

FINAL REPORT

FOOD SECURITY IN BAGESHWAR & CHAMOLI

Government of Uttarakhand

Supported by the International Fund for Agriculture Development



Submitted to

The Project Management Unit

Dehradun, Uttarakhand

9 November 2008



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ACKNOWLEDGEMENTS

We would like to record our deep appreciation for the time so freely given to our field teams by the community, men and women of the project. We would also like to thank the staff of the District Management Units of the Aajeevika project, who provided us with all necessary assistance for the field work. Special thanks are due to the DMU staff of Bageshwar and Chamoli who helped with their continued support to our survey teams. Thanks are also due to the staff at the Sitaram Ashram, Dehradun, for having gone out of their way to help us with accommodation and food, and special requests.

The staff at the Project Management Unit at Dehradun deserves a special mention, for helping us in so many little ways, whenever we visited Dehradun. Thanks are especially due to Mr. V. K. Thapliyal and Mr. Rajesh Sen, for their cheerful assistance.

This document has taken many drafts to evolve into the current product. In particular, we would like to give our heartfelt thanks to Mr. Pawan Kumar for his invaluable assistance, patience, and ever-smiling understanding, throughout our association with the Aajeevika Project. And finally, we owe an enormous debt of gratitude to Ms. Jyotsna Sitling, Project Director of Aajeevika, without whose constant help, guidance and support, the study would have been much more difficult to carry out.

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ABBREVIATIONS AND ACRONYMS

BC	Block Coordinator
DMU	District Management Unit
FNGO	Facilitating Non-Government Organizations
GP	Group Promoter
HH	Household
FAO	Food and Agricultural Organisation
FGD	Focus Group Discussion
ICMR	Indian Council of Medical Research
IFAD	International Fund for Agricultural Development
NGO	Non- government Organisation
PMU	Project Management Unit
PY	Project Year
SHG	Self Help group
SVCC	Social Venture Capital Company
UGVS	Uttarakhand Gramya Vikas Samiti
UPASAC	Uttarakhand Parvatiya Aajeevika Sanvardhan Company
ULIPH	Uttarakhand Livelihoods Improvement Project in the Himalayas
WBR	Well Being Ranking

1. INTRODUCTION

1.1 PROJECT BACKGROUND AND OBJECTIVES

The Government of Uttarakhand began implementing the eight-year Uttarakhand Livelihoods Improvement Project in the Himalayas (ULIPH), more commonly known as “Aajeevika” (meaning Livelihoods in Hindi), from October 2004 with financial support from the International Fund for Agricultural Development (IFAD). The project is managed by the Uttarakhand Gramya Vikas Samiti (UGVS), and is supported by a social venture capital company called Uttarakhand Parvatiya Aajeevika Sanvardhan Company (UPASAC) that provides business development services. The primary objective of the project is to improve the quality of life and incomes of disadvantaged households in a sustainable manner through the promotion of improved livelihood opportunities and strengthening of local institutions that relate to livelihood and social development.

Aajeevika plans to cover 959 villages in a phased manner across 17 development blocks in 5 districts of Uttarakhand and will cover approximately 40 percent of the total population in each selected block (see Table 1.1)

Table 1.1: Project districts and blocks

Project districts	Project development blocks
Almora	Bhaisia Chhana, Dhauladevi, and Lamgara
Bageshwar	Kapkot and Bageshwar
Chamoli	Dewal, Ghat, Narayanbagar and Dasoli
Tehri Garhwal	Jaunpur, Pratapnagar, Devprayag and Bhilagna
Uttarkashi	Mori, Naugaon, Dunda and Purola

The project aims to cover a total of 42,690 households in 959 villages and to support around 4000 community-based organisations, including self-help groups (SHGs). The food security study was conducted in 20 villages, in the two of the five districts under the Aajeevika Project, namely Chamoli and Bageshwar

1.2 OBJECTIVES OF THE STUDY

The *Aajeevika* project (Uttaranchal Livelihood Improvement Project in the Himalayas) is interested in knowing the current status of food security in its project villages and, more importantly, the potential impact on food insecurity of its interventions to improve agricultural production. The hypothesis to be tested is whether or not improved agricultural production will lead to increased food security. The fear is that increased agricultural production will mean more food grain being sold in the market and less available for home consumption, with deleterious consequences for nutrition and food security in project households.

Thus, the fundamental question posed in this study of food security was whether an increase in food production would necessarily mean an increase in food security or would it just lead to more food being sold in the market? The study aimed to study the following:

- a. The current state of food security in project villages (including the severity of the current food insecurity and the pattern of household consumption in terms of quantity and quality of the food consumed)

- b. Changes in factors influencing food security (changes in population, access to forest, change in cultivated area etc.)
- c. The potential impact of project interventions on food security.

1.3 THE SAMPLE

Village sample: The study was conducted in 20 villages in Chamoli and Bageshwar districts of Uttarakhand. A total of 10 villages were surveyed in each district. The 20 villages in each district have been selected proportionately from the number of villages taken up in project year 1 (PY1), project year 2 (PY2) and project year 3 (PY3), in each of the three categories: top hills, mid hills and valley villages {Table 1.2}.

Table 1.2: Sample of village covered in the Food Security survey

District	Project Year	Villages			Total
		Top Hill	Mid-hill	Valley	
Chamoli	1	1	1	1	3
	2	1	2	1	4
	3	1	1	1	3
	<i>Total</i>	3	4	3	10
Bageshwar	1	1	1	0	2
	2	3	1	1	5
	3	2	0	1	3
	<i>Total</i>	6	2	2	10
TOTAL		9	6	5	20

The block-wise distribution of villages is given in Table 1.3 below.

Table 1.3: Block-wise list of surveyed villages

Blocks	Number of households	% of Total
Ghat	30	15%
Bageshwar	50	25%
Kapkot	50	25%
Dewal	30	15%
Narayan Bagar	40	20%
Total	200	100%

Most of the selected villages were from PY2 (9) followed by PY3 (6) and PY1 (5), which also reflects the phase-wise implementation of the project where a larger set of villages are adopted in successive years (Table 1.4).

Table 1.4: Villages covered from different project years

	Number of villages	% of total
Project Year 1: 2005-06	5	25%
Project Year 2: 2006-07	9	45%
Project Year 3: 2007-08	6	30%
Total	20	100%

Most villages (9 out of 20 or 45%) were from the top-hill regions, while (6 or 30%) were from the mid hill and (5 or 25%) were from the valley region {Table 1.5}.

Table 1.5: Location of villages surveyed

	Number of villages	% of total
Top Hill	9	45%
Mid Hill	6	30%
Valley	5	25%
Total	20	100%

Household sample: Within each village, 10 households were selected, proportionately from the total WBR categories in the village, to ensure a representative sample. Thus there were a maximum of 51 (26%) WBR2 households surveyed, followed by 21% of WBR 3 and 4 households {Table 1.6}.

Table 1.6: Well Being Ranking distribution of households surveyed

Well Being Ranking Category	Number of households	% to total
WBR 1	36	18%
WBR 2	51	26%
WBR 3	41	21%
WBR 4	42	21%
WBR 5	30	15%
Total	200	100%

In terms of project village years, a total of 50 first year, 88 second year and 62 third year households were surveyed.

1.4 FIELD TEAMS

The survey was conducted from April to May 2008 by a team of 4 field investigators and 2 district coordinators under a team leader. While some field investigators were hired locally, based on interviews (held on 15 - 16 March 2008), some were provided by the DMUs. All survey field staff were trained and supervised by Pragmatix staff in the two project districts. Training of field staff was conducted at Dehradun where the field staffs was oriented by various aspects of food security and various factors that influence household food security. All survey field staff were trained and supervised by Pragmatix staff in the two project districts.

At the end of the field work a review workshop was organized from 23 - 27 May 2007, to share experiences to finalize the analysis plan for the collected data, and to present the draft findings to the staff of the Project Management Unit (PMU).

