

Tropical Pesticides Research Institute



PROFILE

Research, Training and Services on Management of Pests, Pesticides and Biodiversity for food security, promotion of human health and facilitation of Internal and External Trade for Sustainable Development

Tropical Pesticides Research Institute
P.O. Box 3024, Arusha, Tanzania.
E.mail: tpridg@yahoo.com
Website: www.tpritz.org
Fax: +255 27 2508217
Tel. +255 27 2508813/4/5
Fax: +255 27 2508042

A world rich in biological diversity and free of pests and pesticides problems is possible!

What we call pests are part of biological diversity. Man started recognising some organisms as pests some 10,000 years ago when he started practicing agriculture, and became aware that these organisms were causing damage to him and his agricultural produce. Since then he used simple avoidance and control techniques, based on pest behaviour to manage the organisms.

In the mid 1940s, man started to include the application techniques of synthetic pesticides in pest control. That began false hope, because pesticides acted faster (by killing pests) and knowledge base at that time did not permit serious consideration that the synthetic pesticides are poisonous to the rest of biological diversity. The Tropical Pesticides Research Institute (TPRI) came into operation at that time, primarily to test for pesticides efficacy against vectors and pests.

Over the years the false hope on pesticides revealed itself. Side effects of pesticides to man, environment, rest of biological diversity and pest resistance to pesticides were observed. Also increase in international trade and general movement of goods increased risk due to pests.

On the other hand, the knowledge base expanded for example on pest biology, behaviour and ecology. This knowledge, coupled with developments in information technology, integration of regulatory framework, business to business and business to public arrangements provide a wide range of options for sustainable pest management. The false hope about pesticides in the 1940s was and is still due to use of pesticides as a **single option** for pest management.

On the same token management of **pest, pesticide** and sustainable use of **biological diversity** is **multi-disciplinary** requiring:

1. Base for intervention at national, regional, sub-regional and global business to business and business to public arrangements.
2. Prioritization of intervention, including
 - a. **proactive** - management of pests and pesticide risks
 - b. **reactive** - management of pests and pesticide risks,
 - c. **continue** - with present satisfactory pest and pesticide management
 - d. **simultaneous** – exploitation of opportunities provided by pests, pesticides and biodiversity while cautiously managing associated risks.
3. Smart partnership in fields of;
 - a. **Research** to produce new knowledge,
 - b. **Standardisation, policy, agreement** to provide for direction of using the knowledge,
 - c. **Legislation** for compliance to the standards,
 - d. **Training** for awareness, skills and academia,
 - e. **Extension** for **implementation** (production, trade) facilitation

In so doing we should be able to use biological diversity on sustainable basis, without fear of pests and pesticides.

I take this opportunity to welcome you to work in partnership with TPRI on this exciting field of:

“Management of Pests, Pesticides and Biodiversity for food security, human health safety and facilitation of Internal and External Trade for Sustainable Development”

Charles J. Muangirwa
Ag. Director General

Vision

To excel and become a global leader in pest and pesticide management, biodiversity and environmental conservation for health and sustainable development

Mission

To enhance high quality pests and pesticides research, training and services in human, animal, plant and ecosystem hygiene, health and safety in order to contribute to food security and an increase in market access and share of agricultural and natural resource products as an economic incentive for sustainable development.

Core Values

Integrity, Quality, Teamwork, Efficiency, Entrepreneurship, Creativity, Innovation, Excellence, Self-reliance, Partnership.

Broad Objective

Management of pest, pesticides and biological diversity to contribute to market access and share, food security, wealth creation, sustainable development.

Collaboration

TPRI has realized most of her objectives through collaboration with local and international institutions through memorandum of understanding and other arrangements.

Clients

Small and large scale farmers, industries, institutions, organisations, appropriate Ministries, funding agencies

Legal status:

TPRI was established by Act of Parliament No. 18 of 1979 with a mandate to undertake, promote, evaluate and disseminate findings on the management of pests, pesticides and biological diversity. The institute dates back to 1945 under colonial government and was known as Colonial Insecticides Research Unit (CIRU). Currently, TPRI is engaged in research and services on management of pests, pesticides and biodiversity to enhance food security, safeguard human health and for facilitating internal and external trade for sustainable development. The Institute is semi autonomous operating through the Ministry of Agriculture Food Security and Cooperative of the United Republic of Tanzania. TPRI's research, training and services are multi and interdisciplinary cutting across sectors.

