

**The Definition and Role of High-Value Commodities in
MARD/Rapti**

MARD/Rapti Technical Report No. 17

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The Definition and Role of High-Value Commodities in MARD/Rapti

A. Introduction

A1. The Issue of High-Value Commodities

During the MARD Steering Committee Meeting on January 15, 1998, the MARD/Rapti TA Team was directed to advise the Committee on the appropriate definition of high-value commodities that will best serve the overall project objectives. This issue is critical to the approach taken by the MARD/Rapti TA Team, because it has a small budget, relative to the performance requirements of the Chemonics contract. The broader issue concerns whether the TA Team focuses its assistance on a narrow group of commodities identified in the MARD grant agreement between HMG and USAID¹, or includes a wider range of agricultural commodities.

The Grant Agreement's most explicit definition of "high-value commodities" is in the definition of project success:

"... an increase in the production of high-value agricultural commodities including fresh vegetables and vegetable seeds, citrus, apples and some livestock products, from the current level of 10,929 metric tons (MT) to approximately 68,167 MT, an increase of about 500 percent. (This measure excludes cash crops, such as oilseeds, pulses and sugarcane, which are grown in the Inner Terai.) ..." (p. 9).

This definition raises three critical implementation issues that have yet to be resolved. First, the definition does not provide any economic justification as to why these commodities should be emphasized over all other commodities produced in Rapti. Second, the extraordinary production target of a 500 percent increase (over the period 1995-2001) lacks statistical documentation of both the benchmark and the physical resource base necessary to support such a high annual growth rate². Third, the inclusion of tree crops (citrus and apples) in a 5-year performance-based project begs the question of how the project can contribute to production performance targets by providing technical assistance for planting saplings that would only begin bearing as the project ended.

¹ U.S. Agency for International Development. *Grant Agreement Between His Majesty's Government of Nepal and the United States of America for "Market Access for Rural Development (MARD)", Activity No. 367-0167.72*. Office of Agriculture and Rural Development, U.S. Agency for International Development, Kathmandu/Nepal. January, 1996.

² In February 1998, USAID/Nepal tripled the annual production performance targets for its Strategic Objective 1 from 85,836 MT in 1997 (compared to 24,550 in the Grant Agreement) to 170,000 MT in 2002, for an average annual growth rate of 15 percent. This indicator includes forest non-timber products. (*FY 2000 Results Review and Resource Request: Nepal*, U.S. Agency for International Development, Kathmandu/Nepal. February 1998)

A2. Objectives of This Report

The overall objective of this report is to clarify the definition and role of high-value commodities in MARD/Rapti, and recommend a course of action that maximizes Rapti rural development. In addressing the “high-value” issue, the problem is formulated in terms of the Rapti farmer’s choices for improving his household income with a limited supply of family labor and arable land. In that context, farm production decisions are made, not from a single commodity perspective, but based on how that commodity enterprise utilizes family labor and land to maximize income, net of cash expenses.

A3. Organization of This Report

The definition and role of high-value commodities in MARD/Rapti is addressed in four parts. First, the MARD/Rapti objectives are reviewed to lay the foundations for the role of high-value commodities, and their promotion through market development and production technology programs, in implementing the TA program. . Second, a model farm plan is used to illustrate how TA affects farmers’ choices of enterprises. Finally, the role of high-value commodities is summarized and guidelines are proposed for deciding which commodities the TA Team emphasizes to achieve overall project objectives.

B. The Objectives and Technical Approach of MARD/Rapti

The purpose of the MARD Project is to increase sales of high-value agricultural products in Rapti Zone. The project is achieving this purpose by improving Rapti farm families’: access to markets; application of appropriate agricultural technologies; and adoption of appropriate nutritional practices. Most of the market development effort is aimed at expanding agricultural product markets, but farmers will also need better access to purchased inputs at competitive prices if the zone’s various comparative advantages are to be realized.

Rapti’s comparative advantages will ultimately be determined by how well its farmers use their available land and labor resources. This means production will tend to be specialized in those commodities that have relatively higher returns to land and labor. The MARD/Rapti TA Team is helping Rapti farmers to realize their comparative advantages by a combination of off-farm marketing assistance and on-farm production assistance. The critical ingredient in these marketing and technology assistance program is the farmer’s choice of enterprises that yield the highest return to land and labor. Those enterprises will effectively define “high-value.”

B1. Market Development

Historically, the long term relationship between real (prices deflated for general price inflation) farmgate prices and the adoption of improved agricultural technology is inverse: the more rapidly farmers adopt improved technologies, the more likely that farmgate prices fall, or at least fail to rise. Non-farm consumers benefit from this process,

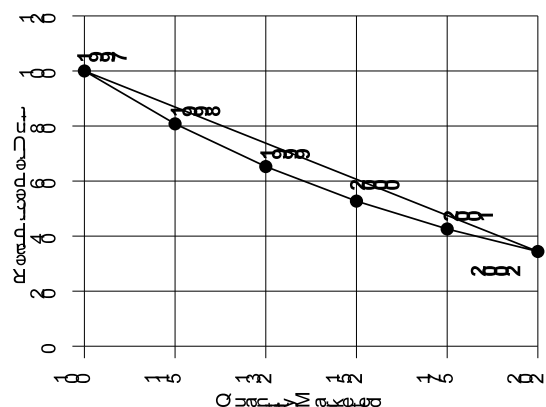
while farm families gain from increased productivity, but sacrifice some of those gains to consumers in the form of lower market prices. In most developing economies, the net result of these trends is an irreversible shift of labor out of agriculture. But problems in the early stages of rural development are also compounded by weak market linkages. The more remote areas lack access to the price discovery and price information institutions that are necessary for efficient markets. These market weaknesses mean that farmers fail to receive adequate price signals on which commodities will best exploit their limited land and labor resources.

The relationship between prices and production growth is particularly important in MARD/Rapti because of the high production growth rate that is assumed in USAID's strategic objective indicator. The current performance target has total MARD (Rapti and Bheri) annual production of forest and high-value agricultural commodities (in project areas) increasing from 55,103 tons in 1995 to 170,000 in 2002. When the intermediate annual targets are included, the average annual growth rate for this trend is 15.1 percent. This number is three times the growth rate targeted in Nepal's new 20 year Agricultural Perspective Plan (APP), and at least 7 times the national agricultural growth rate over the last decade. The USAID annual sales targets for these commodities are set to grow from \$7.6 million in 1995 to \$32 million in 2002, at an average annual growth rate of 20.1 percent. These targets are extraordinary in worldwide agricultural development experience. At the national level, no country has achieved five years of sustained annual production growth of over 10 percent. The price consequences of the 5 percent growth target are not addressed in the APP, although the need to increase exports is emphasized.

To appreciate how Rapti would fare under a 15 percent annual production growth rate, a simple supply and demand model can be used to simulate demand and supply shifts over 1997-2002. In exhibit 1, the wholesale market structure is assumed to have a price elasticity of supply of 0.7, a price elasticity of demand of -0.7, and an income elasticity of demand of 0.8. Disposable household income is assumed to grow at 2 percent per annum. Under these circumstances, a massive amount of technology and production inputs is required, at an annual increase of about 28 percent, to achieve an annual production growth rate of 15 percent. Using 1997 as a benchmark for price and quantity at a beginning index of 100 each, the 15 percent annual production growth rate results in a doubling of production over 5 years, while real price falls by 66 percent.

This scenario will not happen because infrastructure, farmer education, national economic policy are not sufficient to support the rate of technical diffusion that would be necessary to increase production by 15% per annum. And even if the productivity conditions existed, the

Exhibit 1. Rapti Market Change, 1997-2002, With 15% Annual Production Growth



sharp fall in prices would serve as a quick damper on further production increases. Prices would fall because supply (production) would increase far faster than Rapti's disposable income growth and export demand for Rapti surplus production.

The recognition of these fundamental features of the rural development process has required the MARD/Rapti TA Team to focus its marketing assistance in three critical areas: 1) expanding demand for Rapti agricultural products; 2) reducing the costs of marketing those products; and 3) expanding the supply of purchased agricultural inputs for those products. These initiatives work to moderate the negative effects of general price declines, and thereby maintain sufficient incentives for farmers to stay in the market. Expansion of demand for Rapti products is necessary to accommodate unfulfilled food needs within the zone, and to weaken the impact of increased production on local prices by exporting surplus goods to external markets (the rest of Nepal, and nearby Indian markets). An important part of the market expansion program is the development of niche markets for Rapti products in the off seasons of relevant outside markets. Improved price information has to be available to farmers and traders if both groups are to make successful production and marketing decisions. Reducing the costs of marketing Rapti products will affect the market in the same manner as if there were an increase in the supply of those products against a relatively fixed demand curve, where average market prices fall while the quantity of marketed goods increases. Similarly, expanding the supply of purchased agricultural inputs means lower input prices for larger quantities of marketed inputs, which directly increase agricultural production.

B2. Improved Technology

Rapti farmers equate high product prices with high farm income, but prices have to be relatively low if markets are to be expanded. Ultimately, contested markets will be won on the basis of competitive advantages. That means Rapti farmers have to adopt low-cost production technologies if they hope to realize the zone's various competitive advantages.

The MARD/Rapti TA Team assists farmers in adopting new technologies that increase product per unit of land, labor, and other significant production inputs. The technologies are focused on: 1) improved crop varieties that have high fertility response, superior resistance to disease and pests, high consumer acceptability, and lower post-harvest handling losses; 2) crop varieties and cultivation practices that maximize off-season supply windows in export markets; 3) integrated pest management and environmental management approaches to reducing production costs; and 4) post-harvest reductions in processing and handling costs. These interventions have the combined effect of expanding the marketed quantity of Rapti products, at prices that are competitive outside the zone.

C. The Role of Technical Assistance in Rapti Farmers' Choice of Commodities

The quest for increased production can easily lead rural development programs to focus on particularly promising commodities, without fully appreciating how those commodities fit in the farm's overall production plan. One of the most common reasons why

supposedly superior commodities fall far short of their proponents' expectations is the failure to understand the relative land and labor productivity of commodities over the calendar year.

The competition between commodities for the highest returns to a farmer's land and labor can be demonstrated with preliminary production data estimated by the USAID-funded Regional Agribusiness Project (RAP)³ for 11 of the most common crops in the Satbariya VDC of Dang District during 1996. The MARD/Rapti TA Team modified these data to construct a farm-level linear programming model. The model poses the question of how to choose a combination of crops that maximizes annual net income, given individual crop net incomes and land and labor requirements, and subject to a limitation of 1 hectare of land and 44 days of labor per month⁴. After determining the optimum mix of commodities that can be achieved with the model's initial technical coefficients, resource restrictions, input costs, and product prices, alternative specifications illustrate how the enterprise mix is affected by technology and marketing interventions. How the farm enterprise mix changes in response to these two important Rapti interventions has important implications for how the interventions will be diffused throughout targeted pockets and into all other pockets that do not receive direct TA. This analysis demonstrates the importance of designing farm plans to realistically represent farmers' cropping cycles (monthly land use patterns) and labor utilization (total amount and monthly distribution). It should be emphasized that the results are severely limited by the omission of livestock commodities, particularly milking buffaloes, to show the full range of competition between crops and livestock for the farm's limited land and labor resource base.