1.5 METHODOLOGY

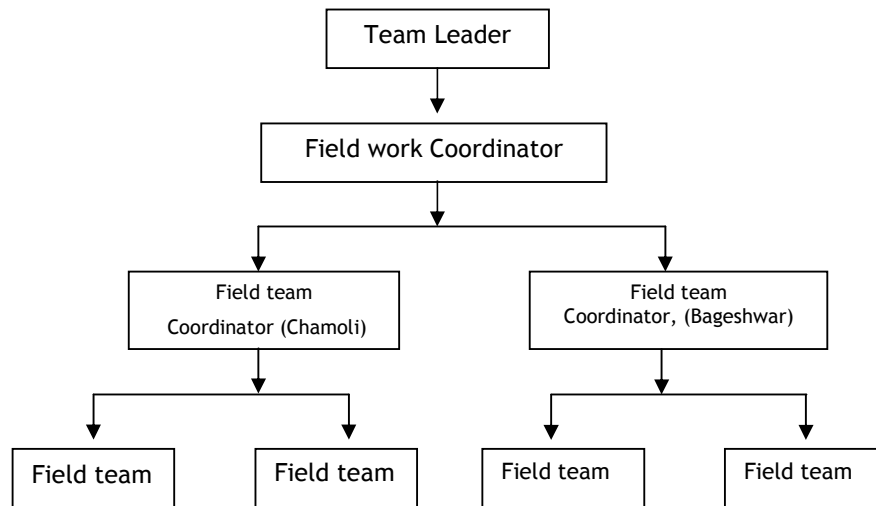
A participatory methodology was used to collect information at the village level, which included focus group discussions, household visits, market visits and key person interviews with major stakeholders including local leaders, the elderly and other prominent people who have vital village-specific information. Thus, apart from the 200 families interviewed across 20 villages in 2 districts on various aspects of household food security, Focus Group

Discussions (FGDs) were also held in each of the villages which enabled the field teams to get a broad overview of the major issues affecting food security in each village.

Survey formats: Draft formats were developed by Pragmatix and discussed extensively and finalized with field staff at a 4-day Methodology and Planning Workshop. This workshop was to orient field investigators about the project and to train them in survey techniques including focus group discussions, household visits and key person interviews. The workshop held at the Sitaram Ashram near the ULIPH office in Dehradun was followed by pilot testing of the survey formats in the two districts on 24 April 2008. A review of the pilot testing was conducted at Gwaldham with both the district field teams on 26 April 2008, in order to assess the feedback and to revise the field formats. The final formats were translated into Hindi for field level implementation of the survey. The DMUs helped with the logistical planning of the study in their respective districts.

Quality Control: The fieldwork for the food security study was conducted from 27 April to 15 May 2008. For quality control, i.e. effective monitoring and co-ordination of the study, Pragmatix put in place a Team Leader, a Field Work Coordinator and two Field Team Coordinators to supervise the study in the selected two district locations (Figure 1.1). The Field Team Co-Ordinators monitored the field work, visiting study villages with the field teams, and tackling basic ground-level logistical problems, and reported to the Team Leader concerning the status and effectiveness of the survey.

Figure 1.1: Study reporting structure



Information sources: Village-level project participants were the primary source of information although other sources include the Panchayat office in the villages and the records with the village head (Sarpanch). Information about the background of the project and project beneficiaries was mainly collected from secondary sources including the Uttarakhand Gramya Vikas Samiti (UGVS), UPASAC the social venture capital company and state government offices such as the Forest Department, Agriculture Department, and Planning Department, census reports, brochures and documents with respect to project, and the project website.

1.6 STRUCTURE OF THE REPORT

The next section (section 2) discusses current food security, while section 3 analyzes factors affecting food security. Section 4 addresses the central question of the potential impact of project interventions on food security and Section 5 concludes with some recommendations.

2. CURRENT FOOD SECURITY

2.1 INTRODUCTION

This section begins by discussing the notion of food security, and then analyzes food security in relation to certain nutritional norms. Findings are presented for the districts as a whole, villages classified by altitude and for households differentiated by well-being ranking (WBR) categories. Thereafter, the section discusses 'stated household food security status', based on the results of a questionnaire-based household survey. Subsequently, coping strategies used by households during lean months are presented and discussed.

2.2 FOOD SECURITY

Food security implies livelihood security at household level and involves ensuring both physical and economic access to balanced diet, safe drinking water, environmental sanitation, primary education and basic healthcare. It basically implies that the entire population in a community has access to enough food at all times for leading an active and healthy life (World Bank, 1986; Parikh, 1998). Food security is achieved when all people at all times have access to sufficient food for a healthy and productive life and has three main components - food availability, food access and food utilization (Haddad, 1997).

Food *insecurity*, on the other hand, exists when 'all people, at all times, do not have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life' (FAO, 1996). On the basis of the food insecurity atlas of rural India, food insecurity has come to be measured in terms of three factors - food availability, food access and food absorption. The distinction between availability of food and access to food is due to Amartya Sen (1991) and states that access to available food can be denied if the household does not have enough purchasing power.

Food for a household is available from basically three sources: (1) own production, and (2) purchase using cash or barter and (3) the public distribution system. How much food the household can actually access depends on its purchasing power, which can be from market sale of agricultural produce or wage income or credit. Thus, analyzing the amount of food actually consumed by the household will take into account both availability and access.

Further, individuals in each household also have a per-capita requirement of food. A deficit of actual consumption vis-à-vis requirement can thus be taken to constitute 'insecurity' in terms of food availability. This exercise, however, is complicated by at least two additional factors: (1) defining deficits for different individuals for multiple constituents of food, as 'Food', may be divided into food grains (e.g., coarse cereals, rice and wheat), pulses, tubers, other vegetables, protein sources (e.g., milk, eggs, meat), etc. and also, individual's nutritional requirements vary according to body weight, metabolism, age, sex, etc ; and (2) addressing the various requirements for cooking, such as fuel, oil, condiments, spices (including salt), vessels and cooking implements (*chimti*, spoons, ladles, etc.). Given this complexity, a focus on consumption deficit (i.e., actual consumption vis-à-vis dietary requirement) may be a simpler approach to analysing current food security. Consumption deficit can be analyzed for major food groups for which average adult consumption requirements have been worked out by ICMR, namely, pulses, oil, vegetables and milk.

The consumption of cereals may be a good approximation of overall food security, as a lack of cereals may indicate food scarcity more than say lack of vegetables or pulses. In fact, the practice in many food-scarce areas in the country is to eat either rice or chapattis with onions, and not having rice or chapattis for a meal - even if other food groups such as fruits, vegetables or milk are available - is taken to indicate food scarcity. Indeed, it has been estimated that the rural poor derive about 80 per cent of their daily energy and protein requirements from cereals, the staple food in most Indian diets (WFP-MSRRF, 2001). When the local production of cereals is inadequate, the poor become more vulnerable to inadequate food availability. And coarse cereals are more commonly consumed in the hilly areas of the state.

Food absorption refers to a person's ability to assimilate the food consumed. It depends on the individual's dietary practices and his/her state of health. The important issues to be considered in terms of food insecurity are the nutritional status of the population, health services and infrastructure and hygiene, including the supply of safe drinking water. Food absorption can thus only be inferred by supplementary questions.

2.3 AVERAGE DAILY CONSUMPTION

The Indian Council of Medical Research (ICMR) and the Indian Institute of Nutrition have set out the standard daily consumption values for major food groups (e.g., cereals, pulses, fruits, vegetables, edible oils, potatoes) and overall daily consumption per capita.¹ The survey asked households to specify their actual daily consumption of major food groups and compared these to the ICMR norms. If average per capita consumption within the household was lower than the norm, the household was termed 'food insecure'. The findings are presented for districts as a whole, for villages segregated by altitude and across well-being ranking (WBR) categories.

2.1.1 District-level findings

While the average daily consumption per capita in both districts is slightly below the ICMR norms, there are significant variations across food groups (Table 2.1). Both the districts consume more cereals and potatoes than the ICMR norms but consume less of fruits, pulses and vegetables.

