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**SCHOOL OF AGRICULTURE AND FOOD SCIENCE**

**DEPARTMENT OF CROP SCIENCE**

**OPTION OF HORTICULTURE**

**MODULE: AGRICULTURE EXTENSION**

ASSIGNMENT OF AGRICULTURAL AND NATURAL RESSOURCES MANAGEMENT

**Presented by: Group 1**

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**Topic: SOWT analysis about crop intensification program (CIP) pillars in Rwanda.**

**The Crop Intensification Program Crop Intensification Program (CIP) is** a flagship program implemented by the Ministry of Agriculture and Animal Resources to attain the goal of increasing agricultural productivity and ensuring food security and self-sufficiency under the programs of the Strategic Plan for the Transformation of Agriculture in Rwanda (PSTA) II. **(Rutayisire and D. E2018)**

**Crop intensification program (CIP) pillars in Rwanda.**

CIP aims to accomplish this goal by significantly increasing the production of food crops across the country. CIP currently undertakes a multi-pronged approach that includes:

1. Facilitation of inputs:

* improved seeds
* fertilizers

1. consolidation of land use
2. provision of extension services
3. improvement of post-harvest handling and storage mechanisms.
4. **Facilitation of inputs:**

Access to improved inputs has long been inhibiting the farmers from raising the productivity levels. The access was curtailed by the low demand and costs which are further amplified by the difficulties in transportation to rural areas. To overcome these constraints, CIP took a ‘supply push’ approach whereby the inputs are initially supplied by the government and the farmers are persuaded to use**. (Rutayisire, D. E 2018),**

* **Improved seeds**

Improved Seeds To augment increases in productivity of these crops, CIP imported improved seeds from neighboring countries such as Kenya and Tanzania. In 2008, 765 tons of seeds of maize and wheat were imported for cultivation in season A. The amount gradually increased from 1200 t in 2009A to 3512 t in 2011 A. In addition, improved planting materials (cuttings) of cassava and potato were also distributed to farmers

Under CIP, the use of improved seeds by farmers has risen from 3% to 40%. By encouraging farmers to use improved seeds, CIP has substantially increased the local demand and the capacity for seed production. With the exception of hybrid seeds, the open pollinated varieties of maize and self-pollinated varieties of wheat, rice and beans are multiplied by public (RAB) and entrepreneurial farmers in the country.

**The access and use of improved seeds**

In line with CIP policy, it is expected that in the consolidated lands, farmers must use improved seeds for selected crop to increase the productivity, ensure food security and to increase incomes.

The findings revealed the following certified institutions for multiplying improved seeds and distribution of agriculture inputs. TUBURA (One Acre Fund) and APTC-Inkeragutabara were the most popular supplier of improved seeds and fertilizers, with 65.6% and 55.5% of interviewed farmers respectively reported to have received the inputs from them

**Distribution of fertilizers**

Through bulk orders, CIP imported 6,000 tons of fertilizers and distributed to farmers for free through various service providers (table 2). About 83% of fertilizers were used by farmers growing maize, wheat, rice and potato. In 2009, CIP imported 14,427 tons and distributed to maize and wheat growers at subsidized rates (50%) covering the overhead (transportation and administrative costs) from Mumbasa to rural areas were covered by the government. CIP continued to import and distribute in 2010 (33,500 t) and 2011 (22,000 t). Through an auction process, the CIP auctions the imported fertilizers to private distributors. To access these fertilizers at subsidized prices, CIP distributes vouchers to farmers through service providers. The farmers buy fertilizers from the distributor/dealer by presenting the vouchers. The distributor transacts the vouchers at the financial bank outlets which in turn collect from MINAGRI/MINICOM. Estimates suggest that as a result of these efforts, the national average fertilizer use per year has increased from 8 Kg/Ha to 23 Kg/Ha in 201015. **(Kathiresan, 2011),**

**SWOT analysis for Facilitation of inputs (Improved seeds and fertilizers)**

**Strength**

* High yielding and disease resistant
* Seed availability at all times
* Improved planting materials(cutting) of crops and distributed to farmers
* Maintain a wide diversity of crop varieties
* Good quality seed
* Increase productivity of improved crops like hybrids
* Distribution of fertilizers at different locations

**Weakness**

* Poor quality seeds
* Quality of seeds available may be small to cultivate large farms
* Very high costs in seed production and seeds were expensive.
* Poor adaptability and acceptability of improved inputs like genetically modified organisms
* irregular supply of seeds in local areas

Mostly hybrids that require purchase of seeds every season

**Opportunities**

* Vibrant market/ demand for indigenous crops
* Training of some farmers to become small scale seed producers
* Training of farmers in seed conservation
* Increasing demand
* Creation of new job
* May reduce use of chemicals such as fungicides
* Availability of facilitators
* Government offers or discount on certain policy like Smart Nkunganire

