



Food and Agriculture Organization
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Evaluation of pesticide risks to soil organisms

A Module in FAO's Pesticide Registration Toolkit



Baogen GU

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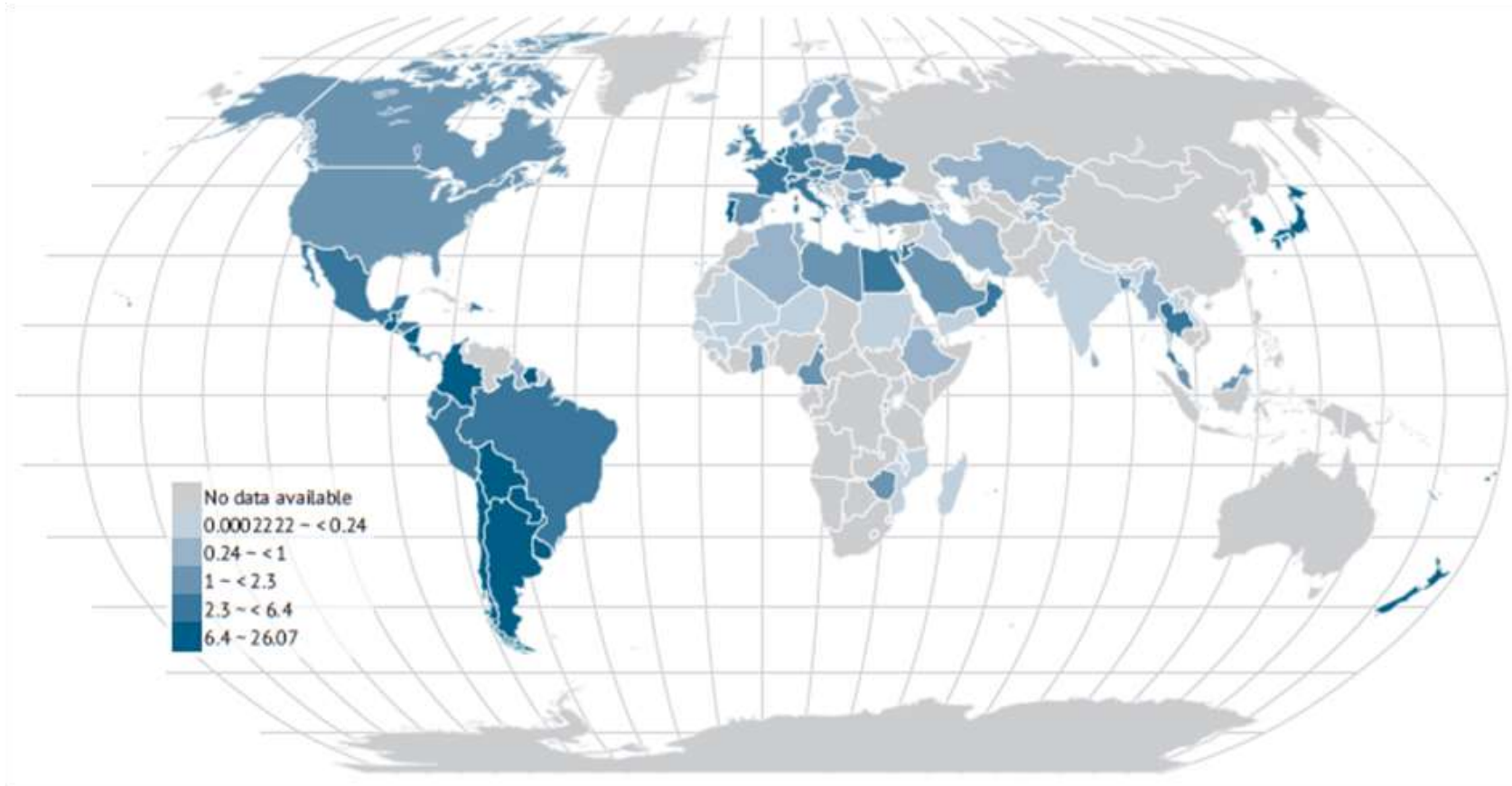
3 May 2018



Contents

- **International context**
- **FAO's Pesticide Registration Toolkit**
- **Risk Assessment Module on Soil Organisms**

Pesticides are used worldwide and play an important role in food security



Use of plant protection product active substances per hectare of arable land in kg a.s./ha (mean 2007-2012, from FAO 2015, see <http://www.fao.org/faostat/en/#data/RP>)