Table 2.1: Average per capita daily consumption, Chamoli and Bageshwar

	Average daily per capita consumption (grams per day)						
	Cereals (420)	Pulses (40)	Fruits (50)	Vegetables (125)	Edible oils (22)	Potato (22)	Total (679)
Bageshwar	488	24	12	34	21	60	639
Chamoli	456	33	20	61	21	67	658

2.1.2 Village-level findings

The broad district-level pattern is also visible when analyzing consumption across top hills, mid-hills and valley villages in the sample surveyed {Table 2.2}. There are, however,

¹ The ICMR defines adult daily food requirement norms, in terms of grams per day per capita, as 420 (cereals), 40 (pulses), 75 (potatoes), 22 (edible oils), 50 (fruits) and 125 (vegetables). But these norms are not specific to either type of cereal, body weight, sex or age or even location (e.g., hills, plains, coastal areas, arid areas).

considerable variations, with the mid-hills villages in Bageshwar actually exceeding the overall ICMR consumption norms.

Table 2.2: Average daily per capita consumption (by villages classified by altitude)

	Average daily per capita consumption (grams per day)							
	WBR	Cereals (420)	Pulses (40)	Fruits (50)	Vegetables (125)	Edible oils (22)	Potato (22)	Total (679)
Bageshwar	Top Hill	456	22	8	31	20	59	597
	Mid Hill	596	27	17	38	25	64	767
	Valley	475	28	17	36	20	61	636
Chamoli	Top Hill	465	33	13	59	21	75	667
	Mid Hill	482	32	17	59	18	59	667
	Valley	411	36	30	64	25	70	636

Top hills villages in Bageshwar have the lowest overall per capita daily consumption (597 gms per day) across all village types in both districts. In Chamoli, however, valley villages have the lowest overall consumption.

As in the case of the overall district scenarios, all village types have lower consumption of pulses, fruits and vegetables than the ICMR norms, while most village types exceed the consumption norms for cereals and potatoes.

2.1.3 Household-level findings

As in the case of the overall district picture, all households fall short of ICMR consumption norms for fruits, vegetables and pulses (Table 2.3). In Bageshwar, Rank I households clearly have the lowest average daily per capita consumption, but in Chamoli Rank III households have marginally lower (592 grams) consumption than Rank I households (595 grams). Also, as expected, household consumption increases from the poorest households (WBR Rank 1) to less poor households (WBR Rank 5).

Table 2.3: Average daily consumption (by WBR groups)

	Average daily per capita consumption (grams per day)							
	WBR	Cereals (420)	Pulses (40)	Fruits (50)	Vegetables (125)	Edible oils (22)	Potato (22)	Total (679)
Bageshwar	Rank I	415	17	6	24	18	44	523
	Rank II	506	22	8	25	18	57	636
	Rank III	508	27	15	39	23	68	679
	Rank IV	460	25	17	39	23	61	625
	Rank V	546	33	14	47	27	74	741
Chamoli	Rank I	420	30	21	49	17	58	595
	Rank II	475	36	22	66	20	62	682
	Rank III	397	34	24	53	18	65	592
	Rank IV	480	31	15	61	22	70	679
	Rank V	492	35	18	71	29	78	724

Also, WBR I households in both Chamoli and Bageshwar have the lowest consumption of cereals, pulses, vegetables edible oils and potatoes, i.e., all food groups except fruits,

which is lowest in Bageshwar, but not so in Chamoli. However, the change in consumption across WBR 2, 3 and 4 is not uniformly increasing, with some cases where consumption falls (e.g., cereal and vegetable consumption in Chamoli, cereal consumption in Bageshwar) and others where consumption rises and then falls (e.g., Chamoli pulse and fruit consumption).

2.2 MEASURED AND STATED HOUSEHOLD FOOD SECURITY

Food security has been analyzed in two ways: (1) by comparing actual consumption to the ICMR norms; and (2) by identifying households which state that they have 1 meal a day for more than 2 months. The need for the second analysis is because all households are not food secure or insecure throughout the year, and average values tend to hide seasonal disparities. Surveyed households have therefore been classified into three categories based on their responses to a household questionnaire (see Annexure 2):

- I. Food-secure households: Households that state that they eat two or three meals in a day for all the 12 months in a calendar year, and consider themselves to be 'food secure'.²
- II. Moderately food-secure households: Households that are neither in the 'food secure' category nor in the 'food insecure' category.
- III. Food-insecure households: Households that state that they eat only one meal in a day, for even one month in a year.

Findings based on both ICMR norm comparisons and stated food security status are presented below, classified by district, location and WBR groups.

2.2.1 District-wise food security

Based on stated food security status, nearly half (40%) of the surveyed households in Bageshwar stated that they were highly food insecure, while only 17% of households in Chamoli said that they were highly food insecure (Table 2.4). Also, most households stated they were moderately food insecure. Only a small proportion of households (10 - 20%) in both districts stated that they were food secure.

Table 2.4: District-wise proportion of food insecure households, Bageshwar and Chamoli

	Food security by stated status				Food security by nutritional norms
	Food secure households	Moderately food secure households	Food secure households	Moderately food secure households	Food secure households
Bageshwar	10%	50%	40%	100%	58%
Chamoli	21%	62%	17%	100%	48%
Total	16%	56%	29%	100%	

² The tradition in many villages in India and the sub-continent is to eat two meals a day, one in mid-morning and another in early evening. Thus, even households that eat two meals a day consider themselves 'food secure'. But this is changing, especially with the necessity to work in urban settings, and some households have started having three meals a day. Both are considered 'food secure' in the study.

According to ICMR nutritional norms, however, a much larger proportion (50-60%) of households are food insecure, more in Bageshwar than Chamoli. Given that the ICMR norms are all-India averages, and not specific to the hills diet and nutrition, the results could be a reflection of this bias. If they are correct, however, it suggests that households are more food insecure, from a nutritional point of view, than they are aware.

2.2.2 Village-wise food security

Based on stated food security status, more households in valley villages of both Bageshwar (35%) and Chamoli (43%) are more food secure as compared to villages at higher altitudes (Table 2.5). Also, while nearly half (48%) of the households in top hills villages of Bageshwar are food insecure only 17% of top hills villages in Chamoli are food insecure. The majority of households in all villages (except valley villages in Bageshwar) are moderately food secure. According to nutritional norms, however, a larger proportion of households are food insecure than according to stated food security status.

Table 2.5: Extent of household food insecurity (across villages by elevation)

Districts	Village Location	Food security by stated status				Food security by nutritional norms
		Food secure households	Moderately food secure households	Food insecure households	Total	Food insecure households
Bageshwar	Top Hill	5%	47%	48%	100%	62%
	Mid Hill	0%	80%	20%	100%	40%
	Valley	35%	30%	35%	100%	65%
Chamoli	Top Hill	17%	67%	17%	100%	43%
	Mid Hill	8%	68%	25%	100%	48%
	Valley	43%	50%	7%	100%	53%

2.2.3 Household-wise food security

Again, there is a difference between the findings based on ICMR norms and those based on households' stated status. According to the latter, in Chamoli, a third (33%) of WBR1 households is food insecure, which is the highest across all WBR categories (Table 2.6). In Bageshwar, however, while 44% of WBR 1 households are food insecure, a larger proportion (50%) of WBR4 households states that they are food insecure.

Table 2.6: Extent of household food insecurity (by WBR group)

Districts	WBR Group	Food security by stated status				Food security by nutritional norms
		Food secure households	Moderately food secure households	Food insecure households	Total households	Food secure households
Bageshwar	1	17%	39%	44%	100%	89%
	2	4%	57%	39%	100%	64%
	3	10%	52%	38%	100%	52%

Districts	WBR Group	Food security by stated status				Food security by nutritional norms
		Food secure households	Moderately food secure households	Food secure households	Total households	Food secure households
	4	6%	44%	50%	100%	44%
	5	20%	53%	27%	100%	33%
Chamoli	1	11%	56%	33%	100%	78%
	2	13%	70%	17%	100%	57%
	3	15%	80%	5%	100%	45%
	4	21%	67%	13%	100%	42%
	5	27%	73%	0%	100%	13%

Not surprisingly, the maximum proportions of food secure households are from WBR5 in both Bageshwar (20%) and Chamoli (27%).

