984/85, the latest year for which trade data were available for the APROSC study team?
6. Is the ginger market highly concentrated and uncompetitive? Are wholesale traders able to manipulate prices to the disadvantage of hill producers, as alleged by APROSC?
7. What is the potential for expanding exports of dried ginger to third country markets? Given high transport costs, can Nepal compete with India and other suppliers?

#### **5.0 Possible Opportunities for Improving Ginger Marketing and Expanding Exports**

Based on APROSC's study findings, several measures could be taken to improve ginger marketing. Our confidence in these measures depends in large part on the accuracy of APROSC's diagnoses of constraints and problems.

1. The ginger marketing system could be made more competitive by providing hill producers with better price and market information, or perhaps by organizing producers in groups which would exercise greater bargaining power. If rural assemblers received credit as working capital for ginger buying, they would be less controlled by the wholesale traders, who presently provide funds for ginger purchases.
2. Improved ginger processing might result in a better quality dried ginger, which would command higher prices in Terai and Indian markets.
3. Improved market intelligence and export promotion in third country markets could expand Nepal's market opportunities. Initially, the public sector (or public funds provided to private market research firms) could assist private traders in identifying these market opportunities.
4. Varietal improvement might lead to higher returns from export of ginger to India or third countries. This would require adapting varieties grown in India (Cochin, Calcut) or other exporting countries (e.g., Jamaica).

#### **6.0 Lessons from the Ginger Experience: Factors Necessary for the Success of High Value Crops**

Ginger is one of the most successful agricultural exports of Nepal. What are some of the factors responsible for this success that might be instructive in thinking about promoting exports of other high-value crops?

1. Ginger grows well in upland areas under 1500 meters in altitude. These areas are located in the hills but are not too far from important markets in the Terai. As such, transport costs to the Terai and to India are not excessive.
2. Ginger, particularly in its dried form, has very high value to weight. The dried form is not very perishable, unlike fresh vegetables, so it can be stored and transported under harsh conditions.
3. Although the ginger marketing system is not highly developed in the hills, wholesale traders based in the Terai play an active coordinating role in the export of ginger.
4. Smoke-dried ginger is a differentiated product with a special market niche in India. Product differentiation may be a key to a successful export promotion strategy, rather than trying to compete directly with established suppliers of more standard (high value) products.
5. Ginger processing (drying, smoking) is a relatively low-cost and low-technology activity that does not require significant capital investments and well-developed fuel and spare parts networks. It is also very labor-intensive, using an abundant and cheap factor of production, off-season labor. By most accounts, this labor has a very low opportunity cost.
6. Ginger production fits well into hill farming systems. It can be grown on very small plots (of only one ropani) or intercropped by small farmers without taking too much land out of foodgrain (or potato) production.

**Annex 3 Vegetable Seed Importers in Bangladesh**

1. Ganges Development Corporation Manufacturer's Representative  
Indentor and Importer  
House No. 7, Main Road No. 3, Block A, Mikpur Sec-11  
Dhaka-21, Bangladesh  
Tel.: 381435 or 381836  
Cable Siddiquis Dhaka

Kushtia Office  
99/1 R.C. Roy  
Choudhury St.  
Kustia, Bangladesh  
Tel.: 4249

USA Office  
Siddique Associates, Inc.  
367 92nd St.  
Brooklyn, N.Y. 11209  
Tel. (718) 748-3762

2. M/S Admark International  
3/7 Naya Paltan  
Dhaka 1000  
Bangladesh  
Tel.: 406536, 236553

3. A.R. Malik & Company  
149, DIT Extension Ave.  
G.P.O. Box No. 3275  
Dhaka 1000  
Bangladesh

## Annex 4

## Notes on Nepal's Agricultural Development Strategy

## 1.0 Agricultural Development Strategies

1. Comparative advantage strategy. Specialization by region: Terai - grains; Hills - FVC; Mountains - livestock products. Assumes exchange possible. The HMG's Fourth Development Plan, Mellor et al. (IFAD Mission, 1973) and Ram Yadav (IFPRI, 1987) argue for greater investment in agricultural research along comparative advantage lines.
2. Food self-sufficiency strategy. Increase grain and food crop production in each zone, in light of high transport costs and limited grain transfers. Recognizes that excess Terai grain will be exported mainly to India, where effective demand greatest.
3. Increasing farm income strategy. Promoting FVC (fruit, vegetable and cash) crops in all three regions and in accordance with comparative advantage in production and transport costs. The higher in altitude an area is located, the higher value per weight and volume FVCs must be in order to be competitive in urban markets and India.