C1. Illustration # 1 – The Optimum Mix of Commodities

The RAP survey data provide valuable information about the cost of crop production, but they do not explain how farmers organize their commodities to maximize income or returns to their land and labor resources. However, the preliminary farm model presented in Table 1 does not require the use of linear programming to determine the optimum mix. Cauliflower has the highest return per unit of land and labor, and it does not require more than the farm's monthly labor supply (44 person-days). Therefore, cauliflower will utilize all of the land, and most of the available household labor during the August-January growing season, to the exclusion of all other crops. Net farm income would be Rs 112,000, solely from the sale of cauliflower. Most of the available household labor would be used for cauliflower production during August-December.

This one-crop solution is troubling for several reasons. First, even after excluding livestock from the enterprise options, it is unrealistic to assume that the typical Satbariya farm specializes in just one crop. This strategy would conflict with most farmers' strong preference for diversified crop mixes to balance annual labor utilization and returns (whether

³ USAID Regional Agribusiness Project (RAP). *Agricultural Practices and Crop Budget Survey [for Rapti Zone]*. RAP Technical Report No. 13, February 1997.

⁴ It is assumed that 2 adults in the farm household are available to each work 22 days per month. This also means that the model does not provide for hiring off-farm labor if the household labor supply is exhausted.

Table 1 Initial Crop Production Opportunities for a Satbariya Farm Model, 1996

	Cauliflower	Potato	Cabbage	Tomato	Chili	Paddy	Maize	Wheat	Garlic	Cotton		RHS (land, labor)
NETINCOME	112,049	58,227	57,128	91,563	26,800	6,064	18,307	10,940	19,701	21,299		
Land (ht)												
Jan	1	1	1	1				1	1		<=	1
Feb		1	1	1				1	1		<=	1
Mar				1				1	1		<=	1
Apr								1	1		<=	1
May							1			1	<=	1
Jun						1	1			1	<=	1
Jul					1	1	1			1	<=	1
Aug	1				1	1	1			1	<=	1
Sep	1	1		1	1	1	1			1	<=	1
Oct	1	1	1	1	1	1			1	1	<=	1
Nov	1	1	1	1	1	1		1	1	1	<=	1
Dec	1	1	1	1	1			1	1	1	<=	1
Labor (day)												
Jan	10	64	99	61				2	39		<=	44
Feb		85	66	62				1	39		<=	44
Mar				41				1	39		<=	44
Apr								34	78		<=	44
May							42			24	<=	44
Jun						22	34			42	<=	44
Jul					10	55	34			15	<=	44
Aug	38				60	55	26			15	<=	44
Sep	38	84		41	30	22	34			15	<=	44
Oct	38	85	17	82	20	33			78	15	<=	44
Nov	29	85	99	62	45	33		20	78	60	<=	44
Dec	38	21	49	61	25			10	39	60	<=	44
Total Labor Days	191	424	330	410	190	220	170	68	390	246		
Yield (kg/ht)	11,765	14,706	20,408	18,750	5,000	1,150	2,630	2,206	1,212	1,154		
Farm Price/kg	9.76	4.73	2.90	4.94	7.68	7.43	6.98	5.98	19.13	21.23		
Cash Costs	2,777	11,332	2,055	1,062	11,600	2,481	50	2,252	3,485	3,200		
Net Returns per:												
Hectare	112,049	58,227	57,128	91,563	26,800	6,064	18,307	10,940	19,701	21,299		
Labor Day	587	137	173	223	141	28	108	161	51	87		
Rs of Cash Cost	40	5	28	86	2	2	366	5	6	7		

Note: This plan, based on Dang/Satbariya data from Annex B, assumes a farm with Right Hand Side (RHS) constraints of 1 hectare of land and 44 days of household labor available per month. Income, yield, and cost data have been rounded for ease of presentation. Total labor days were allocated across the respective crop seasons according to unpublished survey estimates of typical seasonal labor requirements. Net returns per labor day are shaded for crops where the return exceeds Rs 100/day. The data were adapted from:

Source: USAID Regional Agribusiness Project (RAP). *Agricultural Practices and Crop Budget Survey [for Rapti Zone]*. RAP Technical Report No. 13, February 1997. Page 7-13.

for home consumption or sale). Risk and uncertainty about the production and marketing environments prevent even the most productive farmers from using their land and labor in such a specialized manner.

Second, it is not clear that the labor requirements in Table 1 represent the typical situation for a farm that has adopted vegetable production. The allocation of labor

requirements between land preparation, planting, weeding, pest and disease control, and harvesting need to be carefully reviewed to verify their accuracy.

Third, this one-crop plan has to be considered as the upper technical limit on what a farmer would produce. Only farmers who have adopted improved technologies from the Rapti Development Project, particularly its Vegetable, Fruits, Cash Crops and Animal Products (VFC/A) program component, would approach this level of production. This raises the question of the extent to which improved crop technologies have been adopted by Satbariya farmers, and how far the diffusion and adoption process has spread beyond Satbariya.

Finally, the plan is notably lacking in livestock commodities, which use significant amounts of farm household labor and serve as an important source of supplemental cash and food through lean crop seasons. Without livestock commodities, such as milking buffaloes, included in the farm plan, the true competitiveness of all other crops for the farm's limited labor and land resources cannot be accurately evaluated.

However, these shortcomings are not sufficient reasons to ignore the important lessons that can be learned from whole-farm budgeting approaches to farmers' choices of commodities (and subsequent levels of land and labor utilization) under alternative marketing and technology conditions. A close inspection of the monthly land requirements in Table 1 visually demonstrates the seasonal competition for land and labor. Crops have unique growing seasons, and this biological limit creates potentially large underutilization of land and labor in off seasons. Farmers use significant amounts of this slack labor for livestock commodities.

C2. Illustration # 2 – The Impact of Increased Potato Yield or Price

If the optimum mix of crops based on the production possibilities in Table 1 is only full specialization in cauliflower, it is important to understand the impact of MARD/Rapti TA applications by modifying the initial model to reflect the impact of specific TA interventions. If the potato yield in Table 1 is doubled from 14.7 tons per hectare to 29.4 tons, it is useful to demonstrate how this new technology would affect the current complete specialization in cauliflower. This assumption is supported by recent MARD/Rapti potato trial yields well above 30 tons.

Conversely, the effects of market development interventions on the farm plan can be illustrated by assuming that potato prices double to Rs 9.46 per kg, without an increase in yield. It is unrealistic to expect that Rapti prices can be doubled by improving market access. However, the illustration is still relevant for explaining how enterprise mixes respond to a significant price increase in a single enterprise. As a practical matter, the success of MARD/Rapti market interventions will usually be measured by the extent to which the price-depressing effects of new technologies (increased production) is slowed.

By introducing new technology in another enterprise, the usual expectation would be that net income increased and cropping intensity declined. However, in the case of a

doubling of potato yield or price, the structure of input-output coefficients and net income in Table 1 allows only small changes. While the net income per hectare of potatoes would be increased from Rs 58,200 to Rs 127,800 in Table 1, farm net income increases just Rs 2,000 to Rs 114,000, as cauliflower area falls to 0.87 hectares and potatoes just replace the lost cauliflower area of 0.13 hectares.

In the case of these interventions, the particular structure of land and labor productivities among all enterprise options results in only a slight change in resource use. Total land utilization would remain fixed at one hectare. However, labor utilization would increase by about 16 percent (from 191 days, with complete specialization in cauliflower, to 221 days with the introduction of potatoes), because potatoes are much more labor intensive than cauliflower. This means that the introduction of potatoes, by either doubling the yield or the price, results in an additional 30 days of labor utilized to earn an additional Rs 2,000 in net income. Because of the different structure of labor requirements for the two crops, the incremental wage rate for adding potatoes to the farm plan is Rs 67 per day, slightly higher than the local daily rate for hired farm labor.

D. The Relevance of the High-Value Enterprise Concept to MARD/Rapti

The above illustrations of technology and marketing interventions lead to several important conclusions and implications about strategies for using technical assistance to promote rural development throughout Rapti:

- ▶ It is very difficult to predict the impact of an intervention on the overall farm plan without conducting a whole-farm budgeting analysis;
- ▶ Crop and livestock budgets have to be carefully constructed to reflect the resource allocation and farmgate price experience of typical farmers who are adopting TA recommendations;
- ▶ Strategies that focus on particular commodities have a high risk of failure if they do not consider the relative productivity of these commodities among all possible commodities that could be produced; and
- ▶ So-called “pick-the-winner” strategies often build up constituencies that overlook changing market conditions that favor other commodities.

These points are relevant to the issue of defining which commodities should receive MARD/Rapti TA to maximize regional rural development. At a minimum, it is important to stress the joint role of crops and livestock in Rapti farm plans. These considerations behoove the MARD/Rapti TA Team to recommend that the MARD Steering Committee accept the following definition of “high-value” commodities and its associated market-based development strategy and framework for characterizing commodity priorities for MARD/Rapti TA.

D1. The Definition of “High-Value Enterprise”

Rather than concentrate on a particular set of “high-value commodities,” practical technical and market considerations dictate that the MARD/Rapti TA Team take a

flexible approach to employing TA where it will produce the most rural development impact. This means that TA should be concentrated in those commodities (crops or livestock) that have the highest potential return to farmers' scarce land and labor resources.

D2. The Importance of Market-Based Enterprise Development Strategies

MARD's market-based approach to Rapti development cannot be overemphasized. Technologies evolve to give farmers an ever-changing choice of crop and livestock options for exploiting their land and labor resources. However, those choices are further complicated by rapid changes in the regional supply and demand of agricultural inputs and products, with the result that frequent input and product price changes alter the competitive position of each enterprise. Rapti farmers are well acquainted with the price declines that result from sudden gluts of the current fragile marketing system. On the production side, the availability of high-yielding crop varieties cannot be taken as a long-term solution to disease problems. In most cases, current superior varieties will become susceptible to new strains of pathogens and pests by the end of the MARD project. Furthermore, farmers are currently spending significant amounts of labor on off-farm marketing (transportation and selling) of their products. The preliminary evidence suggests that the value of farmers' labor for off-farm marketing is significantly less than the returns to on-farm production. This highlights the importance of improving farm-to-market transportation throughout the zone.

D3. Priority Commodities for MARD/Rapti TA

By adopting the above definition of "high-value commodities," the MARD/Rapti Team still faces the problem of where to focus its TA effort to exploit technology and market developments. The commodities that the Team will concentrate on will depend on:

- ▶ The extent to which the enterprise is already being produced;
- ▶ Empirical evidence of superior technologies (farm demonstrations);
- ▶ Empirical evidence of marketing trends and competitive advantages;
- ▶ The potential for short-term adoption of improved market and technology options;
- ▶ and
- ▶ The potential for long-term sustainability of TA well after the project end.

