

introduction

Background: Farmland in central Tibet
(Gongga County)

- *Nyima Tashi*

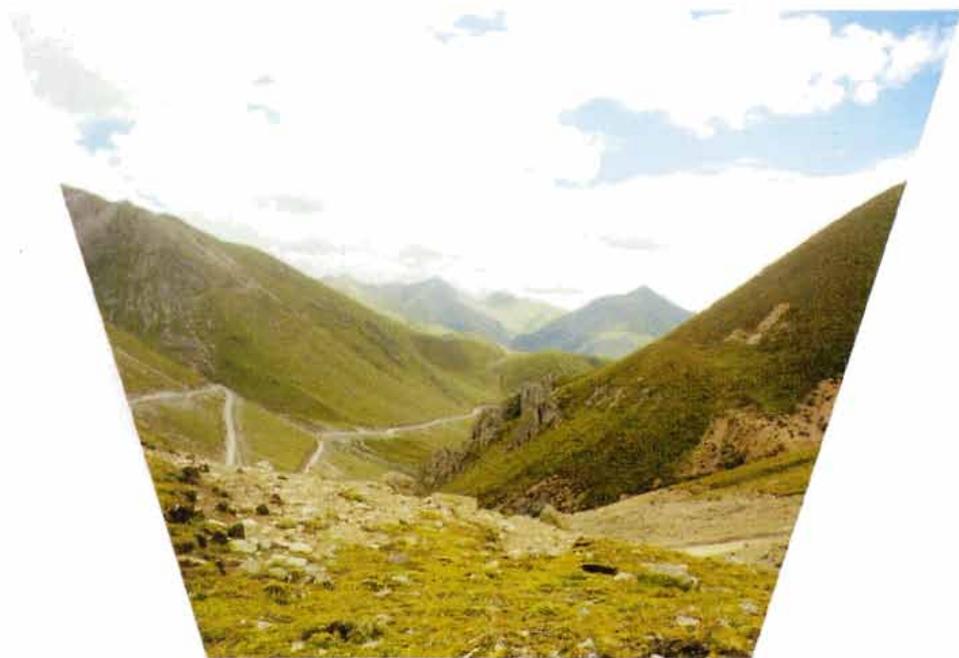
Top Inset: Rainbow over village

- *Nyima Tashi*

Bottom inset: Traditional suspended bridge and
modern motorcycle in

Dangxiong County at 4,200 masl

- *Nyima Tashi*



Road on the roof top of the world - Nyima Tashi

Chapter 1

Introduction

Tibet Autonomous Region (TAR; subsequently referred to as Tibet) has been known to the world because of its high altitude, spectacular landscape, and mysterious culture and history. It is one of the few areas where a yak-farming system has been practised, and it is the only region where barley production is the predominant agricultural sector. These unique food production systems and way of ensuring food security are interesting but relatively unexplored and unknown to the rest of the world.

Concept and Definitions of Food Security Used

As a result of the world food crisis of the early 1970s and the World Food Conference in 1974, the concept of food security was highlighted, and emphasis was placed on maintaining the stability of supplies to ensure the availability of food in the event of widespread crop failure, and particularly to be able to sustain levels of consumption in the most vulnerable countries (FAO 1996).

Various studies undertaken during the late 1970s recognised that the attainment of food security depends on the growth of food production, particularly in the low-income food-deficit countries (LIFDCs). In 1983, the FAO adopted the following reconceptualisation of food security: "The ultimate objective of world food security should be to ensure that all people at all times have both physical and economic access to the basic food they need."

In 1992, the International Conference on Nutrition (ICN) defined food security as: "all people at all times [having] access to safe and nutritious food to maintain a healthy and active life". These definitions have broadened the concept of food security to include not only the food supply consequent to physical and economic conditions, but also the economic and physical accessibility to food, and the safety and nutritional value of the food intake as well. Moreover, they also concern the natural resources and the environment that might be affected by efforts to obtain food security. Therefore, the FAO and UNDP concluded that food security should be attained "without compromising the productive capacity of natural resources, the integrity of biological systems, or environmental quality". This idea of food security aims to ensure production of adequate food supplies, to improve the accessibility to the available food supplies where they are needed, and to maximise the stability of the flow of food supplies, all on the basis of maintaining and promoting the sustainability of the environment and natural resources.

Assessment of Scenarios of Food Security

Food security is a very dynamic subject, and has become related to economics and sociology by its use of methodologies and tools. The concept of food security presented here helps to clarify the reasons behind food insecurity, but it remains difficult to know where and

when food shortage or hunger may occur, as it can be regional, transitory, seasonal, or chronic. For instance, it is difficult to predict where and when serious transitory or seasonal food insecurity may occur.

To achieve sustainable food security has been one of the main goals of overall agricultural development in Tibet for the past few decades. However, many aspects of ensuring food security for Tibet remain to be studied. These include the overall potential food production, the zonal variations of food production, the changing trends of food production and consumption, the kinds of food production systems now in place, changes in local food consumption, how and where food demand is changing, the opportunities for ensuring food security for Tibet, and so on. These issues are the fundamental basis of a better understanding of food security. Particularly, where and when food insecurity in Tibet may occur has remained poorly understood. Assessments of scenarios of food security in spatial and temporal dimensions are valuable for reorienting policy-makers and planners to ensure food security. Knowing the status and changing scenarios of food production and consumption over time would allow us to learn from the past and to make better decisions for the future. Understanding the scenarios of regional or zonal variation of food demand and supply, where there is surplus and where there is deficit, would help to better redistribute food, and so on. Therefore, this book attempts to assess different kinds of scenarios of food security for Tibet along both spatial and temporal dimensions.

