TOWARD SUSTAINABLE HORTICULTURE IN TANZANIA: POLICY COHERENCE AND OPTIONS FOR PESTICIDES USE CONTROL

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ABSTRACT

The adverse effects of pesticide use need to be addressed and minimized for development of an efficient, competitive and sustainable horticultural sector in Tanzania. This review presents a perspective of the regulations and policies guiding pesticide use in horticultural sector. There has been a wide range of food safety standard initiatives lead by both government and private sector targeting on reduction of pesticides use in horticultural production. These initiatives are basically formulated in major three elements of standards such as creating awareness, standards enforcement; institutional and regulatory framework. The intervention strategies for compliance with standards includes: expansion for adoption of good agricultural practices; promotion of horticulture in the government authorities; and promotion of investment in organic horticulture. In spite of generally developed legal framework, policies and legislation with respect to pest and pesticide management in Tanzania, their effectiveness on the pesticide use reduction appears to be seriously insufficient.

Keywords: Pesticides, food safety standards, pesticides legislation

Introduction

The horticulture sub-sector in Tanzania is growing fast at an annual rate of 9 - 12% and has contributed to the country's export earnings [1], [2]. The demand for fresh horticultural products is continually rising, both in the domestic and international markets [3].The need to increase horticultural productivity and meet consumers' demand has triggered an intensive use of potentially hazardous agricultural chemical pesticides[4], [5]. The frequent occurrence of food safety problems and the rising health consciousness of consumers have led to an increasing demand for safe horticultural products[6].

In recent years, a wide range of quality standards, including codes of practice as well as quality assurance schemes, emerging from governments, private standards associations, industry groups, and individual firms have increased much attention into horticultural sector in Tanzania. Mandatory national agricultural standards enacted by public authorities such as Tanzania Bureau

of standards (TBS)and Tanzania Food and Drug Authority (TFDA) are enforced in the horticultural sector to ensure food safety and protect consumer's health. Like other developing countries, the scope of national legislation in Tanzania is considered insufficient to ensure competitive export market and domestic public health[7]. As a result, many other private standards as institutions have emerged partly as a response to a lack of, or weak enforcement of public regulation leading to the development of internationally recognized standards and regulatory schemes [8].

Private standard schemes (e.gGlobalGAP, East African Organic Products Standards (EAOPS), Fair Trade Rapunzel, MPS-ABC, Unilever Sustainable Agriculture Code, BRC Global Standard for Food Safety issue, MPS-Socially Qualified (SQ), IFOAM Standard) are gaining importance in the Tanzania horticultural sector. Furthermore, horticultural producers and exporters have to comply with stringent sanitary and phyto-sanitary (SPS) and maximum residue limits (MRL) standards as well as hazard analysis and critical control points (HACCP) and GlobalGAP standards. In this article, different reports and studies are reviewed to provide an overview of current or past legislation, policy, strategies and programs aimed at improving pesticide management in the horticultural sector in Tanzania.

Regulations and policies supporting pesticides management in horticulture sector

Regulations

As a member of the world trade organization (WTO), Tanzania is required to comply with the international standards within the WTO framework. Tanzania became a member of the International Plant Protection Convention (IPPC) in 2005 and has since then worked through the plant health services (PHS) to ensure compliance to the IPPC standards. Phytosanitary measures including all relevant laws, decrees, regulations, requirements and procedures are taken by the government in order to protect plant health. The Tanzania plant protection Act No. 13 (1997) provides a legal framework for plant protection in prevention and spread of harmful organisms, control of importation and use of pesticides, regulation of export and imports of pesticides and ensures fulfilment of international commitments. The Tanzania Environmental Management Act of 2004 entail various regulations pertaining to persistent organic pollutants (POP) and pesticides issues, to ensure that they are in compliance with the Stockholm convention on POP of 2001 and the Rotterdam convention on the prior informed consent procedure for certain hazardous chemicals and pesticides in international trade.

Institutional set up

The management of food safety and agriculture standards in horticultural sector in Tanzania is done by a number of institutions each with a different matter to address on standards. These

usually range from SPS to quality matters, regulations, capacity building and compliance by the horticultural producers and processors themselves. The management of SPS in Tanzania is the mandate of the ministry of agriculture through its plant health services (PHS) unit which also acts as the national plant protection organization.The TBS conducts the implementation of standards through certification schemes; inspection and testing; and quality management system registration (ISO 9000). The bureau is also the national enquiry point (NEP) on SPS and technical barriers to trade (TBT) agreements of the WTO. The PHS is responsible for the management of pest outbreaks, promotion of integrated pest management and other training, awareness building and surveillance activities related to plant health. While TBS is more concerned with standardization and quality matters, TFDA mandate focus on food safety and protection of consumer's health. The tropical pesticides research institute (TPRI) is responsible for monitoring, registration of new chemical pesticides, inspection of pesticides retail shops, capacity building on different aspects of pesticide trade and safe use.