**Threats**

* Climatic changes may worsen the effect of pests and diseases
* Existing seed legislature availability of funds
* Most seeds were imported thus supply depends on political stability in the foreign country
* May require high use of fertilizers
* Poor infrastructures

1. **Land use consolidation**

The first pillar of the CIP strategy is ‘land use consolidation’ (LUC), a policy that aims to rationalize land use for profit maximization and ecological sustainability. Farmers keep their land rights, but they must use their land in such a way that ‘farmers in a given area’ grow ‘specific food crops in a synchronized fashion that will improve the productivity and environmental sustainability’ **(MINAGRI 2011: 15).** LUC seeks to consolidate small individual land holdings into larger-scale farming enterprises. The rationale for LUC is that joining small plots together to farm as a single unit would deliver important economies of scale in the acquisition of inputs, processing and marketing, as well as efficiencies in access to extension services (USAID 2014). In Rwanda, **LUC is defined as** “"the unification of land parcels with an estimated easier and productive farming than the fragmented parcels**"(GoR, 2010).**

Ministry of Agriculture and Animal Resources (MINAGRI) has embarked on a simplified land use consolidation model whereby farmers in a given area grow the priority food crops (maize, rice, wheat, Irish potato, cassava, soybean and beans) in a synchronized fashion while keeping their land rights intact. Although consolidation is voluntary, it is a pre requisite for availing the benefits such as subsidized inputs under Crop Intensification Program (CIP), a revolutionary flagship program promoting food production**. ( Kathiresan, 2011),**

**SWOT analyses**

**The strengths**

The strengths, weaknesses, opportunities and threats of land use consolidation policy in the context of CIP are shown below. the positive attributes that are internal to the organizational capabilities were described **as the strengths**.

* Comprehensive laws determining the use of farm lands
* Sector Strategies and Policies
* Active engagement of donors
* Synergy with other public investments (irrigation, mechanization, post harvest handling, storage, hillsides)
* Experience in procurement and distribution of inputs - Horizontal linkages with other Ministries (MINITERE, MINICOM, MINALOC)
* Facilitation of Inputs (seeds, fertilizers)
* Established delivery service system (service providers)
* Strong Vertical and horizontal linkages with grass root level beneficiaries District-Sector-Cell- Umudugudu Integrated services Network of farmers’ cooperatives and Imbaragas

**Weaknesses**

Factors that are within the control of organizational implementation of land use consolidation but yet detract from the ability to attain the objectives are listed **as weaknesses**.

* + Misinterpretation of Land Use policies
  + Generalized classification of zones for priority crops
  + Human capacity in implementation
  + Weak participation/engagement of farmers in decision making
  + Weak Extension Network
  + Low reach-ability in marginal lands (remote/hilly areas)
  + Weak research support
  + Less preparedness in handling natural risks e.g. pest/disease outbreak, climate change
  + Low adoption of mechanization
  + Inadequate private investments in value chain
  + Inadequate storage and marketing services
  + Lack of value addition industries
  + Lack of branding of local farm produces

**Opportunities**

External factors from which the land use consolidation policy stands to benefit are described **as opportunities**.

* Favorable production conditions (climate, natural resources)
  + Strong market demand for commodities (local and regional)
  + Regional integration: Economic/Trade Agreements EAC, COMESA GATT, WTO
* Regional, International Initiatives/Collaboration/Projects
  + Favorable macroeconomic and policy environments
  + External investment interests
  + Integrated community (rural) development Strategies

**Threats**

Threats include those factors that are beyond the control of implementing agencies that could reduce and/or hamper the benefits of the land use consolidation from reaching to the farmers and society at large.

* - Sustainability Ecological (agronomic performance, drought, biotic stresses, weeds Economic (subsidy costs, fuel prices)
* Population pressure on land and food production
* High microclimatic variability in production zones
* Water scarcity and distribution/irrigation
* Fluctuations in global food prices
* Dynamics in trading regulations
* High operational costs (transport, logistics)
* Regional competition (Ugandan maize, Tanzanian rice)
* Limited rural infrastructure (water, energy, transport, settlement, health)
* Climate Change

1. **Provision of extension services**

Agriculture extension is an important means in alleviating poverty and achieving food security. Broadly speaking, **agricultural extension** is the “delivery of information inputs to farmers” (Anderson and Feder, 2007). Studies show that Sustainability and productivity of agricultural sector worldwide depends on the quality and effectiveness of extension services among other factors (Kimaro et.al, 2010). In recognition of this fact, and in line with CIP strategy, the Government of Rwanda, in 2009 adopted the National Agricultural Extension Strategy to ensure ideal conditions for the dissemination and exchange of information between producers, farmer organizations and other different partners in order to transform and to modernize the agricultural sector( NAES,2009)

**SWOT analyses**

The strengths, weaknesses, opportunities and threats of provision of extension service policy in the context of CIP are shown below.

**Strength**

the positive attributes that are internal to the organizational capabilities were described **as the strengths**.