According to nutritional norms, however, a much large proportion of households surveyed is food insecure. Also, in both districts, this proportion is highest among WBR1 households, and this proportion decreases as one goes up the WBR groups. The fact that these proportions are much higher than those self-identified by households suggests that households do not consider themselves food insecure when, according to nutritional norms, they may well be so. Given that the norms themselves are correct, the implication of course is that any reduction in their food intake or availability could have a much more serious impact on their nutrition than they realize.

2.3 PERIODS OF FOOD INSECURITY

Food security was also analyzed by asking surveyed households to identify the months during which they had only 1 meal in a day. These were termed food insecure months. In addition, they were also asked which months they had sufficient resources to provide food for all members of their household. Months when they said they had insufficient resources to feed all members of their household were then taken to be food insecure months. Findings from both these analyses are given below, classified by district, location and WBR groups.

2.3.1 District-level findings

Up to a quarter (22%) of WBR 1 households in both Chamoli and Bageshwar stated that they were food insecure throughout the year except for the months of June and July - which are the wheat-harvesting months and household food security is maintained by using the fresh harvest or by barter of the produce (Table 2.7). The most food-insecure months for these households are January-March and August-September.

Table 2.7: Month-wise proportion of food insecure households (Chamoli and Bageshwar)

Districts	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Bageshwar	10%	10%	15%	14%	1%	0%	0%	12%	6%	2%	6%	4%
Chamoli	8%	10%	7%	5%	4%	0%	0%	7%	8%	5%	5%	8%
TOTAL	18%	20%	22%	19%	5%	0%	0%	19%	14%	7%	11%	12%

2.3.2 Household-wise findings

Findings by WBR categories show that WBR1 are most food insecure in both districts, but even WBR5 households in Chamoli are food insecure, in August-September (Table 2.8)

Table 2.8: Month-wise proportion of food insecure households (by WBR group)

Districts	WBR Group	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Bageshwar	1	22%	22%	22%	22%	6%	0%	0%	17%	6%	6%	11%	11%
	2	4%	4%	21%	21%	0%	0%	0%	14%	11%	4%	7%	4%
	3	14%	14%	10%	10%	0%	0%	0%	10%	5%	0%	0%	0%
	4	11%	11%	17%	11%	0%	0%	0%	6%	0%	0%	11%	6%
	5	0%	0%	0%	0%	0%	0%	0%	13%	7%	0%	0%	0%
Chamoli	1	28%	28%	22%	22%	17%	0%	0%	22%	22%	22%	17%	22%
	2	4%	9%	9%	4%	4%	0%	0%	13%	13%	0%	0%	0%
	3	5%	5%	0%	0%	0%	0%	0%	0%	0%	0%	0%	10%
	4	4%	8%	4%	0%	0%	0%	0%	0%	4%	4%	8%	8%
	5	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

The disaggregated findings also confirm that the months of January-March and August-September are the most food insecure for households in all WBR categories (except WBR5 in Bageshwar). Surprisingly, a larger proportion of households in WBR4 reported being food insecure in both districts, than in WBR3.

2.3.3 Village-wise findings

Apart from comparing nutritional norms, surveyed households were also asked if they had resources to provide food for all members throughout the year. Fewer households in the top-hill villages in Bageshwar and Chamoli reported having resources in Jan-April and August (Table 2.9).

Table 2.9: Proportion of households with resources to provide food security

	Location	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Bageshwar	Top Hill	32%	32%	35%	30%	60%	54%	43%	32%	42%	54%	48%	40%
	Mid Hill	26%	14%	6%	20%	23%	27%	31%	32%	26%	26%	30%	31%
	Valley	42%	55%	59%	50%	17%	20%	26%	35%	32%	21%	22%	29%
Chamoli	Top Hill	21%	20%	20%	19%	26%	28%	34%	32%	34%	32%	27%	27%
	Mid Hill	24%	20%	20%	19%	32%	42%	38%	37%	38%	36%	38%	33%
	Valley	56%	60%	60%	61%	43%	30%	29%	31%	28%	32%	35%	39%

The mid-hill villages of Bageshwar and Chamoli reported January-April as the most difficult months. The valley villages of Bageshwar reported May-July as the worst months, although October-November was also difficult. In Chamoli, however, the valley villages reported June-October as difficult months, and January-April were the most food secure months!

Interestingly enough, no village had resources to deal with food insecurity throughout the year.

2.4 STRATEGIES TO COPE WITH FOOD INSECURITY

2.4.1 District-wise findings

By far the most preferred coping strategy during the lean months for households in both Bageshwar (60%) and Chamoli (77%) is to buy food and other essential commodities on credit from a trader (Table 2.10).

Table 2.10: Household coping strategies

Coping Strategy	Bageshwar	Chamoli
Buy on credit from trader	60%	77%
Buy with cash*	31%	9%
Reduce quantity of meal for all	3%	4%
Reduce number of meals	1%	3%
Reduce quantity of meal for elderly women	1%	2%
Borrow to buy food from friends	2%	1%
Borrow to buy food from family member		3%
Reduce quantity of meal for adult women		2%
Reduce quantity of meal for elderly men	1%	
Reduce quantity of meal for boys		
Reduce quantity of meal for girls		
Borrow to buy food from money lender		
Borrow to buy food from SHG		
Borrow to buy food from employer		
Total	100%	100%

* From (1) selling their own produce (e.g., vegetables) (2) wage labour (3) earnings from sale of wood collected from nearby forest or (4) charity received from friends and relatives.

The next set of popular strategies is to get cash from selling vegetables, wood collected from forests, and their own labour or even from charity and use this to buy food. Few households reduce the quantity eaten in each meal by every member of the household, a very small proportion reduce the number of meals eaten per day, while a few others borrow money from family members and friends to buy food. A very small proportion of households reduce the quantity of food served to adult women, elderly women and elderly men.

2.4.2 Household-wise findings

The pattern is similar: buying on credit from traders is the preferred strategy to survive the lean months, for most households surveyed (Table 2.14). But the dis-aggregation of findings by WBR category shows that less than half the poorest households use this strategy, compared to 60-100% of WBR 2-5, signifying that credit-worthiness is a major factor in getting credit from the local shopkeeper. The difference is particularly striking in Chamoli.

Table 2.14: Coping strategies adopted during lean months

Strategy Code	Bageshwar					Chamoli				
	1	2	3	4	5	1	2	3	4	5
Buy on credit from trader	47%	61%	63%	61%	73%	48%	82%	94%	87%	100%
Buy with cash*	44%	25%	32%	28%	27%	28%	5%			
Reduce quantity of meal for all	9%	3%					9%		4%	

Strategy Code	Bageshwar					Chamoli				
	1	2	3	4	5	1	2	3	4	5
Reduce number of meals			2%	5%		1%	3%	6%	6%	
Borrow to buy food from family member			2%			12%				
Borrow to buy food from friends		5%		3%		4%				
Reduce quantity of meal for adult women	1%			2%		5%			2%	
Reduce quantity of meal for elderly women		5%				1%			2%	
Reduce quantity of meal for elderly men		2%	2%							
Reduce quantity of meal for boys										
Reduce quantity of meal for girls										
Borrow to buy food from money lender										
Borrow to buy food from SHG										
Borrow to buy food from employer										

* From (1) selling their own produce (e.g., vegetables) (2) wage labour (3) earnings from sale of wood collected from nearby forest or (4) charity received from friends and relatives.

It is largely these poorer families, denied food purchases on credit, who resort to various ways to get cash to buy food: they sell vegetables, wood collected from forests, and their labour or are lucky enough to receive some money as charity. A small proportion (9%) of poorest WBR1 households in both Chamoli and Bageshwar reduce the quantity eaten in each meal by every member of the household. Few households from WBR2, 3 and 4 reduce the number of meals eaten per day. Others borrow money from family members and friends to buy food. A small proportion of households from WBR1, WBR2 and WBR4 reduce the quantity of food served to adult women, elderly women and elderly men.

3. FACTORS AFFECTING FOOD SECURITY

3.1 INTRODUCTION

Food security is affected by a variety of factors including changes in population, the number of dependents within the household, agricultural production, access to forests, tastes and preferences and household incomes. This section analyzes findings from the surveyed villages on factors affecting food security.