Based on the recent bottom-up planning exercises and the TA Teams' field experience to date, the crop and livestock commodities listed in Annex A will be the focus of most of the Team's routine TA programs. The commodities listed in Annex A are ranked in descending order of frequency, based on a 1996 Regional Agribusiness Project (RAP) survey that asked Rapti farmers what crops and livestock commodities they produced during the past year. These responses show the strong presence of paddy, wheat, and maize crops in all pockets. Unfortunately, there are no reliable statistics on the levels and trends in vegetable crops, which are usually mentioned as "high-value" crops. However, the rankings in Annex A provide a convenient framework for helping the MARD/Rapti TA Team to establish "high-value" priorities for both short-term project impacts and long-term development of the zone.

D3a. Short-Term Enterprise Priorities

The Team will rationalize its annual priorities with whole-farm budget plans that incorporate recent price trends with appropriate production technologies to anticipate both market demand and farmers' perceptions of risk and uncertainty. Farm plans will be developed for each MARD/Rapti production pocket by using the RAP Rapti crop survey as a starting point. The RAP crop survey data and MARD/Rapti TA Team illustrative livestock budgets are summarized Annex B. Much of the initial effort will focus on those commodities highlighted in bold type in Annex A that have the highest potential for increased output per unit of labor and land, and realizing that return in the marketplace. The preliminary relative value of crops and livestock is shown as the net returns to labor in Annex B. One of the most critical issues in a farmer's decision to adopt a production or marketing intervention will be the relative returns to the family labor supply. This means that the interventions have to yield net returns to household labor that are substantially above the local wage rate, which is currently about Rs 60. The net returns to a day of labor that exceed Rs 100 are highlighted in bold type in Annex B. The data in Annex B will be revised as necessary to reflect current resource productivity, farmgate prices, and cash costs. Additional crops and livestock commodities will be added to MARD/Rapti pocket farm plans as needed to reflect high short-term potential for increased production and sales. Technical assistance will be focused primarily on those crop and livestock commodities in the shaded areas of Annex A that exhibit relatively higher net returns to labor.

This approach automatically addresses four issues that have been repeatedly raised in the MARD "high-value" discussion:

- ▶ Livestock will not be excluded from consideration, hence the "high-value crop" emphasis will be dropped in favor of "high-value commodities";
- ▶ Grain or field crops will be included in farm plans because they dominate the current land use pattern – technical assistance will be provided in those infrequent cases where the market and technology options demonstrate high potential for relatively high net returns to labor;
- ▶ Tree crops will not be candidates for technical assistance unless improved management practices on existing stands and market conditions demonstrate high potential for relatively high net returns to labor – this excludes the use of technical assistance to promote new plantings; and
- ▶ "New" crop or livestock commodities not currently operated by a critical mass of Rapti farmers (to ensure adequate existing knowledge of basic production management practices and marketing experience) will not be introduced by the Team.

This framework ensures that the commodities deemed to be priorities for technical assistance will have to promise quick results, before the end of the project. The TA Team will not be able to justify assistance to encourage new plantings of tree crops or the introduction of new commodities that require new marketing channels and/or new production technologies. The decision to promote a particular production technology or market intervention will be based on sound economic feasibility that measure the difference between

the market value “with” the intervention, as opposed to the current or traditional situation “without” the intervention⁵.

D3b. Long-Term Enterprise Priorities

In addition to the short-term enterprise priorities, which will be the focus of the project’s technical assistance effort, the M&E program will include a long-term perspective on all the crop and livestock commodities listed in Annex A. While technical assistance will generally not be extended to commodities outside the underlined areas, their production and marketing (including honey) will be monitored to measure trends in overall rural development and identify rapidly emerging commodities that may be advancing into the underlined areas of Annex A.

⁵ Gittinger, J. Price. *Economic Analysis of Agricultural Projects*. Baltimore, Maryland: Johns Hopkins University Press (for Economic Development Institute, The World Bank), Second Edition. 1982.

ANNEX A – Frequency of Rapti Crop and Livestock Commodities, by Elevation

<1,000m		1,000-1,500m		1,500-2,000m		2,000+m	
Enterprise	%	Enterprise	%	Enterprise	%	Enterprise	%
----- Grain and Vegetable Crops -----							
<u>Improved paddy</u>	<u>88.9</u>	<u>Improved wheat</u>	<u>79.8</u>	<u>Local maize</u>	<u>84.8</u>	<u>Local maize</u>	<u>94.4</u>
<u>Mustard</u>	<u>85.9</u>	<u>Radishes</u>	<u>77.0</u>	<u>Radishes</u>	<u>78.8</u>	<u>Potatoes</u>	<u>83.2</u>
<u>Onions</u>	<u>77.0</u>	<u>Colocasia</u>	<u>62.3</u>	<u>Potatoes</u>	<u>72.4</u>	<u>Barley</u>	<u>71.9</u>
<u>Potatoes</u>	<u>76.3</u>	<u>Tomatoes</u>	<u>61.7</u>	<u>Local wheat</u>	<u>71.5</u>	<u>Millet</u>	<u>58.4</u>
<u>Mustard leaves</u>	<u>74.8</u>	<u>Improved maize</u>	<u>60.1</u>	<u>Mustard</u>	<u>66.4</u>	<u>Local wheat</u>	<u>50.6</u>
<u>Radishes</u>	<u>72.5</u>	<u>Improved paddy</u>	<u>57.4</u>	<u>Chillies</u>	<u>62.2</u>	<u>Chillies</u>	<u>43.8</u>
<u>Improved wheat</u>	<u>71.8</u>	<u>Potatoes</u>	<u>57.4</u>	<u>Mustard leaves</u>	<u>60.6</u>	<u>Mustard leaves</u>	<u>35.9</u>
<u>Cabbage</u>	<u>71.1</u>	<u>Pumpkins</u>	<u>56.8</u>	<u>Peas and beans</u>	<u>57.1</u>	Radishes	31.4
<u>Garlic</u>	<u>68.8</u>	<u>Cucumbers</u>	<u>55.1</u>	<u>Cucumbers</u>	<u>56.0</u>	Colocasia	22.4
<u>Brinjal</u>	<u>67.4</u>	<u>Onions</u>	<u>50.2</u>	<u>Colocasia</u>	<u>53.4</u>	Pumpkins	21.3
<u>Improved maize</u>	<u>64.5</u>	<u>Barley</u>	<u>49.2</u>	<u>Bitter gourds</u>	<u>53.2</u>	Tumeric	19.1
<u>Chillies</u>	<u>60.7</u>	<u>Chillies</u>	<u>49.1</u>	<u>Pumpkins</u>	<u>53.2</u>	Mustard	18.0
<u>Colocasia</u>	<u>59.2</u>	<u>Cauliflower</u>	<u>48.6</u>	<u>Barley</u>	<u>50.7</u>	Mustard seed	17.9
<u>Cauliflower</u>	<u>54.0</u>	<u>Mustard</u>	<u>48.1</u>	<u>Onions</u>	<u>46.8</u>	Cucumbers	15.7
<u>Tumeric</u>	<u>47.4</u>	<u>Bitter gourds</u>	<u>48.0</u>	<u>Coriander</u>	<u>44.7</u>	Peas and beans	15.7
<u>Coriander</u>	<u>43.7</u>	<u>Coriander</u>	<u>48.0</u>	<u>Garlic</u>	<u>44.4</u>	Local paddy	11.2
<u>Okara</u>	<u>34.8</u>	<u>Mustard seed</u>	<u>48.0</u>	<u>Cabbage</u>	<u>43.3</u>	Improved wheat	9.0
<u>Local maize</u>	<u>32.6</u>	<u>Ginger</u>	<u>47.5</u>	<u>Tomatoes</u>	<u>42.8</u>	Improved maize	7.9
Bitter gourds	28.1	<u>Mustard leaves</u>	<u>46.9</u>	<u>Cauliflower</u>	<u>34.7</u>	Onions	7.8
Peas and beans	22.9	<u>Snake gourds</u>	<u>46.9</u>	Mustard seed	30.8	Garlic	6.7
Tomatoes	22.2	<u>Garlic</u>	<u>44.8</u>	Local paddy	28.1	Cabbage	5.6
Local paddy	20.0	<u>Peas and beans</u>	<u>43.1</u>	Improved wheat	26.7	Soybean	5.6
Barley	19.3	<u>Local maize</u>	<u>39.9</u>	Ginger	18.0	Improved paddy	3.4
Local wheat	17.7	<u>Local paddy</u>	<u>38.2</u>	Improved maize	17.1	Green vegetables	3.3
Cucumbers	12.5	<u>Local wheat</u>	<u>37.7</u>	Tumeric	16.6	Bitter gourds	2.2
Bottle gourds	11.8	Millet	28.4	Improved paddy	15.6	Brinjal	2.2
Pumpkins	11.1	Cabbage	26.2	Millet	14.8	Cauliflower	2.2
Green vegetables	10.3	Tumeric	21.8	Soybean	14.8	Coriander	1.1
Cotton	8.9	Brinjal	19.6	Other vegs.	7.4	Ginger	1.1
Long gourds	8.8	Soybean	15.3	Snake gourds	6.9	Other vegs.	1.1
Ginger	5.9	Long gourds	8.7	Sugarcane	6.9	Tomatoes	1.1
Snake gourds	5.1	Other vegs.	6.0	Squash	6.4	Bottle gourds	0.0
Soybean	4.4	Sugarcane	6.0	Green vegetables	5.0	Carrots	0.0
Carrots	2.9	Bottle gourds	5.4	Brinjal	4.6	Cotton	0.0
Other vegs.	2.9	Cumin	5.4	Bottle gourds	3.7	Cumin	0.0
Mustard seed	2.2	Okara	5.4	Long gourds	3.7	Long gourds	0.0
Squash	1.4	Green vegetables	4.9	Carrots	1.8	Okara	0.0
Cumin	0.7	Squash	3.8	Cumin	1.8	Snake gourds	0.0
Millet	0.7	Cotton	0.6	Okara	1.3	Squash	0.0
Sugarcane	0.7	Carrots	0.5	Cotton	0.0	Sugarcane	0.0

Note: Commodities reported by at least one-third of the households surveyed are bold and underlined.

Source: USAID Regional Agribusiness Project (RAP). Household Income Survey of the Rapti and Bheri Zones, Nepal. RAP Technical Report No. 14, May 1997. Pages 41, 56, 70, and 86.