Pesticide use poses risks to human health and the environment



Risks for pesticide users



Risks for consumers



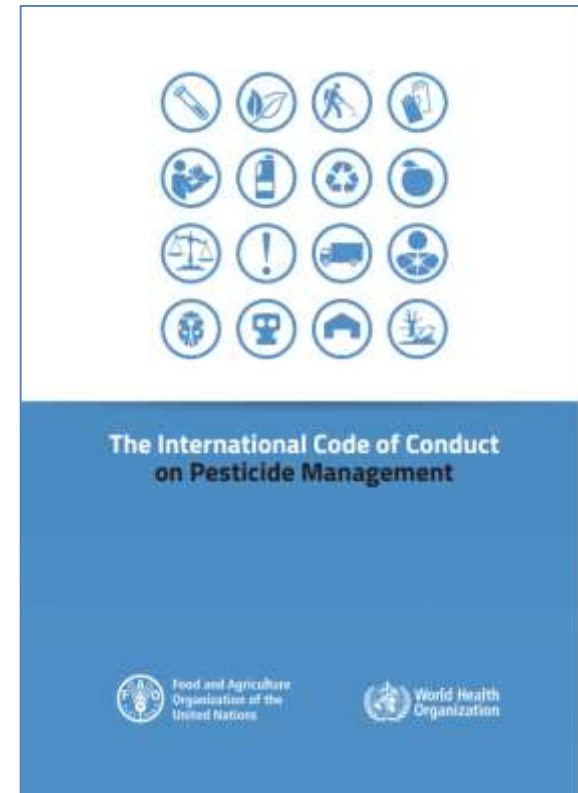
Environmental risks

Pesticide registration/management

Main objective of pesticide registration:

Demonstrate that the product is **effective for its intended purposes** and does **not pose an unacceptable risk to human or animal health or the environment** under the conditions of use in the country or region.

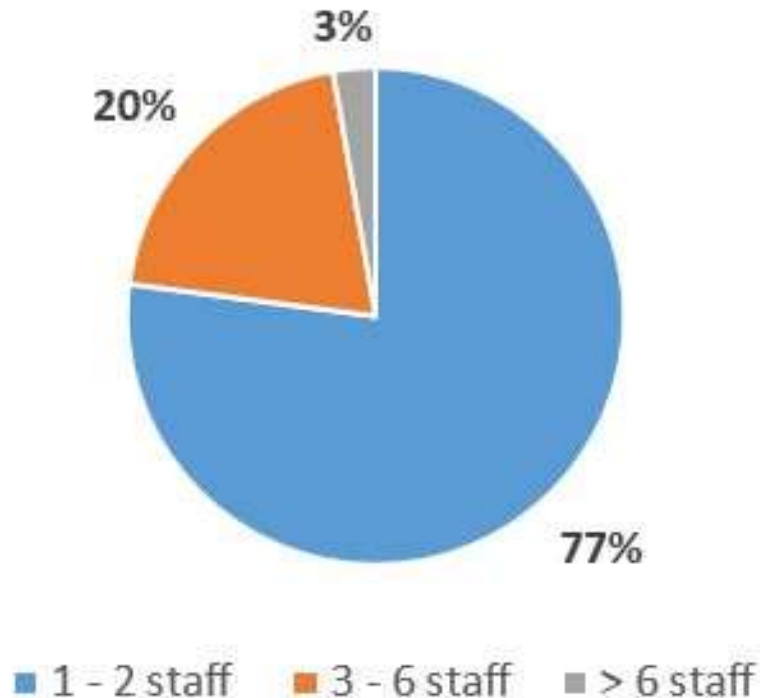
Pesticide registration is carried out by governmental regulatory authorities.



Limited capacity/expertise in low and middle income countries

Staffing of pesticide registration authorities in developing countries

(FAO survey 2013, 109 countries)



Perspective !?

USEPA-OPP: ~ 700 staff

UK-CRD: ~ 150 staff

China ICAMA: ~ 80 staff

Netherlands Ctgb: ~ 120 staff



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FAO's Pesticide Registration Toolkit

<http://www.fao.org/pesticide-registration-toolkit>



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Pesticide Registration Toolkit



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Objective of FAO's Pesticide Toolkit

- Web-based registration **handbook intended for day-to-day use**
- **Decision support system** for pesticide registration staff in developing countries



- Favours methods feasible with **limited resources**
- Assist registrars in **informed decision making** – they still make the decisions!
- **Training programme > 50 countries**

Main elements of the Toolkit

Three main menus

- **Registration Tools**
 - Guidance on procedures
 - **Risk assessment models**
- **Information sources**
 - Access to information
- **Special pages**
 - High interest topics



Quick start guide

Search ...

