

FAO's experience on standards for agricultural equipment

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Outline

- Brief introduction to FAO
- Testing, evaluation, standards & FAO involvement
- A case of pesticides application
- Conclusion

FAO & Our roles

The Food and Agriculture Organisation (FAO):

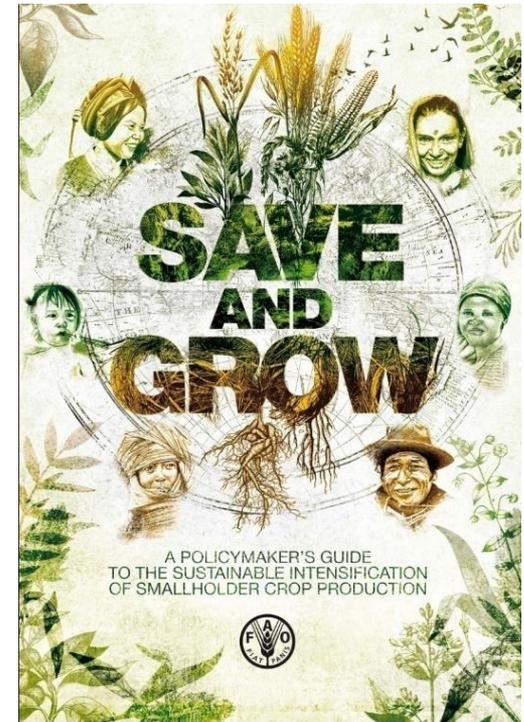
- ✓ **Specialised** technical agency of the United Nations
- ✓ Knowledge and information HUB for agricultural and related **activities**
- ✓ **Neutral forum** for international negotiation agreement and debate policy



FAO & Sustainable intensification

“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



FAO & Sustainable agricultural mechanization

- 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)



SO2 – Make agriculture, forestry and fisheries **more productive & sustainable**



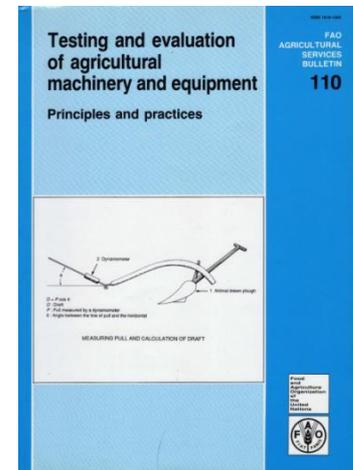
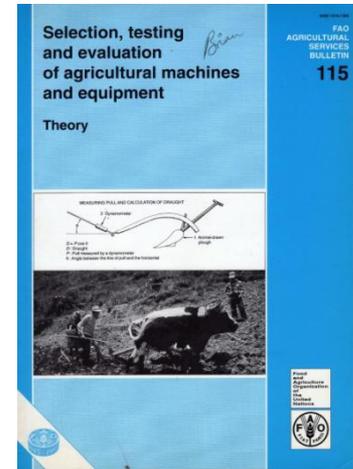
SO4 – Enable **inclusive & efficient** agricultural & food systems



- 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

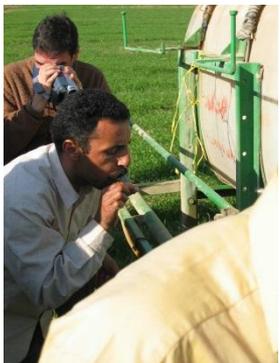


Agricultural Pesticide Sprayers and Sprayer Testing

The Problem – A case of pesticides

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

The Reality in the field:

- 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



Consequences:

- 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**





Areas for intervention: FAO's work:

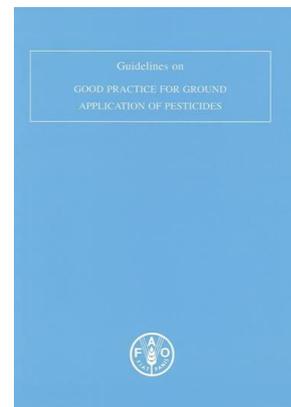
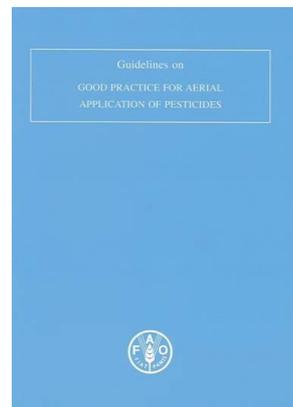
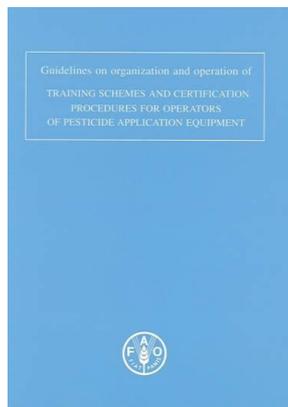
- Programme for Safe and Efficient Application of Agrochemicals and Bioproducts
 - Includes three areas of intervention addressing the three key problems
 - Spray Equipment Quality
 - Spray Equipment Maintenance
 - Proficiency of Spray Operators:
 - A set of technical guidelines which form part of the revised **International Code of Conduct on the Distribution and Use of Pesticides.**

Proficiency of Spray Operators

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

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