**ANNEX A – Frequency of Rapti Crop and Livestock Commodities, by Elevation
(Continued)**

<1,000m		1,000-1,500m		1,500-2,000m		2,000+m	
Enterprise	%	Enterprise	%	Enterprise	%	Enterprise	%
----- Fruit Crops -----							
Other fruits	16.3 <u>Banana</u>	<u>46.5 Apple</u>		<u>37.3 Apple</u>		<u>55.7</u>	
Mango	13.3 <u>Lemon</u>	<u>36.1 Peach</u>		<u>35.0 Other fruits</u>		<u>34.1</u>	
Guava	3.0 <u>Orange</u>	<u>32.8 Pear</u>		<u>34.1</u> Peach		12.5	
Banana	2.2 Guava	27.3 Banana		21.2 Walnut		12.5	
Papaya	2.2 Mango	26.2 Walnut		20.3 Apricot		4.6	
Lime	1.5 Peach	25.1 Lemon		19.4 Pear		3.4	
Pear	1.5 Papaya	23.0 Apricot		16.6 Orange		2.3	
Jackfruit	0.7 Pear	23.0 Other fruits		15.7 Pineapple		2.3	
Lemon	0.7 Lime	15.3 Lime		14.8 Banana		1.1	
Lichi	0.7 Other fruits	11.5 Orange		14.3 Bimiro		0.0	
Melon	0.7 Bimiro	6.6 Bimiro		9.7 Guava		0.0	
Peach	0.7 Walnut	4.9 Guava		3.2 Jackfruit		0.0	
Pineapple	0.7 Pomelo	4.9 Mango		2.8 Lemon		0.0	
Apple	0.0 Apple	3.3 Lichi		2.3 Lichi		0.0	
Apricot	0.0 Pomegranate	3.3 Pomegranate		2.3 Lime		0.0	
Bimiro	0.0 Apricot	2.7 Pomelo		2.3 Mango		0.0	
Orange	0.0 Jackfruit	2.7 Melon		0.9 Melon		0.0	
Pomegranate	0.0 Lichi	2.2 Jackfruit		0.5 Papaya		0.0	
Pomelo	0.0 Pineapple	0.6 Papaya		0.5 Pomegranate		0.0	
Walnut	0.0 Melon	0.0 Pineapple		0.5 Pomelo		0.0	

Note: Commodities reported by at least one-third of the households surveyed are bold and underlined.

Source: USAID Regional Agribusiness Project (RAP). Household Income Survey of the Rapti and Bheri Zones, Nepal. RAP Technical Report No. 14, May 1997. Pages 41, 56, 70, and 86.

**ANNEX A – Frequency of Rapti Crop and Livestock Commodities , by Elevation
(Continued)**

<1,000m		1,000-1,500m		1,500-2,000m		2,000+m	
Enterprise	%	Enterprise	%	Enterprise	%	Enterprise	%

----- Livestock and Poultry -----

<u>Bullocks</u>	<u>83.5</u>	<u>Chickens</u>	<u>82.0</u>	<u>Bullocks</u>	<u>88.8</u>	<u>Bullocks</u>	<u>89.7</u>
<u>Chickens</u>	<u>81.2</u>	<u>Bullocks</u>	<u>81.4</u>	<u>Male goats</u>	<u>87.9</u>	<u>Cows</u>	<u>82.8</u>
<u>Cows</u>	<u>67.7</u>	<u>Male goats</u>	<u>65.5</u>	<u>Cows</u>	<u>76.7</u>	<u>Chickens</u>	<u>74.7</u>
<u>Pigs</u>	<u>61.7</u>	<u>Milking buffaloes</u>	<u>59.6</u>	<u>Chickens</u>	<u>73.5</u>	<u>Milking buffaloes</u>	<u>33.3</u>
<u>Sheep</u>	<u>43.6</u>	<u>Cows</u>	<u>51.9</u>	<u>Milking buffaloes</u>	<u>53.0</u>	<u>Pigs</u>	<u>33.3</u>
<u>Milking buffaloes</u>	<u>42.1</u>	Female goats	29.5	<u>Female goats</u>	<u>43.3</u>	Sheep	31.0
Female goats	31.8	Sheep	23.0	Sheep	25.6	Female goats	25.3
Male goats	29.5	Male buffaloes	17.4	Pigs	18.6	Male goats	18.4
Male buffaloes	26.3	Pigeons	9.8	Male buffaloes	11.6	Male buffaloes	17.2
Ducks	18.8	Pigs	6.0	Ducks	9.8	Mules	6.9
Pigeons	17.3	Ponies	1.1	Ponies	5.1	Pigeons	1.2
Mules	0.0	Ducks	0.0	Pigeons	4.2	Ducks	0.0
Ponies	0.0	Mules	0.0	Mules	0.0	Ponies	0.0

Note: Commodities reported by at least one-third of the households surveyed are bold and underlined.

Source: USAID Regional Agribusiness Project (RAP). Household Income Survey of the Rapti and Bheri Zones, Nepal. RAP Technical Report No. 14, May 1997. Pages 41, 56, 70, and 86.

ANNEX B – Preliminary Rapti Crop and Livestock Budgets

The following crop and budgets are preliminary estimates that will be used to develop representative farm plans for the farming systems that dominate the 14 MARD/Rapti production pockets. These data will be compared with market prices in nearby Nepal and India markets to identify the potential competitive advantage of Rapti crop and livestock products.

The crop budgets were modified by Teeka Pradhan from the 1996 survey by the Regional Agribusiness Project (RAP). The monthly labor allocations were extracted from the raw data collected by No-Frills. The budgets represent the following 20 production pockets, and their distribution among the 5 Rapti districts:

Dang District	Pyuthan District	Salyan District	Rukum District	Rolpa District
Lamahi	Bijuwar	Kapurkot	Takasera	Kureli
Tulsipur	Machhi	Thamare-Khalanga	Chaurjhani	Thabang
Ghorahi	Devislhan	Thamare Kajeri	Musikot	Holeri
		Thamare-Damachaur		Libang
		Bhotechaur-Darimjiula		Jinabang
		Bhotechaur-Falabang		

Preliminary livestock budgets were developed by Dr. Surya Singh to illustrate the major production systems found throughout Rapti.

Following the crop and livestock budgets, the estimated net returns per day of labor are summarized by crop over each district, and by livestock enterprise for the 5-district area.

PRELIMINARY RAPTI CROP BUDGETS – All data are on a hectare basis

	District:	DANG			Pocket:	LAMAHI		Represented by: SATBARIA			
	Cauli	Potato	Cabbage	Tomato	Chili	Paddy	Maize	Wheat	Garlic	Cotton	
Net Return (Rs)	112,049	58,227	57,128	91,563	26,800	6,064	18,307	10,940	19,701	21,299	
Jan Land (ht)	1	1	1	1				1	1		
Feb Land		1		1				1	1		
Mar Land				1				1	1		
Apr Land								1	1		
May Land							1			1	
Jun Land						1	1			1	
Jul Land					1	1	1			1	
Aug Land	1				1	1	1			1	
Sep Land	1	1		1	1	1	1			1	
Oct Land	1	1	1	1	1	1			1	1	
Nov Land	1	1	1	1	1	1		1	1	1	
Dec Land	1	1	1	1	1			1	1	1	
Jan Labor (day)	10	64	99	61				2	39		
Feb Labor		85	66	62				1	39		
Mar Labor				41				1	39		
Apr Labor								34	78		
May Labor							42			24	
Jun Labor						22	34			42	
Jul Labor					10	55	34			15	
Aug Labor	38				60	55	26			15	
Sep Labor	38	84		41	30	22	34			15	
Oct Labor	38	85	17	82	20	33			78	15	
Nov Labor	29	85	99	62	45	33		20	78	60	
Dec Labor	38	21	49	61	25			10	39	60	
Total Labor (days)	191	424	330	410	190	220	170	68	390	246	
Yield (kg/ht)	11,765	14,706	20,408	18,750	5,000	1,150	2,630	2,206	1,212	1,154	
Frmgate price/kg	9.76	4.73	2.90	4.94	7.68	7.43	6.98	5.98	19.13	21.23	
Cash Costs	2,777	11,332	2,055	1,062	11,600	2,481	50	2,252	3,485	3,200	
Net Returns per:											
Hectare	112,049	58,227	57,128	91,563	26,800	6,064	18,307	10,940	19,701	21,299	
Labor Day	587	137	173	173	173	173	173	173	173	173	
Rs of Cash Cost	40	5	28	86	2	2	366	5	6	7	

Note: These data are based on DAI/RAP data for 1996. Modifications have been made as needed to adjust price, yield, labor, and cash cost. Shaded areas denote crops that have significantly higher returns per labor day than typical off-farm wage rates of Rs 60 per day.

PRELIMINARY RAPTI CROP BUDGETS – All data are on a hectare basis

	District:	DANG			Pocket:	TULSIPUR		Represented by:			HEKULI
	Cauli	Potato	Cabbage	Tomato	Chili	Paddy	Maize	Wheat	Garlic	Cotton	
Net Return (Rs)	112,049	58,227	57,128	91,563	26,800	6,064	18,307	10,940	19,701	21,299	
Jan Land (ht)	1	1	1	1				1	1		
Feb Land		1		1				1	1		
Mar Land				1				1	1		
Apr Land								1	1		
May Land							1			1	
Jun Land						1	1			1	
Jul Land					1	1	1			1	
Aug Land	1				1	1	1			1	
Sep Land	1	1		1	1	1	1			1	
Oct Land	1	1	1	1	1	1			1	1	
Nov Land	1	1	1	1	1			1	1	1	
Dec Land	1	1	1	1	1			1	1	1	
Jan Labor (day)	10	64	99	61				2	39		
Feb Labor		85	66	62				1	39		
Mar Labor				41				1	39		
Apr Labor								34	78		
May Labor							42			24	
Jun Labor						22	34			42	
Jul Labor					10	55	34			15	
Aug Labor	38				60	55	26			15	
Sep Labor	38	84		41	30	22	34			15	
Oct Labor	38	85	17	82	20	33			78	15	
Nov Labor	29	85	99	62	45	33		20	78	60	
Dec Labor	38	21	49	61	25			10	39	60	
Total Labor (days)	191	424	330	410	190	220	170	68	390	246	
Yield (kg/ht)	11,765	14,706	20,408	18,750	5,000	1,150	2,630	2,206	1,212	1,154	
Frmgate price/kg	9.76	4.73	2.90	4.94	7.68	7.43	6.98	5.98	19.13	21.23	
Cash Costs	2,777	11,332	2,055	1,062	11,600	2,481	50	2,252	3,485	3,200	
Net Returns per:											
Hectare	112,049	58,227	57,128	91,563	26,800	6,064	18,307	10,940	19,701	21,299	
Labor Day	587	137	173	223	141	28	108	161	51	87	
Rs of Cash Cost	40	5	28	86	2	2	366	5	6	7	

Note: These data are based on DAI/RAP data for 1996. Modifications have been made as needed to adjust price, yield, labor, and cash cost. Shaded areas denote crops that have significantly higher returns per labor day than typical off-farm wage rates of Rs 60 per day.

