Chapter 14
Risk Management in Agriculture:
Production and Technical Risk Management

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ABSTRACT

Risk has always been part of the business of agriculture. It's an industry built on the unpredictable forces of nature. What looks like a promising crop or herd can suddenly fall victim to the weather, insects or disease. Farmers are continually developing new ways to manage risk, from the use of hardier and higher yielding crop varieties and animal breeds to the application of new technologies on the farm to innovative marketing strategies. Smart agricultural policy has also evolved toward risk management programming that helps farmers deal with short-term income fluctuations as a result of risks largely outside their control. But the risks in agriculture today are greater and more complicated than ever before. International competition is fierce. Technological improvements are increasing world production and driving down real commodity prices. Public demand for higher food safety standards and better environmental practices requires new investments in the food system. Advances in science and technology are raising moral and ethical questions about the way food can and should be produced. At the same time, Smart agriculture itself has never been more diverse, ranging from specialty crops planted in small plots to grain farms covering thousands of hectares. In between being livestock operations of all sizes, greenhouses, organic farms and a growing number of agricultural businesses catering to unique consumer demands? It's an environment that is demanding new approaches to how business is conducted on the farm and consequently, how governments conduct agricultural policy.

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INTRODUCTION

Farming is risky. Farmers live with risk and make decisions every day that affect their farming operations. Many of the factors that affect the decisions that farmers make cannot be predicted with 100 percent accuracy: weather conditions change; prices at the time of harvest could drop; hired labor may not be available at peak times; machinery and equipment could break down when most needed; draught animals might die; and government policy can change overnight. All of these changes are examples of the risks that farmers face in managing their farm as a business. All of these risks affect their farm profitability.

While farmers have always faced risk, farming has over the years, as a result of market liberalization and globalization, become increasingly risky. Small holder farmers have become especially vulnerable. A casual approach to farming, even if it is for household food consumption, is no longer viable. Farmers need to acquire more professional skills, not only in basic production, but also in farm business management. Among these are risk management skills.

Skillful farmers and other business people generally do not become involved in risky situations unless there is a chance of making money. Higher profits are usually linked with higher risks. These risky but potentially profitable situations need to be managed as carefully as possible. Good risk management involves anticipating potential problems and planning to reduce their detrimental effects. Simply reacting to unfavorable events after they occur is not good risk management.

Understanding risk will help extension workers to advise farmers on how to assess risk and to choose risk management strategies.

BACKGROUND

Agricultural systems, especially those of least developed countries face new challenges: to produce more to feed a growing population, especially in sub-Saharan Africa, to adapt to climate change and its variability but also to mitigate its contribution to emissions of greenhouse gases (the three pillars of Climate Smart Agriculture). These issues lead to a necessary adaptation for all agricultural systems whose diversity is proven. Among the pathways that can lead to such a transition, a better mobilization of ecological processes is the focus of research and development activities. This is primarily to increase production and improve its stability despite other changes, allowing farmers to improve their nutrition and generate income. It is also necessary to increase the other performances of agricultural systems, in particular by reducing their negative environmental externalities and increase resource use efficiency. This transition should contribute to reduce or to substitute chemical inputs and transformation of environments by techniques / practices that instead valorize the biodiversity and positive ecological processes within cultivated systems. In this approach, the specificity of local contexts in their biophysical, climatic and socioeconomic or cultural dimensions is a major element to be considered (AGRICORA, 2016).

This axis aims to better characterize, valorize and use this diversity (usable resources, biodiversity, production contexts, and local practices). System performance should thus be evaluated through their ability to better use natural resources such as solar energy, major nutrients (nitrogen -N-, -P- phosphorus) and water resources. Thus, they must promote facilitation processes between plant species for access to nutrients (e.g. inorganic P), the use of species that do not compete but instead have access to different nutrients tanks (nitrogen fixing, not fixers for example, surface water, deep water) and / or associating crops and livestock allowing nutrient transfer (crop residues, manure). Similarly, this approach requires