

CGIAR P& S Exercise

Think Piece on

"Defining the major technological, natural resource and environmental, socioeconomic, policy and institutional constraints to agriculture, forestry and fisheries development and sustainability in the CWANA region "

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Priority setting and strategy framework helps to define a research portfolio in line with the mission of international and regional agricultural research organizations, and contribute usefully to implement local agricultural policies. Although research priorities are part of planning, its effectiveness is enhanced to a large extent by working with the national agricultural research systems (NARSs) of the region to better address priority problems and emerging challenges.

In spite of a very heterogeneous geography of the CWANA region and the considerable diversity in confronting agricultural research problems, agriculture of the region is characterized to some extent by common features and trends, which reflect the urgency of collaboration and cooperation through a global and regional agricultural research agenda. However, the CWANA region spread over two large continents, Asia and Africa, of which only a small area is arable with short supply of water resources and high population growth.

Throughout the CWANA region the next decades will be crucial in terms of achieving the objectives of food security and poverty alleviation. The degradation of natural resources, insufficient forage and fodder crops, low crop production, less-favored areas and poor linkages between researches, stakeholders and representative are the norm in the region.

The harvesting of opinions, broaden partnership, set the tone for a multi-stakeholders dialogue, preliminary discussions, and the synthesis of agricultural research priorities in the region will facilitate consensus on the identification of priorities to be addressed within a regional framework in order to enhance synergies, efficiency and impact. The priority outputs and impacts help in harmonizing and integrating CGIAR activities within CWANA research priorities, and identifying operational modalities for the integration of CGIAR activities and cooperation with global and regional institutions. Furthermore, these steps will provide a framework for the total CGIAR portfolio and a context for challenge programmes process and decisions, and help define a coherent CGIAR strategy in CWANA and an action plan to implement such strategy.

As a result of increasing funding constraints, NARSs have undertaken over the past years, to organize at sub-regional and regional levels to better tackle common research and development problems through a regionalization process of agricultural research. This effort has in turn led to the emergence of new forms of inter-regional cooperation. The establishment of various regional organizations such as AARINENA and CAC-NARS forum in the CWANA region, and of the Global Forum of Agricultural Research (GFAR) represents one at the key features of such global effort. The focus of a regional collaborative program must, therefore, target a portfolio of shared research problems that would enable all stakeholders to capture some gains induced by the regional program. The effectiveness of regional research initiatives will greatly depend on the facility with which consensus, on the common problems and strategies among the partners, is reached.

Technological constraints to agriculture

CWANA region is characterized by a diversified agricultural environment of which a substantial proportion is classified as less-favored areas, where agricultural production is significantly constrained by factors such as moisture stress due to low and highly variable rainfall, extreme temperatures, short cropping season, shallow soils, soil nutrient depletion, topography (steep slopes) and socioeconomic factors. Farming systems that have evolved to cope with the formidable constraints were imposed by the harsh natural and economic conditions, through adopted integrated crop/livestock production strategies.

In view of short supply of water resources in CWANA region, a significant improvement in water use efficiency at farm level will have necessarily sustainable increases in agricultural production in the less-favored areas. Irrigation objectives vary a cross regions and different factors enter into decisions about appropriate water management and utilization. Thus a basic question arises: what should be the water management objectives? Production per unit water \ area\ labour \ capital?

Wheat and barley representing the main components of annual rain fed cropping systems in CWANA region. Food legumes, summer crops, oil seeds and sugar beet also represent major components of prevalent annual crop rotations. Perennials mostly include olive, almond, fig, and pistachio trees and fodder trees. The adverse effect of the difficult climatic conditions under which crop productions are taking place are particularly reflected in the low and unstable productivity levels of rain fed production systems. As a result of low crop production and lack of income generating opportunities, household food security remains a serious concern in the region.

Livestock, small ruminants in particular, represent a major component of the farming system in CWANA region. Feed is by for the most limiting factor to the improvement of livestock production. Due to its extensive nature, livestock production mainly relies upon grazing on communal lands that hardly provide the minimum nutrient requirement. The area devoted to forage and fodder crops remains insufficient, showing no sign of growth in spite of area potential.

Thus, subject to these constraints, the technological improvements are highly desirable to meet the needs of crop growth and animal production. Alternative adapted technologies are also desirable in order to meet the increased demand for red meat in relation to population growth along with the changes in the price subsidy for feedstuff. These technologies may include: increasing birth and twinning rates, synch rosining the mating period, introducing the early weaning method, and alternative feed resources.

The Integrated Pest Management (IPM) is a sustainable approach to managing pests by combining biological, cultural, physical and chemical tools in a way that minimizes economic, health and environmental risks. There are many potential crop protection problems that are likely to develop as traditional agriculture is modernized to meet increasing food needs in the region.