Governing Council

TPRI has a Governing Council which oversees the Institute's policy issues. Director General of TPRI is responsible for day to day functions of the institute assisted by directors of department, programme and project leaders.

Capacity

TPRI has skilled, experienced multi-disciplinary scientists including; 8 PhDs, 18 Masters, 17 BSc, 13 Diplomas and 22 Certificates. Scientists on training include 3 PhDs, 10 Masters, 7 BSc and 1 Diploma. TPRI scientists are active members of national and international professional bodies.

TPRI publishes her research and service in scientific journals, books, newsletters, and educational posters for all levels. Outputs from TPRI into training and outreach are at all levels including awareness, skills and attachment for academic degrees students at MSc. and PhD from within and outside Tanzania.

Infrastructure

TPRI has basic infrastructure for undertaking specialized pest, pesticides and biological research, training and services. Such infrastructure on analysis of pesticide residues for environmental, toxicological, agro-product safety and for quality control include High Performance Liquid Chromatography (HPLC), Gas Chromatography (GC), Atomic Absorption Spectrometer (AAS) and UV Visible spectrometer.

Infrastructure for pest behaviour, biology and ecology research include laboratories, pest colonies, animals, experimental rooms, controlled chambers, semi-field trial facilities and field experimental huts.

Infrastructure for plant and arthropod biodiversity research and service include facilities for collection, curation, characterization, storage, computerized data base, tissue culture and molecular biology laboratories, screen and green houses, seed drying and cold rooms. TPRI has 130 hectare of land for research activities.

Research, Training and Services offered

Research Activities

Conducts research on management of pests, pesticides and biodiversity.

Current research on management of pests, pesticide and biodiversity is clearly stipulated in the ten years (2005/15) TPRI Strategic Plan (TSP). The TSP provides for partnership as a room to accommodate related demand driven activities. Main research activities are implemented under three programs:

1.0 SUSTAINABLE PEST AND VECTORS MANAGEMENT RESEARCH AND ITS APPLICATION

- ***Livestock and Human Disease Vectors Control Programme (LHDV)***

Conducts research on sustainable management of mosquitoes, tsetse, hard and soft ticks and snail intermediate hosts of schistosomiasis and fascioliasis.

- ***Plant Protection Programme (PPD)***

Conducts research on management of insect pests, weeds, plant pathogens, bird and rodent pests. Emphasis is on reduction of pesticides use by promoting integrated pest management (IPM), bioremediation and biological control.

- ***TPRI Certification Unit (TCU)***

Conducts research to promote transition from conventional to organic farming and facilitate entry of high value/volume crops into local and international markets.

2.0 PESTICIDE MANAGEMENT RESEARCH AND ITS APPLICATION

- ***Pesticides and Environment Management Centre (PEMC)***

Research on pesticides residues in the environment, human, food and animal feeds. Research to establish pesticides Maximum Residues Limits (MRLs) and community health safety. Research on botanicals as an alternative to synthetic pesticides as well as Pesticides Application Techniques.

3.0 PLANT BIOLOGICAL DIVERSITY RESEARCH AND ITS APPLICATION

- ***National Herbarium of Tanzania (NHT)***

Conducts research and provide training on plant taxonomy and ethno-botany for conservation and sustainable utilization.

- ***The National Plant Genetic Resources Centre (NPGRC) of Tanzania***

Conducts research on conservation and sustainable utilization of plant genetic resources with emphasis on landraces, underutilized crops and crop wild relatives.

Training and Outreach

1. Pest and pesticide management training

- Provide a Training Module for Advanced Diploma in Vector Control (ADVC) in collaboration with the Ministry of Health and Social Welfare
- Compliance with requirements of Plant Protection Act of Tanzania (PPA), WTO-SPS agreements, IPPC, sub-regions and business to business arrangements
- Compliance with new biosafety requirements.