PRELIMINARY RAPTI CROP BUDGETS – All data are on a hectare basis

	District:	DANG			Pocket:	GHORAH		Represented by:		TRIBHUWAN NAGARPALIKA
	Cauli	Potato	Cabbage	Tomato	Paddy	Maize	Wheat	Garlic		
Net Return (Rs)	112,049	58,227	57,128	91,563	6,064	18,307	10,940	19,701		
Jan Land (ht)	1	1	1	1			1	1		
Feb Land		1		1			1	1		
Mar Land				1			1	1		
Apr Land							1	1		
May Land						1				
Jun Land					1	1				
Jul Land					1	1				
Aug Land	1				1	1				
Sep Land	1	1		1	1	1				
Oct Land	1	1	1	1	1				1	
Nov Land	1	1	1	1	1		1	1		
Dec Land	1	1	1	1			1	1		
Jan Labor (day)	10	64	99	61			2	39		
Feb Labor		85	66	62			1	39		
Mar Labor				41			1	39		
Apr Labor							34	78		
May Labor						42				
Jun Labor					22	34				
Jul Labor					55	34				
Aug Labor	38				55	26				
Sep Labor	38	84		41	22	34				
Oct Labor	38	85	17	82	33				78	
Nov Labor	29	85	99	62	33		20	78		
Dec Labor	38	21	49	61			10	39		
Total Labor (days)	191	424	330	410	220	170	68	390		
Yield (kg/ht)	11,765	14,706	20,408	18,750	1,150	2,630	2,206	1,212		
Frmgate price/kg	9.76	4.73	2.90	4.94	7.43	6.98	5.98	19.13		
Cash Costs	2,777	11,332	2,055	1,062	2,481	50	2,252	3,485		
Net Returns per:										
Hectare	112,049	58,227	57,128	91,563	6,064	18,307	10,940	19,701		
Labor Day	587	137	173	223	28	108	161	51		
Rs of Cash Cost	40	5	28	86	2	366	5	6		

Note: These data are based on DAI/RAP data for 1996. Modifications have been made as needed to adjust price, yield, labor, and cash cost. Shaded areas denote crops that have significantly higher returns per labor day than typical off-farm wage rates of Rs 60 per day.

PRELIMINARY RAPTI CROP BUDGETS – All data are on a hectare basis

	District:	PYUTHAN			Pocket:	BIJUWAR		Represented by:			BIJUWAR		
	Onion	Cauli	Rad Seed	Potato 1	Potato 2	Paddy	Wheat	Cucumber	P. Beans	Tomato	S. Pepper	Maize	
Net Return (Rs)	27,763	144,133	86,612	37,621	37,621	35,713	13,033	62,387	225,539	134,616	242,950	43,108	
Jan Land (ht)	1	1	1	1	1		1	1		1	1		
Feb Land	1		1		1		1	1		1	1		
Mar Land	1		1		1		1	1		1	1		
Apr Land	1		1		1		1	1				1	
May Land			1			1		1				1	
Jun Land						1						1	
Jul Land						1						1	
Aug Land		1				1			1			1	
Sep Land		1		1		1			1	1	1		
Oct Land		1	1	1		1			1	1	1		
Nov Land	1	1	1	1			1		1	1	1		
Dec Land	1	1	1	1	1		1		1	1	1		
Jan Labor (day)	174	72	28	124	204		10	147		48	75		
Feb Labor	344		13		245		10	146		48	50		
Mar Labor	344		41		62		10	146		32	75		
Apr Labor	344		42		62		93	200				94	
May Labor			54			40		94				75	
Jun Labor						84						75	
Jul Labor						84						57	
Aug Labor						34			144			75	
Sep Labor		36		123		48			216	32	123		
Oct Labor		106	28	122		47			144	64	50		
Nov Labor	174	35	42	204			75		144	48	75		
Dec Labor	344	107	28	245	245		25		71	48	50		
Total Labor (days)	1724	356	276	818	818	337	223	733	719	320	498	376	
Yield (kg/ht)	5,385	8,000	1,667	16,667	16,667	5,000	2,945	6,111	16,000	14,000	25,000	3,720	
Frmgate price/kg	6.91	19.01	54.73	3.87	3.87	7.57	5.89	12.56	15.80	9.81	9.86	11.66	
Cash Costs	9,447	7,947	4,623	26,880	26,880	2,137	4,313	14,367	27,261	2,724	3,550	267	
Net Returns per:													
Hectare	27,763	144,133	86,612	37,621	37,621	35,713	13,033	62,387	225,539	134,616	242,950	43,108	
Labor Day	16	405	314	46	46	106	58	85	314	421	488	115	
Rs of Cash Cost	3	18	19	1	1	17	3	4	8	49	68	161	

Note: These data are based on DAI/RAP data for 1996. Modifications have been made as needed to adjust price, yield, labor, and cash cost. Shaded areas denote crops that have significantly higher returns per labor day than typical off-farm wage rates of Rs 60 per day.

PRELIMINARY RAPTI CROP BUDGETS – All data are on a hectare basis

	District: PYUTHAN			Pocket: MACHHI			Represented by: OKHARKO T			
	Potato	Cauli	P. Beans	Tomato	Onion	Cabbage	Paddy	Maize	Rad Seed	Wheat
Net Return (Rs)	66,320	60,120	27,341	161,660	35,770	121,560	23,078	31,448	44,976	13,304
Jan Land (ht)	1	1	1	1	1	1			1	1
Feb Land	1	1		1	1	1			1	1
Mar Land	1			1	1				1	1
Apr Land					1			1	1	1
May Land							1	1	1	
Jun Land							1	1		
Jul Land							1	1		
Aug Land							1	1		
Sep Land			1	1		1	1			
Oct Land	1	1	1	1		1	1		1	
Nov Land	1	1	1	1	1	1			1	1
Dec Land	1	1	1	1	1	1			1	1
Jan Labor (day)	45	366	72	225	39	156			22	10
Feb Labor	200	245		225	68	208			23	10
Mar Labor	120			159	68				23	10
Apr Labor					68			94	138	93
May Labor							20	75	96	
Jun Labor							44	75		
Jul Labor							44	57		
Aug Labor							22	75		
Sep Labor			144	150		54	32			
Oct Labor	232	122	216	300		205	32		46	
Nov Labor	160	366	144	225	34	205			65	75
Dec Labor	40	122	144	223	68	208			46	25
Total Labor (days)	797	1221	720	1507	345	1036	194	376	459	223
Yield (kg/ht)	20,000	8,000	3,333	16,666	4,000	16,000	3,077	2,720	1,000	2,946
Frmgate price/kg	4.66	8.76	10.10	9.85	9.47	8.30	7.75	11.66	51.24	5.98
Cash Costs	26,880	9,960	6,322	2,500	2,110	11,240	769	267	6,264	4,313
Net Returns per:										
Hectare	66,320	60,120	27,341	161,660	35,770	121,560	23,078	31,448	44,976	13,304
Labor Day	83	49	38	107	104	117	119	84	98	60
Rs of Cash Cost	2	6	4	65	17	11	30	118	7	3

Note: These data are based on DAI/RAP data for 1996. Modifications have been made as needed to adjust price, yield, labor, and cash cost. Shaded areas denote crops that have significantly higher returns per labor day than typical off-farm wage rates of Rs 60 per day.

PRELIMINARY RAPTI CROP BUDGETS – All data are on a hectare basis

	District: PYUTHAN			Pocket: DEVISLHAN		Represented by: BADDARA (DHUHGEADHI)					
	Potato	Tomato	Onion	Paddy	Maize	Wheat	Horsgram	Ginger	Taro	Tumeric	B.Gram
Net Return (Rs)	57,493	57,493	236,880	13,600	9,006	8,632	9,844	-2,500	85,560	366,800	125,580
Jan Land (ht)	1	1	1			1	1				1
Feb Land	1	1	1			1	1				
Mar Land	1		1			1	1	1			
Apr Land	1		1			1	1	1	1		
May Land					1			1	1	1	
Jun Land				1	1			1	1	1	
Jul Land				1	1			1	1	1	
Aug Land				1	1			1	1	1	1
Sep Land		1		1	1			1	1	1	1
Oct Land		1		1				1	1	1	1
Nov Land	1	1	1	1		1	1	1	1	1	1
Dec Land	1	1	1			1	1	1		1	1
Jan Labor (day)	25	50	200			30	30				43
Feb Labor	25	34	402			30	40				
Mar Labor	75		404			40	50	130			
Apr Labor	24		385			70	50	50	190		
May Labor					14			5	10	230	
Jun Labor				68	12			5	11	20	
Jul Labor				170	12			20	10	20	
Aug Labor				170	13			20	60	20	400
Sep Labor		40		68	12			20	10	60	40
Oct Labor		50		110				20	10	20	40
Nov Labor	80	40	200	100		150	20	50	150	20	100
Dec Labor	25	40	400			67	20	24		250	200
Total Labor (days)	254	254	1991	686	63	387	210	344	451	640	823
Yield (kg/ht)	8,333	8,333	32,000	2,000	1,607	1,500	870	2,500	18,000	16,000	6,000
Frmgate price/kg	7.20	7.20	7.70	7.40	5.74	6.88	11.66	12.00	5.38	23.00	21.73
Cash Costs	2,505	2,505	9,520	1,200	218	1,688	300	32,500	11,280	1,200	4,800
Net Returns per:											
Hectare	57,493	57,493	236,880	13,600	9,006	8,632	9,844	-2,500	85,560	366,800	125,580
Labor Day	226	226	119	20	143	22	47	-7	190	573	153
Rs of Cash Cost	23	23	25	11	41	5	33	-0	8	306	26

Note: These data are based on DAI/RAP data for 1996. Modifications have been made as needed to adjust price, yield, labor, and cash cost.

Shaded areas denote crops that have significantly higher returns per labor day than typical off-farm wage rates of Rs 60 per day.

PRELIMINARY RAPTI CROP BUDGETS – All data are on a hectare basis

	District:	SALYAN		Pocket: KAPURKOT		Represented by: KAPURKOT (DHANABANG)					
	Wheat	Maize	Peas	P.Bean 1	P.Bean 2	Tomato 1	Tomato 2	Cabbage1	Cabbage2	Potato	Capiscum
Net Return (Rs)	10,045	4,852	46,864	63,280	63,280	175,040	175,040	151,940	151,940	21,355	113,360
Jan Land (ht)	1										
Feb Land	1					1		1			
Mar Land	1			1		1		1		1	1
Apr Land	1	1		1	1	1	1	1	1	1	1
May Land		1		1	1	1	1	1	1	1	1
Jun Land		1	1	1	1	1	1	1	1	1	1
Jul Land		1	1	1	1	1	1	1	1	1	1
Aug Land		1	1	1	1	1	1		1	1	1
Sep Land		1	1		1		1		1		
Oct Land	1	1	1				1				
Nov Land	1		1								
Dec Land	1										
Jan Labor (day)	10										
Feb Labor	10					91		18			
Mar Labor	10			108		180		20		40	98
Apr Labor	50	22		108	108	90	91	22	18	45	98
May Labor		44		55	108	97	180	12	20	20	37
Jun Labor		33	56	55	55	97	90	22	22	20	55
Jul Labor		33	110	108	55	135	97	22	12	40	35
Aug Labor		22	56	108	108	135	97		22	30	55
Sep Labor		22	110		108	90	135		22		
Oct Labor	20	44	160				135				
Nov Labor	50		56				90				
Dec Labor	10										
Total Labor (days)	160	220	548	542	542	915	915	116	116	195	378
Yield (kg/ht)	2,144	1,720	4,800	5,600	5,600	24,000	24,000	32,500	32,500	3,500	8,400
Frmgate price/kg	6.44	3.41	11.38	11.90	11.90	7.81	7.81	4.84	4.84	8.05	14.75
Cash Costs	3,762	1,013	7,760	3,360	3,360	12,400	12,400	5,360	5,360	6,820	10,540
Net Returns per:											
Hectare	10,045	4,852	46,864	63,280	63,280	175,040	175,040	151,940	151,940	21,355	113,360
Labor Day	63	22	86	117	117	191	191	1,310	1,310	110	300
Rs of Cash Cost	3	5	6	19	19	14	14	28	28	3	11

Note: These data are based on DAI/RAP data for 1996. Modifications have been made as needed to adjust price, yield, labor, and cash cost. Shaded areas denote crops that have significantly higher returns per labor day than typical off-farm wage rates of Rs 60 per day.