Toolkit start



Home page

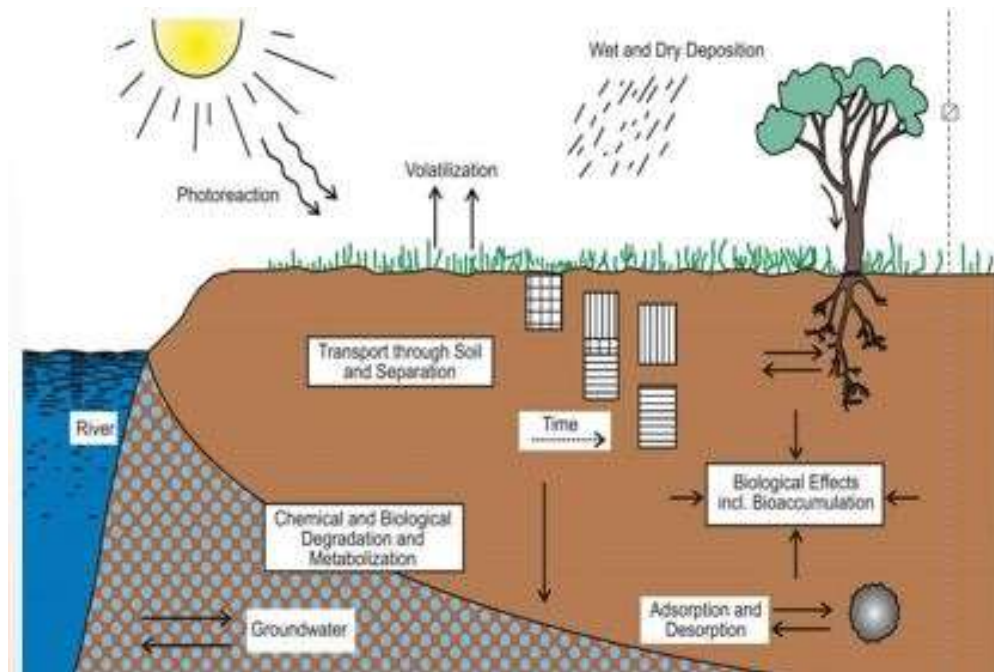
New module on risk assessment for soil organisms

Work in progress!

Modules already included:

- Occupational risk
- Risk to pollinators
- Residue limits

=> Developing new modules
through expert meetings



Expert meeting at FAO (23-25 April 2018)





Risks of pesticides to soil

- Decrease soil biodiversity, impede soil functions, diminish system productivity
- Soil is rather resistant to disturbance, however when soil fertility and soil structure are destroyed in the long run, the loss is quite irreversible



Risks of pesticides to soil

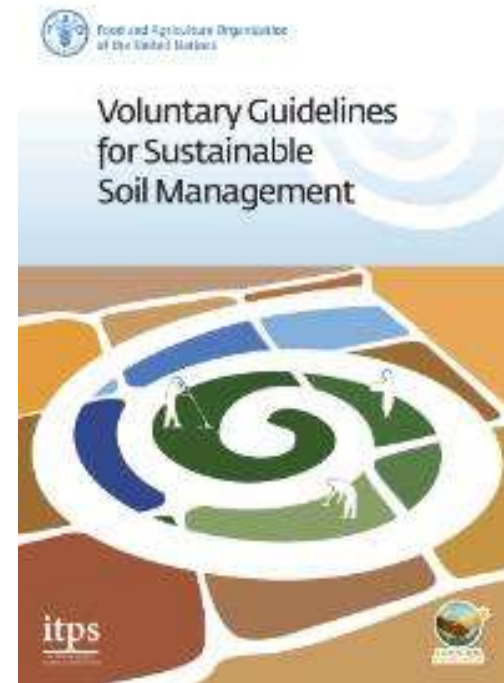
- Soil management is sustainable if the supporting, provisioning, regulating, and cultural services provided by soil are maintained or enhanced without significantly impairing either the soil functions that enable those services or biodiversity
- ⇒ **FAO's Plant Production and Protection Division is developing the module on soil risk assessment to assist low and middle income countries address this issue**