* High qualified competent and experienced personnel.
* Good in-house training programs have produced a credible staff
* Extensive grassroots coverage with districts and /or village-level representation
* Public research system has a broad spectrum of researchers
* Abundant financial resources
* Better logistical support (transport and equipment)
* Numerous farmers’ organizations, NGOs and projects as alternative extension service providers.
* Good networking skills
* Small independent decision-making unit facilitate quick decision-making and greater flexibility in project and programs implementation
* Tend to be collaborative: desire to maximize the profits
* Improved understanding of community needs

**Weaknesses**

Factors that are within the control of organizational implementation of provision of extensional services but yet detract from the ability to attain the objectives are listed **as weaknesses**.

* Limited financial resources
* Poor logistical support: no transport and equipment
* Lagging technical knowledge in new enterprise
* Lack of self-discipline: few can work without supervision
* Inadequate human resources with specialized extension skills, particularly livestock and veterinary specialists.
* Programs that are too short to have an impact
* Lack of information and technical expertise
* Poor grassroots representation
* Time wasting
* Inadequate in extension (particularly for emergent farmers)
* Lack of collaboration: little effective community development
* Resistance to change by the farmers
* Limited specialized in-service training for extension workers

**Opportunities**

External factors from which provision extensional service policy stands to benefit are described **as opportunities**.

* Improved collaboration and efficiency through department mergers
* Potential for improved effectiveness and efficiency through transformations
* Better service and more tangible benefits for members would improve membership base
* Donors will fund a well-designed program with demonstrated impact
* Growing network of micro-finance institutions
* Increasing agricultural education institutions

**Threats**

Threats include those factors that are beyond the control of implementing agencies that could reduce and/or hamper the benefits of the provision of extension service from reaching to the farmers and society at large.

Inadequate budgets are declining in real terms (inflation)

* Unstable macroeconomic and environment
* Donors are withdrawing or scaling down
* Political pressure may force closure
* Natural disaster
* Climatic change related risks
* Lack of motivation for extension workers
* Insufficient public financing (budget allocation) to agricultural sector

**Improvement of post-harvest handling and storage**

The CIP has taken an initiative to minimize the post-harvest losses of key priority crops namely as maize, beans, wheat, rice and others. These initiatives aim at improving the handling and storage of harvested farm produces. The crop intensificaton program is currently engaged in making an inventory of available facilities for community storage in the country. It has also embarked on constructing public drying areas in each district. CIP also intends to acquire in the near future small tools and equipment’s for improving post harvesting by farmers where it has built stores in each district for the country. (MINAGRI,2010) The program provides hands on training to farmers at two levels - farmers' cooperatives and household levels

The PHHS program also embarked on construction of public drying areas in each district. It also acquired small tools and equipment for improving the current practices of post-harvest processing and storage by farmers. Models of storage house were established in each district through CIP.

**SWOT analysis for Improvement of post-harvest handling and storage**

The strengths, weaknesses, opportunities and threats ofpost-harvest handling and storage policy in the context of CIP are shown below.

**Strength**

* Minimization of post-harvesting loss of priority crops
* Improving handling and storage of harvested farm products
* Provides hands-on training to farmers at two levels –farmers ‘cooperative and household levels
* Establish models of storage house in each district
* Embark on construction of public drying areas in each district

**Weakness**

**Drying**

* + Unfavorable climatic conditions.
  + Lack of drying infrastructure.
  + Limited availability and access to improved techniques.
  + Lack of know-how on best practices.
  + Lack of market incentives.
  + Socio-cultural specificities not taken into account by projects.

**Handling & Transport**

* + Poor feeder and main roads‟ network.
  + Very bad handling practices by farmers and transporters.
  + Insufficient transport offer (trucks, rail, water ways) in terms of capacity / quantity and quality.
  + Administrative and technical inefficiencies of the sea port operations.
  + Use of inappropriate packaging.
* Use of inappropriate processing equipment
* Absence of trained and experienced post-harvest specialists
* Lack of knowledge on processing techniques and norms.
* Lack of finances.
* High energy costs, lack of - or inconsistent electricity supply.
* Lack of financial incentives to promote quality
* Inconsistent raw material and input supply
* Risk of bad management of community machines.

**Opportunity**

* Stores and their content (stocks) used as a collateral for credit.
* Opportunities to use residues and waste (straw, bran and husk).
* Opportunities for product differentiation through secondary processing (flour, starch, etc.)
* Availability of improved and diseases resistant varieties with much higher yields.
* Labour intensive, providing employment
* Widely consumed.
* Existing world market for some of the products.

**Threat**

* Poor management of community stores.
* Social constraints limiting the use of community stores
* Spreading diseases in eastern and central Africa
* High processing costs and limited outcomes for industrial
* As biofuel, risk of adjustment of the price to the prices of petrol (for the consumers).
* Important competition from the world market

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