PRELIMINARY RAPTI CROP BUDGETS – All data are on a hectare basis

District:
Maize

SALYAN
Wheat

Millet

Pocket: **THAMARE**

Represented by: **KHALANGA VDC (SIJUWALTAKURA)**

	District: Maize	SALYAN Wheat	Millet
Net Return (Rs)	17,929	6,443	8,980
Jan Land (ht)		1	
Feb Land		1	
Mar Land		1	
Apr Land		1	
May Land	1		1
Jun Land	1		1
Jul Land	1		1
Aug Land	1		1
Sep Land	1		1
Oct Land			1
Nov Land		1	
Dec Land		1	
Jan Labor (day)		14	
Feb Labor		40	
Mar Labor		40	
Apr Labor		29	
May Labor	38		70
Jun Labor	30		20
Jul Labor	30		30
Aug Labor	25		30
Sep Labor	30		10
Oct Labor			55
Nov Labor		136	
Dec Labor		14	
Total Labor (days)	153	273	215
Yield (kg/ht)	2,465	925	2,124
Frmgate price/kg	7.59	8.23	4.85
Cash Costs	780	1,170	1,321
Net Returns per:			
Hectare	17,929	6,443	8,980
Labor Day	117	24	42
Rs of Cash Cost	23	6	7

Note: These data are based on DAI/RAP data for 1996. Modifications have been made as needed to adjust price, yield, labor, and cash cost. Shaded areas denote crops that have significantly higher returns per labor day than typical off-farm wage rates of Rs 60 per day.

PRELIMINARY RAPTI CROP BUDGETS – All data are on a hectare basis

	District:	SALYAN		Pocket: THAMARE			Represented by:
	Paddy	Wheat	Radish S.	Turnip S.	Tomato	Capiscum	Maize
Net Return (Rs)	38,167	9,779	52,211	39,315	314,892	351,251	18,335
Jan Land (ht)		1	1	1	1	1	
Feb Land		1	1	1	1	1	
Mar Land		1	1	1	1	1	
Apr Land		1	1	1	1	1	1
May Land			1	1	1	1	1
Jun Land	1			1	1	1	1
Jul Land	1						1
Aug Land	1						1
Sep Land	1						
Oct Land	1			1			
Nov Land	1	1	1	1			
Dec Land		1	1	1	1	1	
Jan Labor (day)		8	30	50	111	175	
Feb Labor		20	30	90	80	75	
Mar Labor		20	30	60	100	100	
Apr Labor		20	180	30	100	75	70
May Labor			120	30	100	100	60
Jun Labor	25					150	60
Jul Labor	56						42
Aug Labor	56						60
Sep Labor	22						
Oct Labor	35		58	30			
Nov Labor	35	70	90	98			
Dec Labor		9	60	80	50	76	
Total Labor (days)	229	147	598	468	541	751	292
Yield (kg/ht)	4,758	1,849	1,040	910	65,325	61,230	2,480
Frmgate price/kg	8.11	6.60	52.56	47.60	4.91	5.85	7.74
Cash Costs	420	2,424	2,451	4,001	5,854	6,945	860
Net Returns per:							
Hectare	38,167	9,779	52,211	39,315	314,892	351,251	18,335
Labor Day	167	67	87	84	582	468	63
Rs of Cash Cost	91	4	21	10	54	51	21

Note: These data are based on DAI/RAP data for 1996. Modifications have been made as needed to adjust price, yield, labor, and cash cost. Shaded areas denote crops that have significantly higher returns per labor day than typical off-farm wage rates of Rs 60 per day.

PRELIMINARY RAPTI CROP BUDGETS – All data are on a hectare basis

	District: Radish S.	SALYAN Potato	Peas	Pocket: Rayo S.	THAMARE Wheat	PoleBean	Maize	Represented by: DAMACHAUR (BURASE)
Net Return (Rs)	67,658	63,671	11,445	82,718	7,578	39,538	20,791	
Jan Land (ht)	1			1	1			
Feb Land	1		1	1	1			
Mar Land	1	1	1	1	1			
Apr Land	1	1	1	1	1	1	1	
May Land	1	1	1	1	1	1	1	
Jun Land	1	1		1		1	1	
Jul Land		1				1	1	
Aug Land	1	1		1		1	1	
Sep Land	1			1	1	1		
Oct Land	1			1	1			
Nov Land	1			1	1			
Dec Land	1			1	1			
Jan Labor (day)	17			19	8			
Feb Labor	34		75	39	8			
Mar Labor	34	134	63	39	2			
Apr Labor	34	89	37	39	30	88	66	
May Labor	34	22	75	39	16	88	53	
Jun Labor	34	23		40		44	54	
Jul Labor		111				44	40	
Aug Labor	34	67		59		88	53	
Sep Labor	51			39	48	88		
Oct Labor	34			39	8			
Nov Labor	17			20	16			
Dec Labor	17			20	24			
Total Labor (days)	340	446	250	392	160	440	266	
Yield (kg/ht)	600	18,947	1,320	1,000	1,675	1,000	4,166	
Frmgate price/kg	115.85	6.18	11.61	83.86	5.26	44.55	5.10	
Cash Costs	1,852	53,421	3,880	1,142	1,233	5,012	456	
Net Returns per:								
Hectare	67,658	63,671	11,445	82,718	7,578	39,538	20,791	
Labor Day	199	143	46	211	47	90	78	
Rs of Cash Cost	37	1	3	72	6	8	46	

Note: These data are based on DAI/RAP data for 1996. Modifications have been made as needed to adjust price, yield, labor, and cash cost. Shaded areas denote crops that have significantly higher returns per labor day than typical off-farm wage rates of Rs 60 per day.

PRELIMINARY RAPTI CROP BUDGETS – All data are on a hectare basis

District: **SALYAN** Pocket: **BHOTECHA** Represented by: **DARIMJIULA**
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	Paddy	Radish S.	Potato	Wheat	Maize	Garlic	Mustard	Cauli
Net Return (Rs)	35,990	94,910	81,780	13,990	18,335	72,010	33,497	45,255
Jan Land (ht)		1	1	1		1	1	1
Feb Land		1	1	1		1		
Mar Land		1	1	1		1		
Apr Land		1	1	1	1	1		
May Land		1			1			
Jun Land	1				1			
Jul Land	1				1			
Aug Land	1				1			1
Sep Land	1						1	1
Oct Land	1	1				1	1	1
Nov Land	1	1	1	1		1	1	1
Dec Land		1	1	1		1	1	1
Jan Labor (day)		45	85	10		75	200	72
Feb Labor		45	21	10		60		
Mar Labor		45	64	20		60		
Apr Labor		276	85	50	70	142		
May Labor		184			60			
Jun Labor	39				60			
Jul Labor	90				42			
Aug Labor	90				60			100
Sep Labor	39						300	100
Oct Labor	56	92				130	150	100
Nov Labor	56	140	94	70		130	150	72
Dec Labor		94	85	30		60	200	110
Total Labor (days)	370	921	434	190	292	657	1000	554
Yield (kg/ht)	5,000	2,000	28,000	3,000	2,480	2,600	1,400	6,000
Frmgate price/kg	7.60	52.73	3.96	5.33	7.74	31.35	25.22	7.77
Cash Costs	2,010	10,550	29,100	2,000	860	9,500	1,811	1,365
Net Returns per:								
Hectare	35,990	94,910	81,780	13,990	18,335	72,010	33,497	45,255
Labor Day	97	103	188	74	63	110	33	82
Rs of Cash Cost	18	9	3	7	21	8	18	33

Note: These data are based on DAI/RAP data for 1996. Modifications have been made as needed to adjust price, yield, labor, and cash cost. Shaded areas denote crops that have significantly higher returns per labor day than typical off-farm wage rates of Rs 60 per day.

PRELIMINARY RAPTI CROP BUDGETS – All data are on a hectare basis

	District:	SALYAN		Pocket: BHOTECHAUR			Represented by: FALABANG-KAPURKOT	
	Wheat	Maize	Peas	PoleBean	Tomato	Cabbage	Potato	Capiscum
Net Return (Rs)	10,045	4,852	46,864	63,280	175,040	140,240	21,355	113,360
Jan Land (ht)	1							
Feb Land	1				1	1		
Mar Land	1			1	1	1	1	1
Apr Land	1	1		1	1	1	1	1
May Land		1		1	1	1	1	1
Jun Land		1	1	1	1	1	1	1
Jul Land		1	1	1	1	1	1	1
Aug Land		1	1	1	1		1	1
Sep Land		1	1		1			
Oct Land	1	1	1					
Nov Land	1		1					
Dec Land	1							
Jan Labor (day)	10				91			
Feb Labor	10				180	18		
Mar Labor	10			108	135	20	40	98
Apr Labor	50	22		108	142	22	45	98
May Labor		44		55	142	12	20	37
Jun Labor		33	56	55	135	22	20	55
Jul Labor		33	110	108	135	22	40	35
Aug Labor		22	56	108	90		30	55
Sep Labor		22	110					
Oct Labor	20	44	160					
Nov Labor	50		56					
Dec Labor	10							
Total Labor (days)	160	220	548	542	1050	116	195	378
Yield (kg/ht)	2,144	1,720	4,800	5,600	24,000	32,500	3,500	8,400
Frmgate price/kg	6.44	3.41	11.38	11.90	7.81	4.48	8.05	14.75
Cash Costs	3,762	1,013	7,760	3,360	12,400	5,360	6,820	10,540
Net Returns per:								
Hectare	10,045	4,852	46,864	63,280	175,040	140,240	21,355	113,360
Labor Day	63	22	86	117	167	1,209	110	300
Rs of Cash Cost	3	5	6	19	14	26	3	11

Note: These data are based on DAI/RAP data for 1996. Modifications have been made as needed to adjust price, yield, labor, and cash cost. Shaded areas denote crops that have significantly higher returns per labor day than typical off-farm wage rates of Rs 60 per day.