Food Supply and Demand Analysis

The supply and demand of food are dominant but general factors that determine food security status.

Food production

The supply of food and its stability are mainly determined by the total amount of food available, which in turn depends on food production, food reserves, food trade, the capability of importing food, the market

price, and the pricing system. Food production is determined by land availability, water resources, technology, input, per unit productivity of the land, and so on. Food reserves are affected by the policy of food grain procurement, price, and the capacity to store food. Moreover, the effective supplies of food depend upon the spatial and temporal availability of food. In the spatial dimension, distribution of food production and food production potential are important to produce adequate food for an area. In the temporal dimension, food production changes and fluctuation of food supply affect food security status. Food trade is complex and many factors affect it.

Geographically, Tibet is characterised by mountainous topography and a rainfed water supply, which form a very vulnerable and fragile ecosystem in which food security depends on opportunities for production and exchange, which are few (Jodha 1995). Tibet is also isolated from the outside world by both physical inaccessibility and socioeconomic marginality. Physical remoteness is exacerbated by the lack of roads. However, even though some roads exist, the long distance contributes to remoteness. In such circumstances, to produce enough food within the region and to minimise the dependency of acquiring food through exchange are the essence of food security. On the other hand, biophysical diversity is also a distinct characteristic of Tibet, which provides diverse possibilities for producing many food items and reduces the dependence on food exchange. Tibet also possesses a comparative advantage or niche in its potential to produce unique resources such as herbs and solar energy.

Thus, most of the research reported here focuses on food production and its spatial distribution. Changing trends, potential productivity, zonal variation of food production, and opportunities for increasing food production were studied. Food production systems/zones were delineated through using Geographic Information Systems (GIS).

Demand analysis

The effective demand for food and its stability are determined by population and its growth, purchasing power (which depends on per capita income), price of food, food supply, culture, and information about the market. Per capita income in turn is affected by numerous factors such as natural resource availability, pricing policy, population group, GDP of a nation, and so on. These also have spatial and temporal dimensions.

Rapid growth of income and changes in population distribution, such as urbanisation and industrialisation, often contribute significantly to rapid growth of per capita food intake, but have not done so in Tibet. Growth of income often results in changing food consumption habits, influencing choices for more luxurious food such as livestock products that will later be reflected in the demand for food grain. Migrations of rural population into urban areas may also result in changes in food consumption habits that increase demand for particular foods. Tibet, however, has not yet reached a level at which increases in income lead to significantly increased demand for food. Population growth, on the other hand, has been the predominant factor accounting for increased food demand in Tibet for the past few decades.

Tibet's food demand was analysed by considering the population growth and its zonal variation as major factors, followed by changing trends of food preferences in the urban and rural population, income elasticity's relationship to food consumption, and zonal variation of food demand.

The Need for the Study

For the last 40 years, local government has made great efforts to make Tibet food secure. Although progress has been made in achieving food self-sufficiency and providing adequate food to the highlanders of Tibet, new issues and challenges have emerged due to rapid population growth, a poverty-stricken population, poor agricultural education,

limitations of farm land, low productivity of the land, widespread overgrazing and degradation of grassland, poor farming infrastructure, lack of appropriate technologies and related farmer usable materials, poor capabilities in agro-science and technological development and dissemination to farmers, and insufficient capital input for agricultural development. In addition, with the development of the market economy, both the government and consumers face increased food prices and pressure from a limited financial capacity. Since 1994, there has been major improvement in food supply and availability in Tibet. In addition, some studies on the population-carrying capacity of the land showed that there was potentially productive cropland in central Tibet (Liu Yanhua 1991). Other studies, however, indicated that there was lack of food resources and that with its growing population, Tibet would face food shortages and have to import considerable amounts of food grain from other parts of China. (Zhang Junliang 1994).

However, a systematic study of food security in Tibet has not been carried out previously, although there have been some analyses of the status and characteristics of food consumption and production (Hu Songjie 1995; Liu Yanhua 1991; Sun Yong 1991; Zhang Junliang 1994; Xiao Huaiyuan 1994; Yang Gaihe 1995). Many of these studies also have indicated that Tibet has to import considerable amounts of subsidised food grain from other parts of China. In addition, with the development of the market economy, both the government and consumers face increased food prices and pressure from their limited financial capacity. Therefore, since 1994 the Tibetan government has adopted a policy of food self-sufficiency. Little is known, however, about the actual situation of food production and what the food production systems are. The changing trends of food supply and demand, both spatial and temporal; the potential for food production; and the scope for making Tibet food secure have not been studied. Many areas therefore remain to be understood

properly. Trends of changes in food production and consumption need to be understood properly. With this information, agricultural policy and development strategy can be geared towards making Tibet food secure.

This publication aims 1) to provide a general introduction to Tibet (Chapters 1 and 2); 2) to study the state of access to food by the local population (Chapter 3) and identify

different food production systems (Chapter 4); to understand changes in food production and consumption both temporally and spatially (Chapters 5, 6, 7, 8); to examine the potential of various food-production systems (farming systems); to understand potential food production (Chapter 9); and to make recommendations for agricultural policy and technical measures to make Tibet food secure in the future (Chapter 10).