Pesticide Risk Reduction Programme – Ethiopia

Risk assessment method – proposed approach

Paulien Adriaanse (Alterra)

joint collaborative programme on pesticide registration and post-registration

MoA

ALTERRA




Towards a sustainable use of pesticides in Africa

Risk assessment – Proposed approach for WP B2.1

- B2.1: Development of a scientific evaluation system for the registration of pesticides – Evaluation of dossiers of chemical pesticides

So:

- It is about the registration procedure, this is not necessarily what happens in the field !
  So, NOT about
  Point sources such as losses during preparation of application, cleaning application tools after use, bad ways of stocking or waste management at farms, obsolete stocks
- It is about developing scientific methods to assess risks in Ethiopian context and for use pattern requested by registrant
- Risks assessed by GAP: Good Agricultural Practice

Risk assessment – Proposed approach for WP B2.1

- This workshop geared towards risks for the Environment (and indirectly human health, e.g. via drinking water)
- Focus on use of pesticides in agriculture, not for public health

- So, we have limited ourselves to only a part of the problems related to the use of pesticides, we now consider especially the ‘front door ‘ of Ethiopia

Risk assessment – Proposed approach for WP B2.1

- Back to basics of Environmental Risk Assessment:

$$Risk\ estimate = \frac{safe\ concentration\ or\ dose}{predicted\ \ environmental\ concentration}$$

Risk assessment – Proposed approach for WP B2.1

- Risk estimate based upon
  - Safe concentration or dose: **PNEC (Predicted No Effect Concentration)** and
  - PEC (Predicted Exposure Concentration)

- PNEC:
  # based upon a range of experiments (so expensive)
  # compound specific
  # scientific evidence for not sensitive for climatic conditions

- Proposal for PNEC:
  to be based as much as possible on existing information (EU, USA-EPA, other countries)

Risk assessment – Proposed approach for WP B2.1

- PNEC to be based on existing information (EU, USA-EPA, other countries)

- N.B. Not possible for non-standard protection goals, e.g. silk worm (China), or hippo/crocodiles...

Risk assessment – Proposed approach for WP B2.1

- Risk estimate based upon
  - Safe concentration or dose: PNEC (Predicted No Effect Concentration) and
  - **PEC (Predicted Exposure Concentration)**

- PEC: local relevant exposure, so specific for Ethiopian conditions !

- Generic assessment method (not compound specific)
- Once designed: PEC can be calculated in cost-effective, reproducible and user-friendly way

Risk assessment – Proposed approach for WP B2.1

- General principles of PEC estimation:
  - Compound properties (Koc, DT_{50}, etc) plus
  - Requested use pattern (crops, applications: dose, number, interval)
  - Site-specific scenario (agro-environmental conditions)

- What is local relevant:
  # Compound properties: average/mean values reasonable estimate (based upon existing lab/field experiments, including e.g. correction for T, om), so no local values needed
  # Requested use pattern as stated in GAP form (defined by registrant, relation with Efficacy assessment)

Risk assessment – Proposed approach for WP B2.1

- What is local relevant (cont):
  # site-specific scenario !

- Scenario should be based upon
  EU: ‘realistic worst case approach’
  (Directive 91/414/EC of EU)
  Ethiopia: phrase in Proclamation ??
- e.g. Slovenia entered EU: no suitable scenario in existing EU assessment, because considerable agricultural area with higher rainfall than anywhere else in EU, so EU scenarios not realistic worst case for Slovenia, i.e. not sufficiently protective

- Realistic worst-casedness is often translated as ‘90th-percentile occurrence in time and space’

Risk assessment – Proposed approach for WP B2.1

- So, risk estimate based upon
  - Safe concentration or dose: PNEC (Predicted No Effect Concentration) and
  - PEC (Predicted Exposure Concentration)

- PEC estimated on basis of:
  - Site-specific scenario (agro-environmental conditions) plus
  - Compound properties (Koc, DT_{50}, etc)
  - Requested application pattern (dose, number, interval)

- Underlined: known or use existing info, so
  focus of ERA need to be on **scenario-development**

Risk assessment – Proposed approach for WP B2.1

- Scenario development depends on set protection goals:
  - What ? E.g. groundwater, aquatic ecosystem, birds
  - Where ? E.g. gw under agriculturally used land; streams next to agriculture or horticulture
  - How strict ? <- worst-casedness

Risk assessment – Proposed approach for WP B2.1

- What have we done up to now ?
  # general introduction on Environmental Risk Assessment (ERA), especially in the EU
  # Examples from EU, NL, China on how ro design ‘realistic worst case’ exposure scenarios for ERA

- The examples focussed on the gw and sw compartments
  # much knowledge available (contrary to e.g. bees)
  # complicated !
  # gw and sw mentioned by APHRD as important to protect in earlier sessions

Risk assessment – Proposed approach for WP B2.1

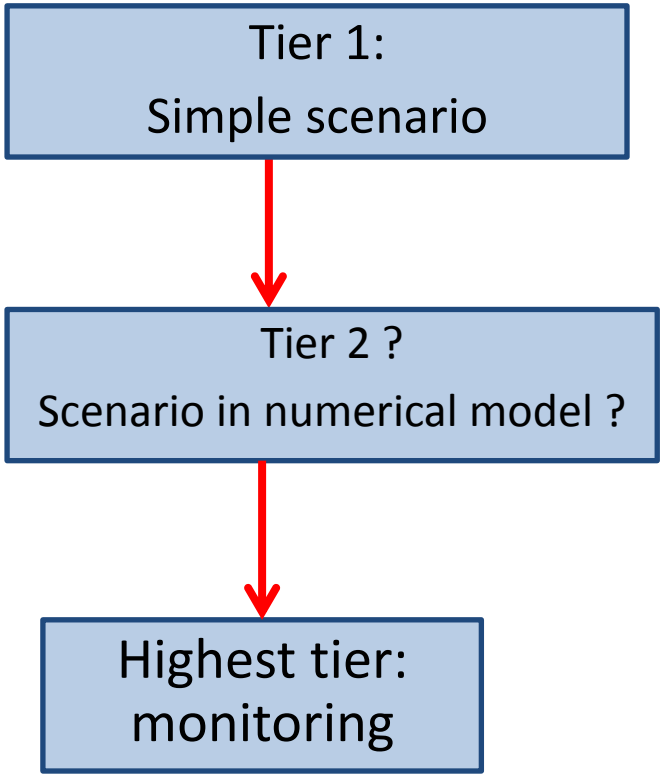
- Next: show PRIMET (in detail for gw/sw)

- PRIMET: developed for risk assessment at farm level in SE Asia
- Here: ERA for representative realistic worst case situation in Ethiopia needed

- So, we have to adapt the exposure scenarios,
  maybe add additional scenarios, add protection goals

Risk assessment – Proposed approach for WP B2.1

- Where do we aim for ?
- First tier in PRIMET for all protection goals for Ethiopia
- For priority goals: more site-specific exposure scenario, (based upon analysis Ethiopian situation)



Risk assessment – Proposed approach for WP B2.1

Focus of workshop from 11 am today

- Definition of potential protection goals, their selection and prioritisation (role representatives political level), designing conceptual models and defining further steps (data needed, analyses to be done)

- .....work to be done.....

- Next workshop: further development of assessment methods of protection goals

Risk assessment – Proposed approach for WP B2.1

Welcome to questions, remarks and discussions !