FAO’s experience on standards for agricultural equipment

Joseph Mpagalile
Outline

• Brief introduction to FAO
• Testing, evaluation, standards & FAO involvement
• A case of pesticides application
• Conclusion
The Food and Agriculture Organisation (FAO):

- **Specialised** technical agency of the United Nations
- Knowledge and information HUB for agricultural and related activities
- **Neutral forum** for international negotiation agreement and debate policy
“Sustainable intensification means a productive agriculture that **conserves** and **enhances** natural resources. It uses an **ecosystem approach** that draws on nature’s contribution to crop growth and applies appropriate external inputs at the right time, in the right amount.”

*Quote: Graziano da Silva, Director General, FAO*
Thus mechanization must meet farmers’ needs efficiently and effectively and result in improved farm productivity and reduced drudgery, as well as contributing to the development and competitiveness of the food supply chain.

To be sustainable, mechanization must take economic, social, environmental, cultural, and institutional issues fully into account.
FAO & Sustainable agricultural mechanization

- The FAO - Plant Production and Protection Division (AGP)

  - supports member countries in the development of capacity in testing, evaluation of agricultural machinery

  - This is done through
    - implementation of projects,
    - publication, translation and dissemination of guidelines and tools.
Testing & Evaluation of agricultural machines

- FAO recognizes the fundamental role of selection, testing and evaluation of agricultural machinery.

- Two publications on selection testing and evaluation of agric. machines:
  - AG Services Bulletin 110 on the Principles and Practice
  - AG Services Bulletin 115 on the Theory
Introduction to testing

The Problem: Quality of equipment has significant impact on:
- Operator’s safety
- Application efficiency
- Environmental hazards
- Food security and food safety

What is happening in the field:
- Market forces do not push for good quality
- Spray equipment in use is often badly maintained
Introduction to testing, evaluation & standards

- Pay attention to:
  - operator & environment safety
  - Include durability tests (in case of safety implication)

- The FAO guidelines are based on:
  - Existing international standards
  - European and National standards
  - Published references
  - Subject matter experts knowledge and experience
It starts with machinery selection

- A user-based activity
- Selection success depends on access to reliable information
- Process must be demand-led and not top-down
Machinery testing

• Who benefits?
  - Manufacturers (supply-side)? or
  - consumers (farmers) demand-side?

• Farmers need **reliable information** on machine performance in the field.

• Testing should target the following aspects
  - functional,
  - field performance
  - comparative
Machinery Evaluation

- Involves measurement of machines performance under real farm conditions

- Evaluation for a machine takes account of:
  - **technical performance parameters** (functional & field tests)
  - **information** on costs, user friendliness, support services, *needs and availability*, social acceptability, environmental impact and other, site-specific characteristics.
Machinery Standards

• The purpose of standards
  - to provide consumers with an assurance of “fitness for purpose”.
  - provide manufacturers with a product specification.
  - Standards serve as a reference point against which features of a product can be compared.

• Common features include:
  - Dimensions
  - Quality of materials
  - Health & safety aspects
  - Functional characteristics & field performance
Standards – Advantages & Disadvantages

• Although government-imposed Standards may impede progress and raise costs, standards that protect users are of great importance.

• The private manufacturing sector should get involved in testing

• Particularly relevant is the case of agro-chemical sprayers
Agricultural Pesticide Sprayers and Sprayer Testing
Quality of spray equipment has significant impact on:

- Operator safety
- Application efficiency
- Environmental hazards
- Food security and food safety
The Problem – A case of pesticides

- Pesticide use in tropical and subtropical countries is increasing

- In 2016 FAO received requests for support for sprayers from: Tajikistan, Georgia and Moldova, Syria, South Sudan, Mozambique, Fiji, etc.

- The sourced equipment included:
  - knapsack sprayers,
  - motorized knapsack sprayers,
  - tractor mounted and towed sprayers,
  - trailed air blast sprayers and boom sprayers.

- Pesticides are considered dangerous and harmful
Safety and quality standards are not necessarily adhered to

Few developing countries have regulations in place to control the field use of pesticides

Low quality spray equipment is on the market
  • Unsafe design, Leaking, Poor durability, Lack of quality control

Maintenance of spray equipment is insufficient or non-existent

Operators of spray equipment are unskilled with limited knowledge on principles of pesticide application

The Reality in the field:

Presentation at the “3rd Meeting of ANTAM Technical Working Groups” Negombo, Sri Lanka, 8 - 9 December 2016
Health hazards for operators and rural population

Incorrect, inefficient and patchy applications featuring:
- Bad practices
- High number of applications
- Waste of pesticides, environmental contamination
- High risk of residues

- Pesticides create hazard for humans and environment
- Increasing cost of production

Consequences:
Areas for intervention: FAO’s work:

• Programme for Safe and Efficient Application of Agrochemicals and Bioproducts

  – Includes three areas of intervention addressing the three key problems
    • Spray Equipment Quality
    • Spray Equipment Maintenance
    • Proficiency of Spray Operators:

  – A set of technical guidelines which form part of the revised International Code of Conduct on the Distribution and Use of Pesticides.
Guidelines on organization and operation of **Training Schemes** and **Certification Procedures** for Operators of Pesticide Application Equipment:

– Guidelines on Good Practice for Ground Application of Pesticides

– Guidelines on Good Practice for Aerial Application of Pesticides
Conclusions

• Most developed countries:
  • have legislations on the process of pesticide application, including equipment standards
  • are tightening the Maximum Residue Limits (MRLs) for pesticides considering good agricultural practice

• Countries should take similar steps for the benefit of the national consumers as well as to secure export markets
• Testing procedures should be unified and protocols standardized in order to be useful
• Private sector and public sectors have to find a common procedure & move forward together
• Private sector should play a more active role in testing
Thank you

Joseph.Mpagalile@fao.org