Tsetse control training at TPRI as part of ADVC

2. Pest and Pesticide management training

- Pest management course for pesticide dealers
- Compliance with requirements for PPA, Codex Alimentarius (FAO/WHO), Rotterdam and Stockholm conventions and the FAO International Code of Conduct on the Distribution and Use of Pesticides.

3. Plant biological diversity

- Conservation and preservation of plant genetic resources
- Training of traditional herbalists and para-taxonomists on herbarium techniques.

4. Insect Arthropods diversity

- Training on arthropods taxonomy and its application

5. Tailored courses

- Formulated according to farmers and other stakeholder's requirements from TPRI capabilities.
- Expertise/situation driven courses addressing constraints and opportunities at farming level

6. Academic training

- MSc. and PhD students are attached to the Institute for partial fulfilment of their academic training.
- Field attachment of undergraduate students
- Mentoring of professionals

7. Participatory Decision and Systems Support (PDSS)

- Draw a wide range of expertise to address thematic stakeholder's issues.

Areas of Collaboration/Partnership

1. Sustainable Pest and Vector Management

1.2 Crop pests

- Research on development of novel pest/vector management techniques
- Research on bioremediation and its application for pesticides contaminated areas
- Promotion of sustainable agriculture
- Development and adoption of pesticides use reduction strategies among farmers in Tanzania
- Dissemination of research findings to farmers including use of Farmer Field Schools (FFS) through participatory research
- Ranking pesticides registered for use in Tanzania



1.2 Post entry plant quarantine

- Pest risk analysis for import and export of plant and plant products
- Plant biosafety
- Research and services on organic farming



1.3 Animal and human disease vectors

- Management of insecticide use in malaria vector control to reduce environmental pollution.
- The use of biological agents in malaria vector and schistosomiasis host snail control.
- Environmental health impact assessment of water resource development projects in irrigation schemes, wetlands and dams.

- Control of tsetse vectors of trypanosomosis in pastoralist and conservation areas.
- Vector resistance to pesticides (mosquitoes and ticks)
- Neglected disease vectors
- Epidemiology and integrated control of vector and snail borne diseases and geohelminths in water resource development projects
- Engineering considerations and environmental control measures for schistosomiasis control in irrigation schemes and dams



2. Pesticides and Environment Management

- Pesticides risk assessment
- Adverse effects of pesticides to human health and environment
- Exposure predictive models for pesticide users
- Biological monitoring of pesticides for human health
- Establishment of GAP and Traceability system for both large and small scale farmers in order to meet export quality and standards
- Pesticides residue analysis in food and feeds for MRLs compliance
- Development of natural products for pest and vector management
- Pesticide application technology Maintenance of Pesticides Poisoning Information Centre Data base



3. Biodiversity

3.1 Plant diversity

- Ethno botany research
- National plant database management
- Inventory of Tanzania flora
- Plants with pesticidal and medicinal properties
- Exploration and collection of crop land races
- Conservation and utilization of plant genetic resources
- Promotion of sustainable utilisation of underutilized plants
- Collaborative field surveys and collecting expeditions in under surveyed areas in Tanzania
- Production of floral region checklists
- Multiplication and characterization of plant genetic resources
- Production of illustrated field guides to the plants of Tanzania's National Parks
- Documentation of information on plant genetic resources
- Distribution of plant genetic resources and information related to plant genetic resources
- Strengthen of field gene banks and botanical gardens
- Biotechnology



3.2 Arthropod diversity

- Arthropod taxonomy and diversity



4. Training and Outreach

- Academic training at Postgraduate level including MSc. PhD and Post Doctoral
- Higher Learning Exhibitions
- Awareness and skills development
- Industrial/community tours/attachment and trade fairs
- Staff and student exchange programmes including sabbaticals

5.0 Participatory Decision and Systems Support (PDSS)

- Multi-interdisciplinary expertise for addressing thematic stakeholder's issues.