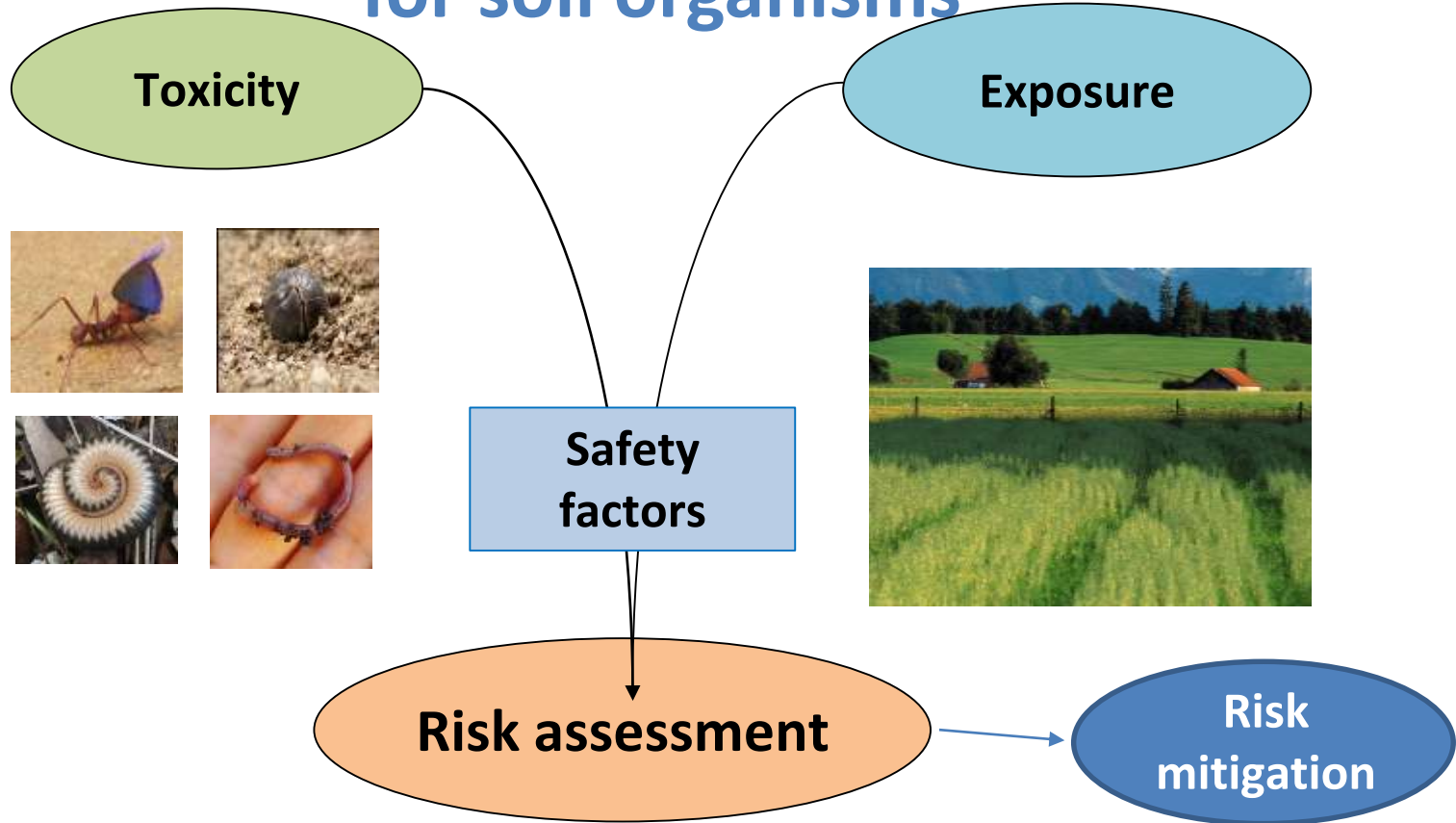
Voluntary Guidelines for Sustainable Soil Management (2016)

3.7 Preserve and enhance soil biodiversity

The **authorization** and use of **pesticides in agricultural systems** should be based on the recommendations included in the International Code of Conduct on Pesticide Management and relevant national regulations. Integrated or organic pest management should be encouraged



Ecotoxicological risk assessment for soil organisms



**Protecting soil organisms, and contributing to biodiversity,
agroecology and food security**

Toxicity – standardized dataset

- **Earthworm** Reproduction (56d)
(*E. fetida*, *E. andrei*, OECD 222)
- **Collembola** Reproduction (28d/21d)
(*Folsomia candida*, *F. fimetaria*, OECD 232)
- **N- Transformation** (28-100d)
(Microorganisms OECD 216)





Thank you



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