Strengthening registration of biological controls in Africa

RIU

Validated RNRRS Output.

Several countries in sub-Saharan Africa have already used new guidelines to develop systems for registering biological controls for pests and diseases—bacteria, viruses, nematodes, fungi, predators and parasites. Although systems for registering chemical controls are often in place, few deal with biological controls. But for produce to meet heath and safety standards, biological controls must be registered. This is vital for horticulture exports from Africa and Asia, particularly those destined for developed countries. Both South Africa and Kenya now have laws—based on the guidelines—that allow biological control agents to be registered, sold and used. Many other countries, including Tanzania, Ghana and Benin, are also using the guidelines to draw up similar laws to help their booming exports of fresh produce.

Project Ref: **CPP44:**
Topic: **7. Spreading the Word: Knowledge Management & Dissemination**
Lead Organisation: **Natural Resources Institute (NRI), UK**
Source: **Crop Protection Programme**

Document Contents:

Description

CPP44

Research into Use
NR International
Park House
Bradbourne Lane
Aylesford
Kent
ME20 6SN
UK

Geographical regions included:

Benin, Ghana, Kenya, South Africa, Tanzania,

Target Audiences for this content:

Crop farmers,

A. Description of the research output(s)

1. Working title of output or cluster of outputs.
In addition, you are free to suggest a shorter more imaginative working title/acronym of 20 words or less.

Capacity building for biological pesticide registration for Africa

2. Name of relevant RNRRS Programme(s) commissioning supporting research and also indicate other funding sources, if applicable.

Crop Protection Programme.

3. Provide relevant R numbers (and/or programme development/dissemination reference numbers covering supporting research) along with the institutional partners (with individual contact persons (if appropriate)) involved in the project activities. As with the question above, this is primarily to allow for the legacy of the RNRRS to be acknowledged during the RIUP activities.

The following three CPP projects each dealt with biopesticide registration and regulation. The first, R7960 identified the absence of biopesticide registration guidelines as a constraint. The second, R8430, developed biopesticide registration and risk assessment guidelines for the Ghanaian EPA. The model followed was that of the Lake Nakuru workshop for biopesticide registration guidelines in Kenya, also funded as a CPP activity. The third project below is a dissemination output that describes barriers to biopesticides in Africa, including the absence of registration and risk assessment guidelines.

1. **R7960** (2000-2003).

Lead Institute: International Institute of Tropical Agriculture, Cotonou, 08 BP 0932 Republic of Benin.
Lead person: Dr Andy Cherry.
Lead partner institute; Natural Resources Institute, University of Greenwich, Central Avenue, Chatham Maritime, Kent ME4 4TB, United Kingdom.
Contact person: Mr David Grzywacz,

2. **R8430** (2004-05).

Lead Institute: Natural Resources Institute of the University of Greenwich, Central Avenue, Chatham Maritime, Kent ME4 4TB, United Kingdom.
Lead person: Dr Andy Cherry.
Lead partner institute Environmental Protection Agency, Accra, Ghana.
Contact person Mr John Pwamang: Director, Chemical Control Management Centre.

3. **Dissemination project:** (R number unknown) (2005-06)

Policy paper on researchable issues for adoption of biological pest control agents in West Africa
Lead Institute: Natural Resources Institute of the University of Greenwich, Central Avenue, Chatham Maritime, Kent ME4 4TB, United Kingdom.
Lead person: Dr Andy Cherry.
Lead partner. Dr Roma Gwynn, Biorational pesticides consultants**.**

4. Describe the RNRRS output or cluster of outputs being proposed and when was it produced? ***(max. 400 words)****. This requires a clear and concise description of the output(s) and the problem the output(s) aimed to address. Please incorporate and highlight (in bold) key words that would/could be used to select your output when held in a database.*

The RNRRS output of interest to this proforma comprises specific **biopesticide regulations**, or **regulatory frameworks** and **risk assessment guidelines** for registration of biological pesticides, principally for those based on **microbial agents**, but also including **biochemical agents** such as **pheromones** and **botanical extracts**.

The Crop Protection Programme (and CPHP) invested in a number of projects throughout the RNRRS that developed or transferred biologically based crop protection technologies for developing countries. In some cases there was concern that, given the absence of appropriate regulatory frameworks for registration of the technologies generated by RNRRS projects, adoption of these technologies would be hindered. Indeed, it became widely accepted that one of the major barriers to the implementation of biologically based pest control technologies was the absence of registration guidelines. This was certainly the case for project R7960 in which national stakeholders in Benin and Ghana concluded that the most important next step to the implementation of a viral biopesticide against ***Plutella xylostella*** for W. Africa **brassica production** would be specific biopesticide registration guidelines since at that time, regulatory authorities only had frameworks for registration of synthetic chemical pesticides. It is acknowledged that such frameworks are inappropriate for biological pesticides.