PRELIMINARY RAPTI CROP BUDGETS – All data are on a hectare basis

	District: Apple	RUKUM Rape S.	Barley	Pocket: TAKASERA Wheat	Maize	Potato	PotMzBn	Represented by: TAKASERA (very remote high hills)
Net Return (Rs)	38,449	8,000	6,960	23,520	28,308	33,836	62,504	
Jan Land (ht)	1	1	1	1				
Feb Land	1	1	1	1				
Mar Land	1	1	1	1	1	1	1	
Apr Land	1	1	1	1	1	1	1	
May Land	1			1	1	1	1	
Jun Land	1				1	1	1	
Jul Land	1				1	1	1	
Aug Land	1				1	1	1	
Sep Land	1				1	1	1	
Oct Land	1	1	1	1	1		1	
Nov Land	1	1	1	1				
Dec Land	1	1	1	1				
Jan Labor (day)	30	2	2	5				
Feb Labor	41	2	2	5				
Mar Labor	30	22	40	5	90	60	90	
Apr Labor	10	20	34	85	70	15	70	
May Labor	10			60	30	5	30	
Jun Labor	10				30	5	30	
Jul Labor	10				30	5	30	
Aug Labor	10				100	44	30	
Sep Labor	50				80	22	100	
Oct Labor	10	30	42	60			90	
Nov Labor	20	2	2	45				
Dec Labor	30	2	2	5				
Total Labor (days)	261	80	124	270	430	156	470	
Yield (kg/ht)	5,341	400	1,200	1,680	3,600	15,360	11,800	
Frmgate price/kg	7.60	22.50	6.40	15.00	7.93	2.60	5.68	
Cash Costs	2,143	1,000	720	1,680	240	6,100	4,520	
Net Returns per:								
Hectare	38,449	8,000	6,960	23,520	28,308	33,836	62,504	
Labor Day	147	100	56	87	66	217	133	
Rs of Cash Cost	18	8	10	14	118	6	14	

Note: These data are based on DAI/RAP data for 1996. Modifications have been made as needed to adjust price, yield, labor, and cash cost. Shaded areas denote crops that have significantly higher returns per labor day than typical off-farm wage rates of Rs 60 per day.

PRELIMINARY RAPTI CROP BUDGETS – All data are on a hectare basis

	District: Paddy	RUKUM		Pocket: CHAURJHANI		Represented by: KHAOLAGAON	
		Rayo S.	Onion S.	Radish S.	Cauli S.	Wheat	Maize
Net Return (Rs)	26,258	72,554	115,935	72,554	150,592	15,429	17,798
Jan Land (ht)		1	1	1	1	1	
Feb Land		1	1	1	1	1	
Mar Land		1	1	1	1	1	
Apr Land		1	1	1	1	1	
May Land		1	1	1	1		1
Jun Land	1		1				1
Jul Land	1						1
Aug Land	1						1
Sep Land	1						1
Oct Land	1	1		1	1		
Nov Land	1	1	1	1	1	1	
Dec Land		1	1	1	1	1	
Jan Labor (day)		20	70	20	15	20	
Feb Labor		20	200	20	15	30	
Mar Labor		20	70	20	40	30	
Apr Labor		30	100	59	50	20	
May Labor		30	100	40	10		60
Jun Labor	60		100				40
Jul Labor	100						40
Aug Labor	100						30
Sep Labor	49	59					35
Oct Labor	70	70		40	40		
Nov Labor	70	30	106	50	80	70	
Dec Labor			200	30	72	31	
Total Labor (days)	449	279	946	279	322	201	205
Yield (kg/ht)	3,806	1,467	1,000	1,467	1,040	2,157	2,480
Frmgate price/kg	7.55	51.23	120.47	51.23	147.21	7.53	7.59
Cash Costs	2,477	2,600	4,535	2,600	2,506	813	1,025
Net Returns per:							
Hectare	26,258	72,554	115,935	72,554	150,592	15,429	17,798
Labor Day	58	260	123	260	468	77	87
Rs of Cash Cost	11	28	26	28	60	19	17

Note: These data are based on DAI/RAP data for 1996. Modifications have been made as needed to adjust price, yield, labor, and cash cost. Shaded areas denote crops that have significantly higher returns per labor day than typical off-farm wage rates of Rs 60 per day.

PRELIMINARY RAPTI CROP BUDGETS – All data are on a hectare basis

	District:	RUKUM			Pocket:	MUSIKOT		Represented by: CHHIBANG		
	Onion S.	Radish S.	Turnip S.	Rayo S.	Cress S.	Squash S.	Cauli S.	Maize	Paddy	Wheat
Net Return (Rs)	157,904	68,355	46,958	67,392	22,841	125,271	73,260	17,062	36,967	15,979
Jan Land (ht)	1	1	1	1	1	1	1			1
Feb Land	1	1	1	1	1	1	1			1
Mar Land	1	1	1	1	1	1	1			1
Apr Land	1	1	1	1	1	1	1			1
May Land	1	1	1	1		1	1	1		
Jun Land	1					1		1	1	
Jul Land								1	1	
Aug Land								1	1	
Sep Land								1	1	
Oct Land							1		1	
Nov Land	1	1	1	1	1		1		1	1
Dec Land	1	1	1	1	1		1			1
Jan Labor (day)	70	74	10	56	40	70	30			30
Feb Labor	70	40	10	55	40	30	30			30
Mar Labor	70	40	14	50	60	10	50			90
Apr Labor	80	70	50	100	60	10	60			70
May Labor	150	130	40	100		60	55	60		
Jun Labor	142					70		40	40	
Jul Labor								40	126	
Aug Labor								30	60	
Sep Labor								35	100	
Oct Labor							40		140	
Nov Labor	100	119	70	180	142		150		100	110
Dec Labor	180	180	50	190	20		100			80
Total Labor (days)	862	653	244	731	362	250	515	205	566	410
Yield (kg/ht)	1,340	1,000	1,400	1,404	600	450	560	2,480	4,282	2,465
Frmgate price/kg	121.42	71.68	36.77	49.00	44.67	289.19	140.41	7.59	9.38	7.62
Cash Costs	4,799	3,325	4,520	1,404	3,961	4,865	5,370	1,761	3,198	2,804
Net Returns per:										
Hectare	157,904	68,355	46,958	67,392	22,841	125,271	73,260	17,062	36,967	15,979
Labor Day	183	105	192	92	63	501	142	83	65	39
Rs of Cash Cost	33	21	10	48	6	26	14	10	12	6

Note: These data are based on DAI/RAP data for 1996. Modifications have been made as needed to adjust price, yield, labor, and cash cost. Shaded areas denote crops that have significantly higher returns per labor day than typical off-farm wage rates of Rs 60 per day.

PRELIMINARY RAPTI CROP BUDGETS – All data are on a hectare basis

	District:	ROLPA		Pocket:	KURELI		Represented by:		KURELI
	Potato	Radish S.	Bean S.	Rayo S.	MazPotat	Maize	Wheat	Mustard	
Net Return (Rs)	25,420	100,837	49,523	37,260	55,996	11,886	4,002	17,640	
Jan Land (ht)		1		1			1	1	
Feb Land		1		1			1	1	
Mar Land	1	1		1	1	1	1	1	
Apr Land	1	1	1	1	1	1	1	1	
May Land	1	1	1	1	1	1	1		
Jun Land	1	1	1	1	1	1			
Jul Land	1		1		1	1			
Aug Land	1	1	1	1	1	1			
Sep Land	1	1	1	1	1	1			
Oct Land		1		1	1	1	1	1	
Nov Land		1		1			1	1	
Dec Land		1		1			1	1	
Jan Labor (day)		15		10			2	2	
Feb Labor		15		10			2	2	
Mar Labor	70	15		10	80	60	2	2	
Apr Labor	25	50	90	10	35	10	2	10	
May Labor	5	70	110	40	10	10	29		
Jun Labor	5	60	60	31	10	10			
Jul Labor	5		60		10	10			
Aug Labor	54	55	86	20	64	10			
Sep Labor	42	50	90	40	42	40			
Oct Labor		50		10	29	14	40	20	
Nov Labor		15		10			2	2	
Dec Labor		15		10			2	2	
Total Labor (days)	206	410	496	201	280	164	81	40	
Yield (kg/ht)	10,000	840	1,680	600	9,200	1,840	700	720	
Frmgate price/kg	4.25	130.02	37.24	71.05	6.48	6.56	6.86	24.75	
Cash Costs	17,080	8,380	13,040	5,370	3,620	184	800	180	
Net Returns per:									
Hectare	25,420	100,837	49,523	37,260	55,996	11,886	4,002	17,640	
Labor Day	123	246	100	185	200	72	49	441	
Rs of Cash Cost	1	12	4	7	15	65	5	98	

Note: These data are based on DAI/RAP data for 1996. Modifications have been made as needed to adjust price, yield, labor, and cash cost. Shaded areas denote crops that have significantly higher returns per labor day than typical off-farm wage rates of Rs 60 per day.

PRELIMINARY RAPTI CROP BUDGETS – All data are on a hectare basis

Represented by: **THABANG (remote high hills)**

	District:	ROLPA		Pocket:	THABANG	
	Maize	Wheat	Potato	Barley	Mustard	Buckwheat
Net Return (Rs)	8,400	8,400	177,440	6,499	12,400	-6,650
Jan Land (ht)		1		1	1	
Feb Land		1		1	1	
Mar Land	1	1	1	1	1	
Apr Land	1	1	1	1	1	1
May Land	1	1	1	1		1
Jun Land	1		1			1
Jul Land	1		1			1
Aug Land	1		1			1
Sep Land	1		1			1
Oct Land	1	1		1	1	1
Nov Land		1		1	1	
Dec Land		1		1	1	
Jan Labor (day)		5		2	2	
Feb Labor		5		2	2	
Mar Labor	40	5	60	2	2	
Apr Labor	10	15	20	20	35	30
May Labor	10	20	10	10		2
Jun Labor	10		10			2
Jul Labor	10		10			2
Aug Labor	10		60			2
Sep Labor	40		30			12
Oct Labor	20	20		20	35	20
Nov Labor		10		2	2	
Dec Labor		5		2	2	
Total Labor (days)	150	85	200	60	80	70
Yield (kg/ht)	1,200	1,250	24,000	900	500	500
Frmgate price/kg	7.50	7.36	7.86	8.11	25.40	11.50
Cash Costs	600	800	11,200	800	300	12,400
Net Returns per:						
Hectare	8,400	8,400	177,440	6,499	12,400	-6,650
Labor Day	56	99	887	108	155	-95
Rs of Cash Cost	14	11	16	8	41	-1

Note: These data are based on DAI/RAP data for 1996. Modifications have been made as needed to adjust price, yield, labor, and cash cost. Shaded areas denote crops that have significantly higher returns per labor day than typical off-farm wage rates of Rs 60 per day.

PRELIMINARY RAPTI CROP BUDGETS – All data are on a hectare basis

	District:	ROLPA		Pocket:	HOLERI	Represented by:			BUDHAGAON-DHAHABAY
	Wheat	Maize	Peas	P.Bean	Tomato	Cabbage	Potato	Capiscum	
Net Return (Rs)	10,045	4,852	46,864	63,280	175,040	151,940	21,355	113,360	
Jan Land (ht)	1								
Feb Land	1				1	1			
Mar Land	1			1	1	1	1	1	
Apr Land	1	1		1	1	1	1	1	
May Land		1		1	1	1	1	1	
Jun Land		1	1	1	1	1	1	1	
Jul Land		1	1	1	1	1	1	1	
Aug Land		1	1	1	1		1	1	
Sep Land		1	1		1				
Oct Land	1	1	1						
Nov Land	1		1						
Dec Land	1								
Jan Labor (day)	10								
Feb Labor	10				91	18			
Mar Labor	10			108	180	20	40	98	
Apr Labor	50	22		108	90	22	45	98	
May Labor		44		55	97	12	20	37	
Jun Labor		33	56	55	97	22	20	55	
Jul Labor		33	110	108	135	22	40	35	
Aug Labor		22	56	108	135		30	55	
Sep Labor		22	110		90				
Oct Labor	20	44	160						
Nov Labor	50		56						
Dec Labor	10								
Total Labor (days)	160	220	548	542	915	116	195	378	
Yield (kg/ht)	2,144	1,720	4,800	5,600	24,000	32,500	3,500	8,400	
Frmgate price/kg	6.44	3.41	11.38	11.90	7.81	4.84	8.05	14.75	
Cash Costs	3,762	1,013	7,760	3,360	12,400	5,360	6,820	10,540	
Net Returns per:									
Hectare	10,045	4,852	46,864	63,280	175,040	151,940	21,355	113,360	
Labor Day	63	22	86	117	191	1,310	110	300	
Rs of Cash Cost	3	5	6	19	14	28	3	11	

Note: These data are based on DAI/RAP data for 1996. Modifications have been made as needed to adjust price, yield, labor, and cash cost. Shaded areas denote crops that have significantly higher returns per labor day than typical off-farm wage rates of Rs 60 per day.