3.1.1 Changes in population

Almost all villages reported an increase in the number of households, adult males, old people and children over the last 25 years and the last 10 years, but there are a few exceptions and the extent of change varied across factors and across villages (Table 3.1).

Table 3.1: Changes over time in households and population

District	Location	Households		Adult Males		Old People		Children	
		Compared to 25 years ago	Compared to 10 years ago	Compared to 25 years ago	Compared to 10 years ago	Compared to 25 years ago	Compared to 10 years ago	Compared to 25 years ago	Compared to 10 years ago
Bageshwar	All villages	173%	58%	131%	74%	159%	39%	110%	44%
	Top hills villages	141%	32%	138%	54%	86%	28%	107%	54%
	Mid hills villages	359%	169%	192%	184%	525%	106%	167%	34%
	Valley villages	85%	27%	52%	24%	12%	5%	62%	28%
Chamoli	All villages	137%	76%	119%	47%	4%	-10%	198%	91%
	Top hills villages	133%	70%	167%	68%	26%	-12%	201%	67%
	Mid hills villages	195%	48%	104%	31%	-47%	-37%	279%	135%
	Valley villages	64%	119%	90%	49%	50%	29%	88%	58%

While numbers of households and different segments of the population have generally grown more over the last 25 years than over the last 10 years, there are some important exceptions.

- **Number of households:** There are far more households now than 25 years ago. There are more households in mid-hills villages in Bageshwar (169% increase over the last 10 years), compared to top hills or mid hills, but in Chamoli, the largest increase is in valley villages (119% increase over the last 10 years), followed by top hills villages.
- **Pattern of household growth:** This is changing, with mid-hills villages in Chamoli having grown significantly over the last 25 years, but the growth has slowed down considerably in the last 10 years. Growth in valley villages, however, has spurted in the last 10 years. In Bageshwar, however, the pattern of high growth in mid-hills villages has been sustained.
- **Number of old people:** The number of old people in Chamoli in general, and in the top hills and mid-hills villages in particular, has decreased in the last 10 years (signified by the negative change in numbers over the last 10 years). The contrast is with Bageshwar, where there are many more old people now than 25 years ago (increase of 525%) but this rise has slowed down (change of only 106% in the last 10 years).
- **Number of adult males:** There is a strong rise in the number of adult males in the mid hills villages in Bageshwar (signified by the fact that most of the change over 25 years occurred in the last 10 years).

- **Number of children:** The increase is highest in mid-hills villages in Chamoli (135%) and higher in Chamoli overall than Bageshwar. In Bageshwar, however, the increase is highest in the top hills villages.

Overall, Bageshwar has seen the largest increases in population but Chamoli has the largest increase in the number of children borne. Therefore, population has generally grown in the sampled villages, putting a strain on food availability - unless matched by increases in agricultural productivity or access to forests or income (with which to buy food to feed the larger number of mouths).

3.1.2 Changes in biomass

All villages reported a decrease or no change in the area under civil soyam forests near the village, compared to 25 years ago (Table 3.2). But some villages in Bageshwar report a modest increase (6%) in the forest area over the last 10 years, while the situation appears to be the same in Chamoli (i.e., percentage change across both 25 years and 10 years are roughly the same).

Table 3.2: Changes over time in area under forests and under cultivation

District	Location	Area under civil soyam forests near village		Village area under cultivation	
		Compared to 25 years ago	Compared to 10 years ago	Compared to 25 years ago	Compared to 10 years ago
Bageshwar	All villages	-4%	6%	-8%	-13%
	Top hills villages	-7%	4%	10%	-1%
	Mid hills villages	0%	17%	-71%	-59%
	Valley villages	0%	0%	0%	0%
Chamoli	All villages	-14%	-11%	21%	14%
	Top hills villages	-9%	-9%	24%	14%
	Mid hills villages	-7%	-5%	-16%	-16%
	Valley villages	-6%	-6%	33%	33%

Overall, the area under cultivation has grown in villages surveyed in Chamoli but decreased in Bageshwar. Within these districts, cultivation has fallen sharply in mid-hills villages in Bageshwar, and fallen in mid-hills villages in Chamoli. Cultivation, however, has gone up by 33% in the last 10 years in valley villages in Chamoli, but remained static in valley villages in Bageshwar. Cultivation has also increased by 14% in top hills villages in Chamoli, but declined by 1% in top hills villages in Bageshwar, over the last 10 years.

Sampled villages in Bageshwar have the largest growth in adult population and decreases in cultivation and only a mild increase in the forest area surrounding them.

3.1.3 Changes in cultivation and consumption patterns

There has been a perceptible change in the varieties of crops grown and consumed by village households in the last 10-25 years. Crops consumed 25 years ago but no longer include traditional cereals (*ram daana*, *koni*, *makka*, *chaulai*, *maadira*), vegetables (onion, chilli), and oilseeds (*til*) but the pattern varied across villages (Table 3.3).

Table 3.3: Change in crop consumption

Districts	Villages	Village Location	Crops consumed 10 years ago but not now	Crops consumed 25 years ago but not now
Bageshwar	Kharktanta	Top Hill	Til, Maadira and Koni	Ram Dhaan
	Bauri	Top Hill	Chaulai, Chilli, Til and Onion	Koni and Onion
	Jalthakote	Top Hill	Til, Ram Dhaan and Chaulai	
	Dawari	Top Hill	Makka	Chaulai
	Harkote	Top Hill	Chaulai	Chena
	Dhokti	Top Hill		Dhaan and Ram Daan
	Kismilla	Mid Hill		Chaulai
	Ratghar	Mid Hill		
	Nargoli	Valley	Bhang	
	Bhaisori	Valley	Chaulai, Til	
Chamoli	Mundoli	Top Hill		Vaa, Koni, Chena, Mandua and Apple
	Mathkot	Top Hill		Chena
	Jhinhoni	Top Hill	Chena	
	Koteda	Mid Hill		Chena, Vaa, Bhangjeera and Chaulai
	Fali	Mid Hill	Chena and Chaulai	
	Batheda	Mid Hill		
	Budera	Mid Hill		Bhang
	Lausari	Valley	Chena, Chaulai, koni and Moong	
	Kumartoli	Valley		
	Tuneda	Valley		Bhangjeera, Koni, Kau Matar and Bajra

In addition, surveyed households also reported changes in consumption patterns: the majority of households reported a decrease in the consumption of traditional rice, traditional wheat, traditional cereals, pulses, meat, milk and ghee, and an increase in the consumption of vegetables and eggs (Table 3.4).³

Table 3.4: Percentage change in food consumption over the last 10 years

Food items	Change in consumption pattern	Bageshwar	Chamoli
Traditional Rice	Less	52%	55%
	Same	19%	18%
	More	28%	27%
Traditional Wheat	Less	55%	55%
	Same	13%	21%
	More	32%	24%
Traditional Cerels	Less	73%	82%
	Same	16%	0%
	More	12%	18%
Vegetables	Less	14%	5%
	Same	16%	15%
	More	70%	80%

³ The percentages refer to the proportion of households that reported that its consumption of that particular food item 10 years ago was less, same or more than current consumption.

Food items	Change in consumption pattern	Bageshwar	Chamoli
Pulses	Less	67%	59%
	Same	22%	9%
	More	11%	31%
Meat (Chicken)	Less	66%	71%
	Same	21%	14%
	More	14%	14%
Meat (Pig)	Less	93%	86%
	Same	7%	14%
	More	0%	0%
Meat (Goat)	Less	56%	45%
	Same	12%	30%
	More	32%	25%
Milk (Buffalo)	Less	71%	89%
	Same	11%	10%
	More	18%	2%
Milk (Cow)	Less	69%	85%
	Same	14%	12%
	More	17%	4%
Eggs	Less	5%	6%
	Same	29%	3%
	More	66%	91%
Ghee	Less	73%	85%
	Same	11%	12%
	More	16%	3%

The decrease in traditional cereals is understandable in terms of the recent preference for rice and wheat. Similarly, the decrease in the consumption of meat, milk and ghee is understandable in the context of declining livestock numbers (with decreasing fodder and water availability). The increase in eggs and vegetables may partly be a deliberate offset of the decrease in other animal protein, and partly the increased market production. The decrease in pulses, however, is less easily understandable but is possibly linked to a general decline in the production of pulses.