Policies

The policy governing horticultural development falls under the national agricultural sectoral policies which promotes production of quality products. In the policy statement, horticultural commodity standards are promoted and regulated to meet national and international market requirements[9].Furthermore, at the national level, the principal agricultural development policies and programs favour integrated pest management (IPM) as recommended approach to pest management as needed option for compliant with GAP and ensure export standards. However, the national agriculture policy does not specifically entail IPM issues, but mentions that pest management options need to be compliant with GAP to ensure export standards, which is a critical requirement in international trade. The agricultural sector development programme (ASDP-2) is the current development and programme promoting increased sustainable agricultural production in Tanzania. Most relevant for pest and pesticide management is component 2 of ASDP-2 which aims to enhance agricultural productivity and profitability.

National initiatives

A number of initiatives have been implemented by public and private organizations to bring strong compliance with food safety standards targeting on reduction of pesticides use in horticultural production. A Global GAP national technical working group has been formulated to coordinate horticultural standards development and work with farmers to meet international standards [10]. The government of Tanzania and FAO in partnership with the horticultural industry has devoted coercive efforts to create awareness on good agricultural practices (GAP) in horticultural production. Furthermore, the USAID-TAPP have developed clusters of commercial small scale horticultural farms in Arusha, Kilimanjaro, Lushoto, Morogoro, the Coastal strip, and Zanzibar as a platform to facilitate GAP adoption. As highlighted in the report of standards and

trade development facility in East Africa [11], efforts have been made for SPS capacity building from a. continuation of donor support for specific project initiatives (Table 1).

Table 1: SPS-related initiatives in Tanzania

Agency	Initiative
Plant Protection	
Netherlands (WSSD)/TAHA:	Development of pesticides manual and general publicity campaign; Development of industry-driven training program for export horticulture; Improving phytosanitary system for horticulture exports; Pesticide registration arrangements
FAO	TCP project on training , surveillance and legislation, 2008
USAID	Air-freight Program (TAP) for horticulture; Integration of small scale farmers into value chains; PASA projects, 2006-2011
STDF	Creation of Eastern Africa Centre of Phytosanitary Excellence Establishment of pest risk analysis (PRA) unit
Food safety	
FAO/DANIDA/Switzerland/UNIDO	Improving TBS laboratory infrastructure and accreditation
Several donor (basket) programs	Schemes for upgrading food safety and quality in small and medium enterprises (SMEs) through training, loans, partial subsidies
EU USAID/USDA	Capacity Building on Maximum Residue Levels (MRLs) (2006-2010); Support for Standards, Quality Assurance, Accreditation and Metrology (SQAM) 2006-2011;

	Strengthening food safety systems through sanitary and phytosanitary (SPS) measures (ACP, 2008 – 2012); PASA projects focusing on food safety (2006-2011)
Horticultural sector	
Netherlands (WSSD) / TAHA	Training for horticultural industry workers ; Support for pesticide registration
UNDP (IF Window II)	SPS training for horticulture industry
FAO/ Norway/ UN	Establishment of phytosanitary control and surveillance system
EDF	Capacity building for companies and farmers on food safety issues/SPS (2008-2013

[WSSD, World Summit on Sustainable Development; TAHA Tanzania Horticulture Association, STDF, Standards and Trade Development Facility Trust Fund; PASA, Participating Agency Service Agreement; FAO Food and Agriculture Organisation; DANIDA, Danish International Development Agency; UNIDO United Nations Industrial Development Organisation, UNDP, United Nations Development Programme; USAID, United States Agency for International Development; USDA, United States Department of Agriculture, EDF, European Development Fund]

National horticultural development strategy 2012- 2021

The strategy envisages facilitating the development of horticultural industry so as to improve nutritional status, increase incomes and reduce poverty while increasing productivity and quality of the produce [12]. Expansion of the production base and quality improvement is one of the main pillars of the strategy. As shown in Table .2 several horticultural development programs have been implemented for improving the quality and compliance with standards. These include expansion for adoption of GAPs and required standards; promotion of horticulture in the government authorities; strengthening of training institutions; and promotion of investment in organic horticulture [13]. In an effort to promote the application and adherence to quality and safety standards at farm and market, the TBS implemented a project (2012-2014) through the local capacity building of farmers and consultants; training in GlobalGAPs; development of quality management system (QMS) for fruits and vegetables; and preparation of quality and standards for fruits and vegetables.