## 2.0 Important and Salient Facts

1. Increasing inequality of land distribution and food production/access.
2. Declining food grain production per capita in all regions.
3. Extremely high transport costs away from roads. As roads developed, rural households gain access to cheaper food from the Terai and India.
4. Increasing outmigration from rural areas in hills to towns in hills and Terai. Effect on rural labor availability, particularly during peak periods, may be quite negative.
5. Increasing deforestation, and in some areas, erosion. In most areas a stagnant livestock population and decreased availability of organic matter for maintaining soil fertility. Increasing cultivation of marginal lands. Greater fertilizer application required to maintain grain yield levels.
6. Increasing population, particularly in better quality lowlands, and fragmentation of holdings in hills. Possible that holdings in Terai and valley bottoms becoming less fragmented and more concentrated, as ownership declines and tenancy & share-cropping increase.
7. High degree of interdependence between Nepal and India. Independent Nepalese price and trade policies not possible. Nepalese economy will continue to be dominated by Indian economy.

### 3.0 Investment in Agricultural Research

1. Mellor and ICIMOD - increasing food production.
2. Investment priorities - foodgrains, FVC, livestock. Largest population in hills, where maize, winter wheat and FVC most important.
3. Limited knowledge of rural households' agricultural production and marketing strategies and behavior, sources and importance of off-farm income, and rural financial and labor markets. Many short-term studies, one-shot retrospective surveys, but little longitudinal formal surveys that collect detailed micro-level data.
4. Higher priority to research on rural households' food security.

### 4.0 Some Seemingly Common Fallacies and Assumptions

1. Increased rural FVC income in the hills will improve household food security. Depends on willingness and ability of private agents to transport foodgrains from India and the Terai to the hills. In some years far greater effective demand in India has pulled grain from the Terai across the border.
2. FVC income promotion will help small farmers relatively more than larger farmers, because FVC can be profitably grown on small (and fragmented) parcels. Specializing in FVC may lower small farmer grain self-sufficiency and increase their reliance on the market. Since grain markets are not well-developed in the hills, this strategy may be highly risky for small farmers, particularly in more isolated areas.
3. FVC production in the hills will be competitive with imports from India and the Terai. As shown by Buchanan-Smith (LAC studies, 1986), this will depend upon hills' production costs, which are generally higher than those of India and the Terai, distances of hill production zones from town and tourist markets, and distances of latter from roads.
4. FVC income promotion will keep rural households in the hills. This will depend in part on their access to consumer goods and desired services (health, education, cleaner water). Rural households in the hills procure consumer goods in the Terai or in hill towns. Absence of periodic markets in the hills, except in the East. Households in Rapti express preference for education. GTZ experiment shows that investments in education and hygiene (especially water) were highest priorities for communities receiving aid in the form of cash.
5. Some passages from an April 1976 report by a Rockefeller Foundation team, headed by Alfred Moseman and including Michael Harwood, Delane Welsch and Wayne Freeman, are instructive.

Without ready access to markets most farms are almost entirely subsistence-oriented. The few that do market a larger proportion

of their produce are involved in production of high-value crops. Even with access roads, however, few farms market more than half of what they produce, largely because of small farm size and the tendency to produce their own staple foods for home consumption. Small farmers will continue to produce their own food, remaining largely non-market oriented, until alternative production enterprises are sufficiently attractive and until the assurance of a stable external food supply becomes a reality. (p. 93)

Some argue that a Hill farmer might better grow high-value, low-bulk crops and then purchase his food needs. With small farm size, however, he will never achieve more than low-income status. If, in addition to concern about future uncertainty of food supplies, the farmer must bear the significant cost of marketing and transport services for both his produce and his consumed goods, the income advantage of cash crops in place of food crops must be substantial. Until such time as inexpensive transportation and efficient marketing channels are available, maintaining self-sufficiency in food production in Hill areas would seem to be a high priority national goal. (p. 98)

## 5.0 Directions for Further Research

1. More detailed collection and analysis of data on rural households' agricultural production and marketing strategies and behavior, food security strategies, off-farm employment and income, and their opinions and perceptions of constraints to increasing agricultural production and economic opportunities. What is the investment preference structure (or rank ordering) of households in the hills?
2. Learning from successful areas or villages in the hills, such as Palung, which is approximately three and one half hours from Kathmandu. Examine factors responsible for success, and assess replicability in other areas/villages.
3. Selected commodity subsector studies for promising FVC crops. Vegetable seed, ginger, cardamon, nuts (e.g., walnuts), selected vegetables produced in the hills during off-season in Terai and India. Examine successes, such as ginger exports to India, and assess whether expansion warranted and improved productivity possible and feasible. Are factors responsible for successes transferable to other crops?
4. Distill significant lessons and principles for successful promotion of FVC. Develop detailed checklist for considering feasibility of export promotion.
5. Improving price (and market quantity) data collection and analysis, more for the benefit of policy-makers than for use by the private sector. Accurate and timely price reporting for use by the private sector is very demanding and costly. But better market data collection and analysis will improve policy-makers' understanding of market opportunities and flows

(intra-regional, inter-regional, international). Will also show how well markets are integrated.

6. Selected action programs to improve productivity of production and marketing of promising crops. Case of vegetable seed.