While this pattern was generally replicated in villages across different elevations (i.e., top hills, mid-hills and valley villages), the maximum decreases in consumption were reported from top hills villages.

3.1.4 Changes in nutrition, quantity and taste

A large majority of surveyed households stated that the food consumed 10 years ago was more nutritious, more in quantity and tastier (Table 3.5).

Table 3.5: Change in quantity and taste of food compared to 10 years ago

	Bageshwar	Chamoli
Food consumed now is more nutritious	No (92%)	No (97%)
More quantity was eaten in the past	Yes (94%)	Yes (92%)
Food eaten in the past was more tasty	Yes (85%)	Yes (73%)

3.2 HOUSEHOLD EXPENDITURE ON FOOD

Even if agricultural production has not been able to keep pace with the population growth, increases in household incomes supplement food production with purchased food. While it is difficult to get accurate estimates of changes in household incomes, the proportion of income spent on various items of expenditure gives an insight into household spending on food security.

3.2.1 Current Monthly Expense of Households

Among the surveyed households in both Bageshwar and Chamoli poorest (WBR 1) households spends the largest proportion of their income (62%) on food (Table 3.6). This proportion, expectedly, decreases as one moves from WBR 1 to WBR 5 households.

Table 3.6: Pattern of current monthly expenditure (by WBR group)

Items	Proportion of current expenditure for household of				
	WBR 1	WBR 2	WBR 3	WBR 4	WBR 5
Food (General)	62%	51%	49%	50%	47%
Food (Animal products)*	16%	17%	18%	17%	18%
Health	7%	7%	7%	7%	5%
Education	7%	10%	11%	10%	15%
Festivals	3%	4%	5%	5%	3%
Other**	6%	11%	10%	12%	13%
TOTAL	100%	100%	100%	100%	100%

*Ghee, milk, meat, eggs

** These include LPG, liquor, clothes, marriage expenses and charitable donations

Three other points of interest are that (1) the combined expenditure on food varies from 88% (WBR 1) to 65% (WBR 5); (2) all households, across WBR groups, spend roughly the same proportion on animal product food, health and festivals; and (3) the two important exceptions where WBR 1 households spend around half the proportion spent by WBR 5 households are education and 'other expenditures' (which basically comprise LPG, liquor, clothes, marriages and donations).

Across districts, households in Chamoli generally spend a larger proportion of monthly income on food and education than those in Bageshwar, but those in Bageshwar spend a higher proportion on animal products (Table 3.7).

Table 3.7: Pattern of current monthly expenditure (by WBR group and district)

	Bageshwar					Chamoli				
	WBR 1	WBR 2	WBR 3	WBR 4	WBR 5	WBR 1	WBR 2	WBR 3	WBR 4	WBR 5
Food (General)	53%	51%	48%	46%	44%	70%	51%	50%	53%	49%
Food (Animal products)*	20%	18%	20%	22%	20%	11%	17%	15%	14%	16%
Health	7%	6%	7%	9%	6%	7%	7%	7%	6%	5%
Education	8%	8%	9%	8%	13%	6%	11%	12%	12%	16%
Festivals	4%	3%	5%	4%	3%	2%	4%	5%	5%	3%
Other**	7%	11%	11%	14%	14%	5%	11%	10%	10%	11%
TOTAL	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

*Ghee, milk, meat, eggs.

** These include LPG, liquor, clothes, marriage expenses and charitable donations

Disaggregating the monthly household expenditure shows that most of food (general) expenditure is on cereals (followed distantly by vegetables and edible oils), while most expenditure on food (animal products) is for milk and ghee, and the largest component of 'other' expenditure is on marriages and liquor (Table 3.9).

Table 3.9: Percentage of current expenses of household on various food and related items

Items	Sub Items	Percentage Current expense of HH (%)	
		Bageshwar	Chamoli
Food (General)	Cereals	53%	57%
	Vegetables	14%	14%
	Pulses	11%	12%
	Fruits	5%	7%
	Edible Oil	14%	9%
	TOTAL FOOD (General)	100%	100%
Food (Animal Products)	Milk	51%	38%
	Ghee	24%	22%
	Eggs	7%	16%
	Meat	19%	14%
	TOTAL FOOD (Animal Products)	100%	100%
Other Expenses	Clothes	60%	32%
	Marriages	21%	35%
	LPG	3%	8%
	Liquor	11%	9%
	Donations	3%	10%
	TOTAL OTHER EXPENSES	100%	100%

The picture is similar across WBR groups but for the fact that while expenditure proportions is expected to decline from WBR 1 to WBR 5 - and does for cereal - it goes up for vegetables, milk and liquor, signifying that larger absolute amounts are being spent on these items by better-off households (Table 3.10).

Table 3.10: Expenses incurred on various food and related items

Items		Average current expenditure of households of				
		WBR 1	WBR 2	WBR 3	WBR 4	WBR 5
Food (General)	Cereals	61%	57%	51%	54%	51%
	Vegetables	12%	14%	14%	15%	16%
	Pulses	9%	12%	12%	13%	13%
	Fruits	3%	5%	8%	7%	7%
	Edible Oil	10%	12%	13%	12%	13%
	TOTAL FOOD (General)	100%	100%	100%	100%	100%
Food (Animal Products)	Milk	38%	45%	44%	46%	53%
	Ghee	22%	19%	24%	26%	22%
	Eggs	9%	12%	13%	13%	10%
	Meat	16%	19%	16%	16%	15%
	TOTAL FOOD (Animal Products)	100%	100%	100%	100%	100%
Other Expenses	Marriages	26%	29%	28%	27%	29%
	Liquor	3%	13%	9%	12%	9%

Items		Average current expenditure of households of				
		WBR 1	WBR 2	WBR 3	WBR 4	WBR 5
	LPG	2%	4%	5%	7%	8%
	Clothes	5%	6%	7%	7%	8%
	Donations	5%	6%	7%	7%	8%
	TOTAL OTHER EXPENSES	100%	100%	100%	100%	100%

3.2.2 Household expenditure and food security

Combined with the findings on decreased consumption of traditional cereals, milk and ghee, the relatively high proportion of monthly household expenditure on buying cereals, milk and ghee suggests a shift from village production to satisfy demand to market purchases with cash income from non-farm activities. In other words, villagers are aware of the importance of these items in their daily diet - and are spending money to buy these when they cannot get them through own production.

Assuming that households have a tight budget constraint (i.e., cannot increase expenditure at will), the fact that around half the households surveyed are food insecure by nutritional norms implies that food security cannot be obtained by asking households to increase expenditure on food. Improvement in food security will have to come either by increasing (own) food production or by increasing incomes with which they can purchase food.

The Aajeevika Project aims to do both, through interventions to improve farm and off-farm production and incomes. The issue, however, is whether this increase in agricultural production and household incomes will result in more market sales and non-food expenditure or in greater household food consumption to reduce food insecurity. This issue is addressed in the next section.

4. FUTURE TRENDS IN FOOD SECURITY

4.1 INTRODUCTION

Two issues were explored: Potential responses to changes in income and potential responses to changes in agricultural production.

4.2 CHANGE IN HOUSEHOLD INCOME

4.2.1 District-wise findings

Surveyed households were asked hypothetical questions about the impact on household food expenditures of possible increases and decreases in household income. Specifically, they were asked (1) how much they would increase monthly household expenditure on food if household monthly income increased by 10% and (2) how much they would decrease monthly household expenditure on food if household monthly income decreased by 10%.

In answer to the first question, surveyed households in Bageshwar stated that, on average, they would spend 36.7% of the increased income (i.e., 36.7% of Rs. 10 or Rs. 3.67) on food (Table 4.1). Households in Chamoli, however, were willing to spend 64% of the additional income on food.