Key issues in pesticide regulation and management

Although progress has been made in some areas of pesticide regulation in horticultural sector, the overall level of SPS and quality management remains weak. The current efforts in complying with the international requirements for market access is clearly inadequate in terms of technical capacity of regulatory authorities, competence, resource allocation and poor institutional clarity. Effort to comply with pesticides related standards is further affected by limited awareness and low priority given to plant health issues. This is viewed in terms of limited awareness among farmers and private sector of plant health issues, good agricultural practice, and safe use of pesticides. Limited research activities in the area of pesticides reduction in horticultural production is another key factors for slow adoption of standards. Numerous laboratories are in place with limited ability to undertake pesticides analyses. Although some progress has been made in upgrading SPS laboratory capacity with accreditation of TBS laboratories the overall diagnostic capacity is still weak.

Table 2: Food safety intervention program in horticultural sector

Strategic Interventions	Strategic Activities	Responsible Organisation
Expand adoption of Good Agricultural Practices (GAP) and required standards	Equip extension officers with the latest technical information for key horticulture crops on Good Agricultural Practices (GAP) and existing standards	MOA, Industrial associations
	Conduct horticulture crop production practice and post – harvest care workshops and training sessions for growers and district agriculture extension agents	MOA, HODECT, PORALG, Industry associations
	Conduct training on the requirements for Global GAP certification and how to obtain certification	TAHA, MITM, Private sector
	Establish the National Technical Working Group to investigate the viability of supporting local certification	TAHA, MITM

	capabilities	
	Encourage extension officers and other regulators to promote the application of quality and safety standards along the value chain	Industry associations, MOA, TBS, TFDA
	Strengthen public extension services and encourage private sector participation in offering extension services.	MOA, PORALG, Private sector, Industry associations
Promote Horticulture in the Government	Promote the application and adherence to quality and safety standards at farm and market	TBS
Promote investment in organic horticulture	Support development of organic and fair trade labelled products; Promote local certification to reduce involved cost; Establish farmer blocks to reduce certification cost	Private sector, Industry associations, MITM

[MOA, Ministry of Agriculture; PORALG,President Office Regional Administrative and Local Government; MITM,Ministry of Industry, Trade and Marketing; TBS, Tanzania Bureau of Standards; TFDA Tanzania Food and Drug Authority; HODECT,Horticultural Development Council of Tanzania]

The limited awareness and understanding of the risks of pesticides, as well as limited expertise to develop and enforce legislation results into poor pesticides handling and risk assessment. As a result, farmers apply pesticides without prior checking for pest infestations, mixtures of pesticides, pesticides without personal protective equipment, and lack of handling procedures for empty containers [14]. There exist important deficiencies in legislation, registration, and enforcement of pesticides in Tanzania [15]. Pesticide registration system is underdeveloped and lack published guidelines of pesticide requirements, and the necessary registration requirements such as the requirement to reregister a pesticide periodically. As a result, retailers distribute unauthorized pesticides, which had not been registered in Tanzania [16]. The small scale farmers in Tanzania lack appropriate knowledge on safe handling and use of pesticides [17].

Monitoring programs and official inspection of horticultural produces to ensure compliance with MRLs is not often done in Tanzania, the case that may provide uncertainty on chemical safety of fresh fruits and vegetables. Furthermore, data of pesticides residue contamination horticultural produces in monitoring programs by legislative bodies such TFDA, TPRI and ministry of agriculture are relatively few and largely qualitative. The national safety standard for most common horticultural produces is not currently being implemented in Tanzania. Rarely is a clear regulatory requirement for risk assessment of mixtures of pesticides within a national regulatory framework. Current pesticides regulations in Tanzania do not adequately allow for greater than additive toxicity to address mixtures of pesticides with a similar mechanism of action and do not address chemical synergism and the effects of mixtures of pesticides from multiple classes.

Recommendations for Policy Intervention

While some initiatives has been done toward adoptions of standards, the following key recommendations are made for its success: strengthening of enforcement mechanisms to promote safe pesticides use and handling practices need to be addressed through review of relevant policies and legislation; critical assessment of regulatory and institutional capacity in terms of their strengths and weaknesses to establish a system that covers small scale producers. In order to be effective, standards need a favorable economic and institutional environment to which public policies and initiatives should contribute. Due to the presence of many competing initiatives and the lack of a coordinating actor, there is a need for organization that combines public policies with the merits of private intervention. Furthermore, there is a need to strengthen delivery of public information, education and awareness programs as well as monitoring of adverse effects to human health and the environment caused by pesticides use.

Conclusion

A number of measures have been taken to stimulate adoption of food and agricultural standards, to reduce pesticide use and ensure inclusive growth of the horticultural sector in Tanzania. These include legal and regulatory change; institutional organization; policy and strategies; technical and scientific researches investments in physical infrastructure and strengthening of accreditation and certification systems. The core aspects of initiatives are basically formulated in major three areas of creating awareness, capacity building and institutional and regulatory framework. Although the necessary basic framework for SPS management in horticultural sector is in place, little progress has been made to ensure competitiveness of the sector. There is a need for review of relevant policies and legislation focusing on reduction of pesticide use.

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