This issue extends beyond Ghana as provision of biological pesticides (bacteria, viruses, nematodes and fungi) and biological control agents (predators and parasitoids) is seen by the horticultural export industry in Africa and Asia as key to maintaining and expanding export markets in EU and OECD countries. To date in SSA only South Africa and Kenya (with support from the CPP) has completed legislation to allow the registration, sale and use of biological control agents (BCA). Many other countries including Tanzania also urgently want to develop such legislation in order to support the growth of the booming fresh produce export sector. The expansion of the fresh produce sector is seen in turn as a major element in increasing national income and expanding employment opportunities for the poor.

Several years ago the CILSS (there is no common definition of SSA to indicate whether the CILSS countries are considered as part of SSA) countries as a block implemented a common biopesticide registration framework. This was supported largely by USAID, but project R7960 played a facilitating role in these developments by hosting a workshop at IITA in Benin. The implementation of biopesticide registration framework in CILSS countries paved the way for registration of Green Muscle, a microbial pesticide based on the fungus *Metarhizum anisopliae* for control of locusts and grasshoppers.

5. What is the type of output(s) being described here?
Please tick one or more of the following options.

Product	***Technology***	***Service***	***Process or Methodology***	***Policy***	***Other Please specify***
				x	

6. What is the main commodity (ies) upon which the output(s) focussed? Could this output be applied to other commodities, if so, please comment

The output is policy or legislation. As such it is applicable to all commodities for which biological pesticides could be employed as crop protection agent.

7. What production system(s) does/could the output(s) focus upon?
Please tick one or more of the following options. Leave blank if not applicable

Semi-Arid	***High potential***	***Hillsides***	***Forest-Agriculture***	***Peri-urban***	***Land water***	***Tropical moist forest***	***Cross-cutting***
	x			*x*			

NB: Although only two boxes are ticked above, in principle, regulations and risk assessment guidelines for biopesticides can be applied to products destined for use in any of the above production systems. Given the intensity of pesticide use in the peri-urban system, replacement with biopesticides here had greater priority.

8. What farming system(s) does the output(s) focus upon?
Please tick one or more of the following options (see Annex B for definitions).
Leave blank if not applicable

Smallholder rainfed humid	***Irrigated***	***Wetland rice based***	***Smallholder rainfed highland***	***Smallholder rainfed dry/cold***	***Dualistic***	***Coastal artisanal fishing***
	x					

As under section 7, although only one box is ticked here, there is no *a priori* reason why biological pesticides should not be registered for use in any or most of the above systems (with the probable exception of coastal artisanal fishing)

*9. How could value be added to the output or additional constraints faced by poor people addressed by clustering this output with research outputs from other sources (RNRRS and non RNRRS)? (**max. 300 words**).*

Please specify what other outputs your output(s) could be clustered. At this point you should make reference to the circulated list of RNRRS outputs for which proformas are currently being prepared.

It would make considerable sense to cluster this output with activities that involve the use and application of biologically based pesticides. For example, the regulatory authorities in Tanzania have expressed an interest in developing biopesticide registration regulations and risk assessment guidelines. At the same time, biopesticides are being considered for use as a pest control technology in Tanzania against the armyworm, *Spodoptera exempta,* an output of CPP projects R7954 and R8408. It should be noted however that there is a real need, when developing regulations of this nature, to operate on a regional or sub-regional scale to achieve a degree of harmonisation. It would be counterproductive to develop country specific regulations because of the effect this would have on market size and the implications for registration costs across in multiple markets. Moreover, on a

cautionary note, it is of prime importance to avoid to the degree possible, the use of legislation or regulation "templates" that are based on western models and imported to Africa. Regulatory frameworks should be developed with the local context in mind.

This policy approach could also be extended to other new biotechnologies where countries in SSA lack capacity to legislate, conduct safety assessments or register new types of crop production products. A number of public goods have been developed by RNRRS programmes such as the PSP but have not been adopted in part because of concerns about capacity to critically and objectively regulate these novel biological technologies.

Validation

B. Validation of the research output(s)

*10**. How** were the output(s) validated and **who** validated them?*

*Please provide brief description of method(s) used and consider application, replication, adaptation and/or adoption in the context of any partner organisation and user groups involved. In addressing the "who" component detail which group(s) did the validation e.g. end users, intermediary organisation, government department, aid organisation, private company etc... This section should also be used to detail, if applicable, to which social group, gender, income category the validation was applied and any increases in productivity observed during validation **(max. 500 words)**.*

The biopesticide regulatory framework and risk assessment guidelines for Ghana developed under project R8430 were validated by the Ghanaian Environmental Protection Agency after project completion through a process of internal consultation, The framework itself was adapted for the local context from an earlier policy framework developed with the Kenyan Pest Control Products Board as part of a CPP funded initiative in 2003. This latter framework was validated by the PCPB and the Kenya Agricultural Research Institute, after project completion.

These CPP initiatives were seen by recipient countries as good models in participatory adoption of new regulatory systems for novel biotechnologies. The same impression was expressed by representatives of pesticide registration authorities in Togo, Benin and Ivory Coast who participated in project R8430 as observers.