Table 4.1: Stated response of household food expenditure to changes in income

Suppose if your household monthly income is Rs. 100 and it...	Average part of changed income spent on food?			
	Bageshwar		Chamoli	
	Amount (Rs.)	Proportion (%)	Amount (Rs.)	Proportion (%)
Increased by 10% (and became Rs. 110)	3.67	+36.7%	6.40	+64%
Decreased by 10% (and became Rs. 90)	-1.74	-17.4%	-2.33	-23.3%

Similarly, in answer to the second question, households in Bageshwar stated that on average, they would decrease food expenditure by 17.4% of the amount by which their income decreased (i.e., 17.4% of Rs. 10 or Rs. 1.74). Households in Chamoli, however, said that they would decrease food expenditure by 23%.

Two points are of interest. First, villagers were ready to spend 36-64% of increased income (of Rs. 10) on food, but would cut food expenditure by only 17-23% of any decrease in their income (by Rs. 10). This suggests that households are already at subsistence as far as food is concerned, and cannot afford to cut food expenditure by much without threatening food security (including nutrition). But there is scope for improving food consumption - and thereby food security including nutrition.

Second, villagers in Chamoli were willing to spend more of increased income on food, and reduce a larger proportion of food expenditure out of decreased income. This suggests that the 'income elasticity of food' is higher in Chamoli than in Bageshwar - which in turn suggests that households in Chamoli are better off than in Bageshwar. A fall in income will lead to larger decreases in consumption, suggesting that current consumption is above subsistence, in relation to Bageshwar. This further suggests that a rise in income will lead to more expenditure on non-essential food items (such as fast foods and packaged foods).

4.2.2 Household-wise findings

The responses across WBR groups showed that potential increase in food expenditure, given an increase in income, was highest for WBR 1 and lowest for WBR 5 (Table 4.2).

Table 4.2: Stated response of household food expenditure to changes in income (by WBR)

Suppose if your household monthly income is Rs. 100 and it...	Average proportion of changed income spent on food?				
	WBR1	WBR2	WBR3	WBR4	WBR5
Increased by 10% (and became Rs. 110)	67%	62%	53%	48%	44%
Decreased by 10% (and became Rs. 90)	-12%	-16%	-23%	-25%	-26%

Also, that the potential decrease in food expenditure was lowest for WBR 1 and highest for WBR 5. Both of these are similar to the previous findings and suggest that 'income elasticity of food' is low for poor households (WBR 1) and increases for better off households (WBR 5). Thus, increases in income will result in a greater proportion of it being spent on food by poorer households in comparison with better off households. But a decrease in income will see a large cut in food expenditure by better off households than by poorer households - as consumption is already low and at subsistence.

4.2.3 Village-wise findings

The findings across village locations suggest that valley villages are the worst off and mid-hills villages the best off in Bageshwar - given that decreases in income will lead to lower reductions in valley and top hill villages (Table 4.3). Similarly, in Chamoli, mid-hill villages are the best off and valley villages are the worst off in terms of food security.

Table 4.3: Stated response of household food expenditure to changes in income (by elevation)

Suppose if your household monthly income is Rs. 100 and it...	Average proportion of changed income spent on food?					
	Bageshwar			Chamoli		
	Top hill Villages	Mid Hill Villages	Valley Villages	Top hill Villages	Mid Hill Villages	Valley Villages
Increased by 10% (and became Rs. 110)	29%	44%	52%	63%	70%	57%
Decreased by 10% (and became Rs. 90)	-16%	-24%	-16%	-23%	-27%	-19%

4.3 CHANGES IN AGRICULTURAL PRODUCTION

A similar hypothetical question was asked regarding changes in household food consumption given changes in agricultural production. Specifically, they were asked (1) if their wheat production increased by 10 bags, how much would they consume and how much would they sell; and (2) if their wheat production decreased by 10 bags, how much would be consumed at home and how much would be sold on the market. The responses suggested that much more would be consumed from increased production, but if production decreased, the corresponding decrease in household consumption would be much less (Table 4.4)

Table 4.4: Stated response of household food expenditure to changes in production

	If household wheat production increases by 10 bags ...	If household wheat production decreases by 10 bags ...
	% change in consumption?	Change in marketed amount?
Bageshwar	25%	No sale (99% of respondents)
Top hills villages	25%	No sale (98% of respondents)
Mid-hills villages	23%	No sale (100% of respondents)

	If household wheat production increases by 10 bags ...	If household wheat production decreases by 10 bags ...
	% change in consumption?	Change in marketed amount?
Valley villages	24%	No sale (100% of respondents)
Chamoli	87%	No sale (83% of respondents); less (11%)
Top hills villages	91%	No sale (90% of respondents); less (8%)
Mid-hills villages	83%	No sale (78% of respondents); less (15%)
Valley villages	89%	No sale (83%); less (10%)

The same question aggregated across WBR groups suggested that there are strong differences between WBR 5, but the difference was not so strong across other WBR categories.

Table 4.2: Prediction of change in production from agricultural produce with respect to WBR

Other things remain same if	Rank 1	Rank 2	Rank 3	Rank 4	Rank 5
If wheat production is increases by 10 bags, % change in household consumption	60%	55%	53%	62%	48%

4.4 OVERVIEW

To answer the main question, the study findings show that if households' own agricultural production increases, they will use more of the output for self-consumption in poorer districts (such as Bageshwar), while more may be put on the market in a better off district like Chamoli. However, if additional income is given to households, they are likely to spend a larger proportion of this increased income on food, in both Chamoli and Bageshwar. However, a reduction in income will not lead to any significant decreases in expenditure on food.

5. MISCELLANEOUS OBSERVATIONS

Project Outreach: A significant impact of the Aajeevika project has been that certain remote villages which had hitherto been ignored by government and non governmental organizations have now been accessed by project staff for the first time in many years, giving a huge boost to information access in these villages

Sunday Markets: The Sunday Market has been a significant innovation of the project, which has not only contributed to an increase in the production of vegetables, but also enabled many women to become economically independent for the first time by providing them with a stable source of livelihood.

Traditional methods: Most villages in the surveyed districts used to practice the *Baarah Anaaj* (twelve-crop) system in which 12 crops were grown together so that if one crop failed, the others would offset this loss. This practice has however, now been replaced with mono culture wherein the same crop is grown in the entire field, with the result that the probability of the entire crop being lost to pests or disease are that much higher.

6. RECOMMENDATIONS

Based on the findings of the study, there are some suggestions for the Project.

1. There is a urgent need for awareness generation through GPs and then SHGs, to persuade households to supplement local diets with more pulses, vegetables and fruits
2. Food security is under threat, with rising dependent populations, stagnant or reducing forest areas and stagnant or slowly-increasing cultivated areas, and measures are urgently needed to preserve and increase forest areas and cultivated land in villages. Even if these are not done directly through the project, senior project officers at state and district level need to lobby and work with other departments (such as Forests and Agriculture) to ensure effective implementation of existing government schemes in project villages.
3. The project needs to strengthen efforts to improve agricultural productivity and production, especially of pulses, vegetables and fruits, as this will lead to improvements in household nutrition before market sale is considered in most villages.
4. The project also needs to facilitate urgent steps to improve milk marketing and provisions for fodder and water for livestock, in an effort to help arrest the decline in milk and ghee production and consumption.
5. Since the majority of the households surveyed reported buying food on credit during food scarce months, SHGs could be motivated to provide cheaper credit to members during these food scarce months.
6. The project could also consider lobbying with state and district governments to ensure that NREGA work is taken up during the food scarcity months of May-June-July-August and February. This will help provide cash income to poor households to purchase food when stocks of own production are low.