Technological priorities

1. Managing Water Resources
2. The biological efficiency of the cropping systems and manipulating difficult environments within the constraints imposed by soil and climate.
3. Plant and animal production technologies
4. IPM Technology

Natural resource and environmental constraints to agriculture

The degradation of natural resources, especially soil and water, represents one of the major threats to rural livelihoods in CWANA region. This threat is exacerbated by steady upward trends in population growth and by poorly designed technologies. For example, over-pumping of ground water has resulted in increasing salinity level of irrigation water, overgrazing and barley encroachment have led to degradation by and recovery of most rangeland areas of the region, not to mention extensive loss of biodiversity.

The natural resource and environmental priorities in CWANA region:

1. Water.
2. Soils.
3. Range.
4. Integrated Crop Management (ICM).
5. Biodiversity.

Socioeconomic constraints to agriculture

Socioeconomic constraints such as the rapid population growth, low natural resource endowment, fallen in agricultural labor force, and the combination of increased population pressure and biophysical constraints are common in the region. However, these constraints have resulted in fragmentation in land, increase demand for food, low living standards, and increasing in food deficit. Adoptions of new technologies are highly desirable to improve productivity, income and welfare of users. However, to affect productivity, technology must be adopted in the production processes. To a large extent, the rate of adoption of a new technology is subject to its profitability, degree of risk associated with it, capital requirements, governmental policies, and socio-economic characteristics of users. Lack of appropriate and adaptable technology is an overriding constraint to sustainable development. The other contributory factor is the lack of involvement of local people in setting research priorities and consequent lack of information on their needs.

Women are responsible for half of the world's food production and between 60-80 percent of the food in most developing countries. Not only are women the mainstay of the agricultural food sector, the labor force and the food systems; they are also largely responsible for post-harvest activities. Despite their responsibilities, and very heavy duties, women have limited access to agricultural services. Most development projects have tended to support or at least succumb to this bias against women's involvement, choosing instead to focus attention on men. Given their key role in ensuring good health and food security women must be involved in development efforts, and be made aware of the latest improved technologies.

Socioeconomic priorities in CWANA region:

1. Technology dissemination.
2. Marketing/commerce and trade.
3. Post harvest technologies.
4. Quality and value addition.
5. Institutional policies.
6. Gender.
7. Impact assessment.

Policy and institutional constraints to agriculture

Governments intervene in the domestic economy to achieve specific objectives. These objectives may include: increasing the food supplies, income stability, improving the income distribution among different groups of the society, and improving the efficiency of utilizing the natural resources. To achieve these objectives, Governments use different policy tools, which may include: price fixation of input and output, intervening in the production patterns, imposing tariffs and quotas on imports, subsidizing exports and/or output prices.

Property rights institutions shaped over centuries the relationships between people and resources, between people, and between people and the governing institutions. Property rights and production strategies, which were developed by communities, institutions, and governments in response to high environmental variability, are equally important in accounting for demographic, environmental, economical, and political pressures. Many approaches could be proposed for the study of property rights by focusing on the incentives and disincentives for efficient and sustainable resource management.

Policy and institutional priorities in CWANA region:

1. Management of natural resources
2. Agricultural production planning policy
3. Pricing and marketing policies
4. Exchange rate and agricultural input policies
5. Property rights of resources and regulations
6. Institutional policies

Forestry development and sustainability

Land degradation must be recognized as a major threat to sustainable development, urge countries to adopt more holistic approaches in unison with policy reforms, technical guidelines and support systems to address rehabilitation and restoration through forest management and planted forest development.

The magnitude and importance of forests in some countries of CWANA region is so high, that these resources are to conserve biological diversity and that they fulfill their function as carbon sinks. Forests in those countries are predicted that future supply of wood fiber as well as non-wood forests products, goods and services will depend heavily on these resources. In many countries, the current pace of industrial development of planted forests would barely keep pace with losses from deforestation and the transfer of natural forests to protected status. It is possible not only to sustain but also to increase productivity in successive rotations of planted forests. This requires a clear definition of the end-use of planted forests and sound management. There is a need to integrate strategies for tree improvement programmes, nursery practices, matching species and provenance to sites, appropriate silviculture, forest protection and harvesting practices.

Forestry Priorities in CWANA region:

1. Forest resources management.
2. Rehabilitation and restoration of degraded lands.
3. Development of forests lands.
4. Access to information technology and networks on forestry.
5. The inclusion of forestry and forestry-related issues.

Fisheries development and sustainability

The fisheries industry is vital in many countries of CWANA region, contributing in to a certain extent in total export earnings, and employing a large numbers of full-time fishers and people working part-time. But while the contribution of the sector to food supply and gross domestic product (GDP) needs to be optimized in order to support economic growth and employment, it is essential to ensure that fisheries are managed effectively and the aquatic environment is protected at the same time.

Major fishing projects are needed to support environmentally friendly and sustainable fish and shrimp production for consumption and exports and to help fight poverty in the region by improving the livelihoods of people who depend on fishing.

Problems facing open water inland fisheries are needed to address through different management measures with the direct involvement of beneficiaries and NGOs in the design, site selection, management and monitoring of these interventions. Participation of men, women, non-governmental organizations and other key stakeholders in fisheries industry and projects are highly needed.

Fisheries priorities in CWANA region:

1. Marine.
2. Fresh water.

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