*11. **Where and when** have the output(s) been validated?*

*Please indicate the places(s) and country(ies), any particular social group targeted and also indicate in which production system and farming system, using the options provided in questions 7 and 8 respectively, above **(max 300 words)**.*

Validation of biopesticide registration guidelines and similar policies and procedures is the responsibility of the implementing agency in the respective country, usually the Government department with responsibility for regulation and registration of chemical pesticides.. In Ghana the draft biopesticide registration framework and risk assessment guidelines were adopted by the Environmental Protection Agency in 2005 and is now undergoing incorporation in the appropriate Act of Parliament. In Kenya the outputs were adopted as national policy with

supporting legislation in 2004.

Regulations and risk assessment guidelines for biopesticides can be applied to products destined for use in any of the above production systems. Given the intensity of pesticide use in the peri-urban system this is probably the sector in which outputs will have most impact. Though BCAs for migratory pests including “Green muscle” for locusts and *S.exempta* NPV are available or under development for controlling these pests in semi arid systems.

Current Situation

C. Current situation

*12. **How and by whom** are the outputs currently being used? Please give a brief description **(max. 250 words**).*

The Pest Control Products Board of Kenya has adopted outputs as a legal framework and many commercial products are now registered and in use particularly in the export horticulture sector. In Ghana the Environmental Protection Agency now has the capacity to likewise consider biopesticide registration dossiers.

*13. **Where** are the outputs currently being used? As with Question 11 please indicate place(s) and countries where the outputs are being used **(max. 250 words).***

See Q 12 above

*14. What is the scale of current use? Indicating how quickly use was established and whether usage is still spreading **(max 250 words).***

Work to develop national legislation in Kenya started in 2003 and was completed in 2005. Biologically-based products were already being registered in Kenya in 2004 through the new biopesticide framework and given the scale of Kenya’s fresh produce export sector, there is likely to be continuing requests for registration of novel biological crop protection agents. It must always be borne in mind that globally, biological pest control captures only a very small proportion of the crop protection market, so the number of biological products submitted for registration under these new regulations will probably not reach the numbers of registered synthetic pesticides. In Ghana the process of developing a biopesticide registration framework began in 2004 and was completed in 2005. The outputs are expected to pass into the statute books in 2006/07. Tanzania is anxious to adopt a system based on the Kenyan model and is actively seeking funding from UN Global environment fund so that this can start in 2006-07.

*15. In your experience what programmes, platforms, policy, institutional structures exist that have assisted with the promotion and/or adoption of the output(s) proposed here and in terms of capacity strengthening what do you see as the key facts of success? **(max 350 words).***

The process of developing biopesticide-specific regulatory frameworks has been driven by at least two separate

agendas. In Kenya, the need for crop protection products that comply with strict EU maximum residue limits on fresh produce led the private sector to voice a demand for biopesticide- specific regulations to be put in place. In Ghana, demand was articulated more loudly by the public sector. The EPA itself was anxious to be ready for anticipated demand for biological products, and given the importance of IPM as a national strategy for crop protection, this demand reflected national strategy. Development funding partners and implementing agencies also recognised the possible dichotomy of having a number of products developed via research projects, yet an inadequate regulatory framework to deal with them, effectively placing a barrier to their implementation.

One of the keys to successful wider implementation of specific regulations will be the negotiation of common or harmonised standards of registration, or equivalence between dossiers. This would not have to preclude national sovereignty on regulation, but it would favour product development and commercialisation. Because of the fragmented nature of the African markets and the number of African countries, steps that facilitate the registration process on a regional scale will make product development more economically feasible.

Environmental Impact

H. Environmental impact

24. What are the direct and indirect environmental benefits related to the output(s) and their outcome(s)? ***(max 300 words)***
This could include direct benefits from the application of the technology or policy action with local governments or multinational agencies to create environmentally sound policies or programmes. Any supporting and appropriate evidence can be provided in the form of an annex.

The implementation of a policy of promoting safe non polluting BCA alternatives to toxic chemicals by creating a regulatory framework which allows BCA products to registered and sold is a clear environmental benefit. The adoption of biopesticides in place of chemical pesticides is seen by the Kenyan and Ghanaian governments as a significant tool in reducing pesticide poisoning and the environmental damage caused by pesticide residues in soil and water.

The full extent of pesticide poisoning in countries such as Ghana and Kenya is difficult to determine but SSA can be reckoned to account for a significant part of the 20,000 deaths and one million cases of pesticide poisoning estimated to occur annually. Pesticide poisoning is particularly an issue for marginal poor farmers who lack access to safer more expensive pesticides or landless labourers employed to carryout more dangerous tasks such as spraying and where safety procedures and equipment are almost universally deficient.

The use of BCA to reduce pesticide levels in food and commodities to meet MRL standards also benefits consumers and food handlers of such produce which while currently produced mainly for export is finding an increasing market locally.

25. Are there any adverse environmental impacts related to the output(s) and their outcome(s)? ***(max 100 words)***

None

26. Do the outputs increase the capacity of poor people to cope with the effects of climate change, reduce the risks of natural disasters and increase their resilience? ***(max 200 words)***

Outputs are neutral in respect of climate change