ANNEXURE 1: FIELD FORMATS USED IN THE STUDY

1. VILLAGE-LEVEL FOCUS GROUP DISCUSSION

- Make sure that there are at least 10 members in the FGD.
- Count during the middle of the FGD, after latecomers have joined and before people start to leave!
- Circle the correct answer, wherever relevant; don't cut or use tick marks!
- Fill using CAPITAL letters

Total Present		Start time		a.m.	p.m.
Female		Project Year (I/II/III)		Top Hill	Mid Hill Valley
Male		Name of the NGO			

1.1 General village details

1.	Name of district				
2.	Name of block				
3.	Name of village				
4.	Field Investigator 1				
5.	Field Investigator 2				
6.	Dates of survey	Day 1		Day 2	

1.2 Village demographic details

	Now (ordinal score:100)	% change from NOW		Reason for score
		10 years ago (~2001)	20 years ago (~1991)	
Households	100			
Old people	100			
Children	100			
Accessible forest area ⁴	100			
Cultivated area ⁵	100			
Adult males	100			

Note: If forest area in the past was *double* the current area, it would be scored at 200. If population 20 years was half the current level, it would be scored at 50.

1.3 Current Village Cultivation Details

Crops	If Now = 100, what score would you give the situation		Is this crop also being bought from the market today?		Reason for score
	10 years ago (~2001)	20 years ago (~1991)			
Kharif (May to Sep)					
1.Rice			YES	NO	
2.Vegetables			YES	NO	
3.Dals			YES	NO	
4.Oilseeds			YES	NO	
5.			YES	NO	
6.			YES	NO	

⁴ Available to the villagers for grass, grazing, NTFP and timber.

⁵ Available during the *kharif* cultivation season.

Crops	If Now = 100, what score would you give the situation		Is this crop also being bought from the market today?		Reason for score
	10 years ago (~2001)	20 years ago (~1991)			
7.			YES	NO	
8.			YES	NO	
Rabi (November to April)					
1. Wheat			YES	NO	
2. Dals			YES	NO	
3. Vegetables			YES	NO	
4. Oilseeds			YES	NO	
5.			YES	NO	
Zaid (Aug To Oct)					
1.			YES	NO	
2.			YES	NO	
3.			YES	NO	
4.			YES	NO	
5.			YES	NO	

1.4 Food crops no longer cultivated in the village

	Crop	When was it last cultivated?		Is this crop being bought from the market today?	Reason for score
		Within last 10 years	More than 10 years ago		
1					
2					
3					
4					
5					

Note: Mention all food items (e.g., cereals, fruits, vegetables, oilseeds, milk products, etc.) that are no longer cultivated in the village, but may be purchased from the market still. Also, mention even varieties of crops (e.g., wheat, rice and millets) that are no longer cultivated today.

End time		a.m.	p.m.
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2. HOUSEHOLD INTERVIEW

Project year (I/II/III)		Well Being Ranking (category)	
Name of the NGO		Village	
Start time		a.m. p.m.	

2.1 General household details

1.	Name of head of the household				
2.	Father's name				
3.	Number of adults (> 15 years)	Female		Male	
4.	Number of children (<15 years)	Female		Male	
5.	Area owned				<i>Nalis</i>
6.	Other area operated (rent or gift)				<i>Nalis</i>
7.	Area cultivated in Kharif 2007				<i>Nalis</i>
8.	Area cultivated in Rabi 2007				<i>Nalis</i>

2.2 Cultivation details (kharif 2007)(May to Sep)

Crop Name	Area (<i>Nalis</i>)	Output		Quantity sold		
		Bags (Bori)	Kgs/bag	Bags (Bori)	Kgs/bag	Price/bag
1.						
2.						
3.						
4.						
5.						
Comments						
1.						
2.						
3.						

2.3 Cultivation details (rabi 2007) (November to April)

Crop Name	Area (<i>Nalis</i>)	Output		Quantity sold		
		Bags (Bori)	Kgs/bag	Bags (Bori)	Kgs/bag	Price/bag
1.						
2.						
3.						
4.						
5.						
Comments						
1.						
2.						
3.						

2.4 Cultivation details (zaid 2007)

Crop Name	Area (Nalis)	Output		Quantity sold		
		Bags (Bori)	Kgs/bag	Bags (Bori)	Kgs/bag	Price/bag
1.						
2.						
3.						
4.						
5.						
Comments						
1.						
2.						
3.						

2.5 Food secure and food insecure months

Month	Does your family have own resources for all to eat enough for the day?	If NO, specify what coping strategy is followed (use codes given below)	Explanation
1. January	YES/NO		
2. February	YES/NO		
3. March	YES/NO		
4. April	YES/NO		
5. May	YES/NO		
6. June	YES/NO		
7. July	YES/NO		
8. August	YES/NO		
9. September	YES/NO		
10. October	YES/NO		
11. November	YES/NO		
12. December	YES/NO		

Codes for coping strategy

1. Reduce number of meals
2. Reduce quantity of meals for all
3. Reduce quantity of meals for some (specify who gets less, using codes given below):
 - a. Boys
 - b. Girls
 - c. Elderly women
 - d. Elderly men
 - e. Adult women
4. Buy on credit from trader
5. Borrow to buy food (specify from whom, using codes given below)
 - a. From money lender
 - b. From family members
 - c. From friends
 - d. From SHG
 - e. From employer
6. Any other (specify - and add more if necessary)
 - a. _____
 - b. _____
 - c. _____
 - d. _____
 - e. _____

2.6 Current household consumption details

		Monthly quantity consumed			
		Unit (e.g., kgs, litres)	Food secure months	Moderately food insecure months	Severely food insecure months
CEREALS					
1	Rice				
2	Wheat				
3	Milletts (specify below)				
4					
5					
6					
7					
PULSES					
VEGETABLES					
16	Potato				
17	Onion				
18	Tomato				
19	Others				
EDIBLE OILS					
31	Mustard oil				
32	Dalda Ghee				
33	Refined oil				
34	Others				
ANIMAL PRODUCTS					
36	Milk				
37	Eggs				
38	Meat				
39	Ghee				
NAME OF MONTHS WHEN THIS QUANTITY WAS CONSUMED IN THE LAST YEAR (April 2007 - March 2008)		1.			
		2.			
		3.			
		4.			
		5.			
		6.			
		7.			
		8.			
		9.			
		10.			
		11.			
		12.			

2.7 Changes in household consumption patterns over time

	Food item	Current consumption compared to 10 years ago (More/Less/Same)	Reason for change
1	Traditional rice (specify)		
2	Traditional wheat (specify)		
3	Milletts (specify)		
4	Vegetables (specify)		
5	Pulses (specify)		
6	Meat (chicken)		
	Meat (buffalo)		
	Meat (goat)		
7	Milk (buffalo)		
	Milk (cow)		
8	Eggs		
9	Ghee		

2.8 What other changes in food habits have you noticed?

1	Food consumed now is more nutritious than what was eaten in the past	YES	NO
2	More quantity was eaten in the past	YES	NO
3	Food eaten in the past was more tasty	YES	NO
4		YES	NO
5		YES	NO

2.9 Current household expenditure (in the last year: April 2007 - March 2008)

Note: Ask the household to give a percentage breakup of monthly expenditure - OR, how they would distribute Rs. 100 across different monthly expenditures.

	Household expenditure head	Amount spent (Rs.)	Per? (Month, Year, week, etc.)
I	FOOD		
	CEREALS		
	PULSES		
	VEGETABLES		

	Household expenditure head	Amount spent (Rs.)	Per? (Month, Year, week, etc.)
	EDIBLE OILS		
	ANIMAL PRODUCTS		
II	HEALTH		
III	EDUCATION		
IV	FESTIVALS		
V	MISCELLANEOUS		
1	LPG		
2	Liquor /Smoking		
3	Clothes		
4	Marriage functions		
5	Donations		
6	Other (Specify)		

2.10 Potential changes in household food consumption

	All other things remaining the same, ...	Unit	Amount
1	If your household annual income is Rs. 100 and it increased by Rs. 10%, how much of this would you spend on food for the family?	Rs.	
2	If your household annual income is Rs. 100 and it decreased by 10% by how much would you decrease your food consumption?	Rs.	
3	If your wheat production is 100 bags and it increased by 10 bags, how much of this would you use for home consumption?	bags	
4	If your wheat production is 100 bags and it decreased by 10 bags, would you sell a larger or smaller proportion of your wheat in the market?		Smaller Larger Will not sell in the market
Comments: 1. 2. 3.			

End time		a.m.	p.m.
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