PRELIMINARY RAPTI CROP BUDGETS – All data are on a hectare basis

	District:	ROLPA			Pocket:	LIBANG		Represented by: BUDHAGAON	
	Wheat	Maize	Peas	P.Bean	Tomato	Cabbage	Potato	Capiscum	
Net Return (Rs)	10,045	4,852	46,864	63,280	175,040	151,940	21,355	113,360	
Jan Land (ht)	1								
Feb Land	1				1	1			
Mar Land	1			1	1	1	1	1	
Apr Land	1	1		1	1	1	1	1	
May Land		1		1	1	1	1	1	
Jun Land		1	1	1	1	1	1	1	
Jul Land		1	1	1	1	1	1	1	
Aug Land		1	1	1	1		1	1	
Sep Land		1	1		1				
Oct Land	1	1	1						
Nov Land	1		1						
Dec Land	1								
Jan Labor (day)	10								
Feb Labor	10				91	18			
Mar Labor	10			108	180	20	40	98	
Apr Labor	50	22		108	90	22	45	98	
May Labor		44		55	97	12	20	37	
Jun Labor		33	56	55	97	22	20	55	
Jul Labor		33	110	108	135	22	40	35	
Aug Labor		22	56	108	135		30	55	
Sep Labor		22	110		90				
Oct Labor	20	44	160						
Nov Labor	50		56						
Dec Labor	10								
Total Labor (days)	160	220	548	542	915	116	195	378	
Yield (kg/ht)	2,144	1,720	4,800	5,600	24,000	32,500	3,500	8,400	
Frmgate price/kg	6.44	3.41	11.38	11.90	7.81	4.84	8.05	14.75	
Cash Costs	3,762	1,013	7,760	3,360	12,400	5,360	6,820	10,540	
Net Returns per:									
Hectare	10,045	4,852	46,864	63,280	175,040	151,940	21,355	113,360	
Labor Day	63	22	86	117	191	1,310	110	300	
Rs of Cash Cost	3	5	6	19	14	28	3	11	

Note: These data are based on DAI/RAP data for 1996. Modifications have been made as needed to adjust price, yield, labor, and cash cost. Shaded areas denote crops that have significantly higher returns per labor day than typical off-farm wage rates of Rs 60 per day.

PRELIMINARY RAPTI CROP BUDGETS – All data are on a hectare basis

	District:	ROLPA		Pocket: JINABANG		Represented by: JINABANG (accessible high hills)	
	Radish S.	Potato	Peas	Rayo S.	Wheat	P.Bean	Maize
Net Return (Rs)	67,618	61,199	11,445	82,718	7,578	39,538	20,791
Jan Land (ht)	1			1	1		
Feb Land	1			1	1		
Mar Land	1	1	1	1	1		
Apr Land	1	1	1	1	1	1	1
May Land	1	1	1	1		1	1
Jun Land	1	1	1	1		1	1
Jul Land		1				1	1
Aug Land	1	1				1	1
Sep Land	1					1	
Oct Land	1				1		
Nov Land	1				1		
Dec Land	1				1		
Jan Labor (day)	17			19	10		
Feb Labor	34			39	10		
Mar Labor	34	134	75	39	10		
Apr Labor	34	89	63	39	50	88	66
May Labor	34	22	37	39		88	53
Jun Labor	34	23	75	40		44	54
Jul Labor		111				44	40
Aug Labor	34	67				88	53
Sep Labor	51					88	
Oct Labor	34				20		
Nov Labor	17				50		
Dec Labor	17				10		
Total Labor (days)	340	446	250	215	160	440	266
Yield (kg/ht)	600	18,547	1,320	1,000	1,675	1,000	4,166
Frmgate price/kg	115.85	6.18	11.61	83.86	5.26	44.55	5.10
Cash Costs	1,892	53,421	3,880	1,142	1,233	5,012	456
Net Returns per:							
Hectare	67,618	61,199	11,445	82,718	7,578	39,538	20,791
Labor Day	199	137	46	385	47	90	78
Rs of Cash Cost	36	1	3	72	6	8	46

Note: These data are based on DAI/RAP data for 1996. Modifications have been made as needed to adjust price, yield, labor, and cash cost. Shaded areas denote crops that have significantly higher returns per labor day than typical off-farm wage rates of Rs 60 per day.

PRELIMINARY RAPTI LIVESTOCK BUDGETS (not pocket-specific)

	C.Layers	C. Broiler	Fat Pigs	Breed Pig	Goat 1	Goat 2	RPoul 1	RPoul 2	Buffalo 1	Buffalo 2	Buffalo 3
Production Unit	500 birds	1000 birds	5 pigs	4 F-1M	20 Jamun	20 Local	5 NH hen	4LcHIR	1Loc	1 Murrah	1 Crossbreed
Net Return (Rs)	84,329	17,378	5,124	22,872	21,079	20,051	522	1,110	7,098	9,251	6,861
Gross Income	496,813	125,900	23,500	86,050	39,841	35,683	2,900	5,265	16,270	32,238	25,936
eggs	422,013							855			
birds	65,800	123,500					2,850	4,360			
pigs			22,500	85,050							
kids					38,016	33,858					
calf									1,400	1,600	1,500
milk									10,806	24,938	19,950
buffalo sale									1,689	3,325	2,111
manure	9,000	2,400	1,000	1,000	1,825	1,825	50	50	2,375	2,375	2,375
Production Costs	412,484	108,522	18,376	63,178	18,762	15,632	2,378	4,155	9,172	22,987	19,075
Labor (days)	432	28	46	183	288	288	0	0	112	111	89
Net Returns per:											
Labor Day	195	621	111	125	73	70	--	--	63	83	77

Note: Production costs are exclusive of labor costs. Salvage value of breeding animals not included as income except for buffalo.

No labor is included in rural poultry budgets because the birds are not confined.

Shaded areas denote crops that have significantly higher returns per labor day than typical off-farm wage rates of Rs 60 per day.

District	Crop											
Pocket	Net Return per Labor Day (Rs)											
Dang	Cauli	Tomato	Cabbage	Wheat	Chili	Potato	Maize	Cotton	Garlic	Paddy		
Lamahi	587	223	173	161	141	137	108	87	51	28		
Tulsipur	Cauli	Tomato	Cabbage	Wheat	Chili	Potato	Maize	Cotton	Garlic	Paddy		
	587	223	173	161	141	137	108	87	51	28		
Ghorahi	Cauli	Tomato	Cabbage	Wheat	Potato	Maize	Garlic	Paddy				
	587	223	173	161	137	108	51	28				
Pyuthan	S. Pepper	Tomato	Cauli	Rad Seed	P. Beans	Maize	Paddy	Cucumber	Wheat	Potato 2	Potato 1	Onion
Bijuar	488	421	405	314	314	115	106	85	58	46	46	16
Machhi	Paddy	Cabbage	Tomato	Onion	Rad Seed	Maize	Potato	Wheat	Cauli	P. Beans		
	119	117	107	104	98	84	83	60	49	38		
Devislhan	Tumeric	Potato	Tomato	Taro	B.Gram	Maize	Onion	Horsgram	Wheat	Paddy	Ginger	
	573	226	226	190	153	143	119	47	22	20	-7	
Salayan	Cabbage2	Cabbage1	Capiscum	Tomato 1	Tomato 2	P.Bean 2	P.Bean 1	Potato	Peas	Wheat	Maize	
Kapurkot	1,310	1,310	300	191	191	117	117	110	86	63	22	
Thamare-Khalanga	Maize	Millet	Wheat									
	117	42	24									
Thamare-Kajeri	Tomato	Capiscum	Paddy	Radish S.	Turnip S.	Wheat	Maize					
	582	468	167	87	84	67	63					
Thamare-Damach.	Rayo S.	Radish S.	Potato	PoleBean	Maize	Wheat	Peas					
	211	199	143	90	78	47	46					
Bhotechaur-Darim.	Potato	Garlic	Radish S.	Paddy	Cauli	Wheat	Maize	Mustard				
	188	110	103	97	82	74	63	33				
Bhotechaur-Fala.	Cabbage	Capiscum	Tomato	PoleBean	Potato	Peas	Wheat	Maize				
	1,209	300	167	117	110	86	63	22				
Rukum	Potato	Apple	PotMzBn	Rape S.	Wheat	Maize	Barley					
Takasera	217	147	133	100	87	66	56					
Chaurjhani	Cauli S.	Rayo S.	Radish S.	Onion S.	Maize	Wheat	Paddy					
	468	260	260	123	87	77	58					
Musikot	Squash S.	Turnip S.	Onion S.	Cauli S.	Radish S.	Rayo S.	Maize	Paddy	Cress S.	Wheat		
	501	192	183	142	105	92	83	65	63	39		
Rolpa	Mustard	Radish S.	MazPotat	Rayo S.	Potato	Bean S.	Maize	Wheat				
Kureli	441	246	200	185	123	100	72	49				
Thabang	Potato	Mustard	Barley	Wheat	Maize	Buckwht						
	887	155	108	99	56	-95						
Holeri	Cabbage	Capiscum	Tomato	P.Bean	Potato	Peas	Wheat	Maize				
	1,310	300	191	117	110	86	63	22				
Libang	Cabbage	Capiscum	Tomato	P.Bean	Potato	Peas	Wheat	Maize				
	1,310	300	191	117	110	86	63	22				
Jinabang	Rayo S.	Radish S.	Potato	P.Bean	Maize	Wheat	Peas					
	385	199	137	90	78	47	46					

Note: Crops with net returns of at least Rs 100 per day of labor are shown in bold.

Livestock Enterprise	Production Unit	Daily Labor Return (Rs)
Commercial Broiler	1000 birds	621
Commercial Layers	500 birds	195
Breeding Pigs	4 F-1M	125
Fattening Pigs	5 pigs	111
Milking Buffalo 2	1 Murrah	83
Milking Buffalo 3	1 Crossbreed	77
Goat 1	20 Jamunaparti	73
Goat 2	20 Local	70
Milking Buffalo 1	1 Local	63
Rural Poultry 1	5 New Hampshire Hens	--*
Rural Poultry 2	4 Local Hens, 1 Rooster	--*

Note: Crops with net returns of at least Rs 100 per day of labor are shown in bold.

* No labor is included in rural poultry budgets because the birds are not confined.