Studies on biobed in Turkey

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- In Turkey, 2007,
  - active ingredient consumption was 18 240 tons and 0.7 kg a.i. per ha.
  - number of PTO driven sprayers is about 250 000.

- Operators generally clean their sprayers 2 or 3 times per season in farmyard, field or near rivers, ditches in Turkey.

(Photo by Nigar Yarpuz-Bozdogan, 2008)

BIOBED IN TURKEY

There is one biobed in Turkey.

It is in Adana province of the Mediterranean Region.

This project was funded by The Scientific and Technical Research Council of Turkey. (TOVAG 107 O 215)

This project was started on July 2007 and finished on July 2009.

ABSTRACT

- The specific aim of this study was to investigate the degradability of mixtures of pesticides in the biobed mixture.
- Biobed mixture was 50% straw, 25% soil and 25% peat.
- Soil and biobed mixture samples were taken at 0-15, 15-30 and 30-50 cm.
- Soil and biobed mixture samples were removed for each chemical treatment at 7, 14, 21, 28, 35, 42, 49, 56, 63 and 70 days after treatment (DAT).

- Malathion, dichlorvos and fenthion active substance were used for the degradation studies.

- These active substances degradation studies were determined by GC-NPD (gas chromatograph equipped with nitrogen-phosphorus detector).

- The samples were extracted by SPE (solid phase extraction) method.

Construction of Biobed

Preparation of Biomix

Biobed Mixture

Placement of Biomix in Biobed









Preparation of Farmsoil

Filling and Cleaning of Sprayer on Biobed





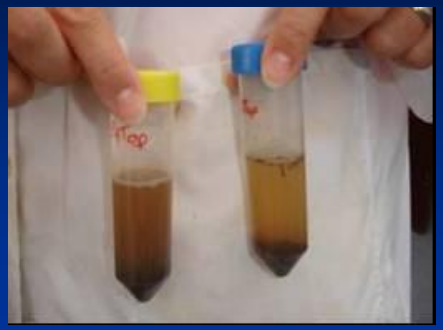
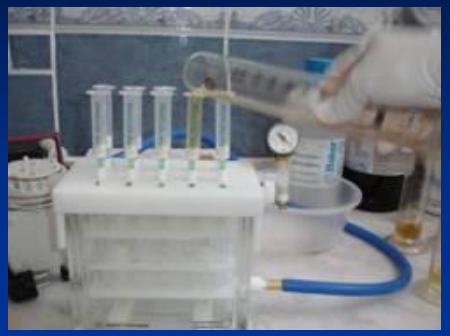


Malathion, dichlorvos and fenthion a.i. were used in trials.

Sampling of Biomix, Farmsoil and water

Analysis in the laboratory







Results in biobed

- In biobed, high concentrations of active ingredients were obtained 0-15 cm depth at trial day.

- The highest concentration was obtained in dichlorvos a.i. because of its Koc value and solubility in water. From this specifications, dichlorvos was observed in the depth of 30-50 cm at 70 DAT. Dichlorvos a.i., has low Koc value and high solubility, can easily infiltrate to deeper in soil.

Results in biobed

- Malathion was determined in depth of 0-15 cm at 21 DAT (days after treatment). In depth of 30-50cm, malathion was observed at trial day. This a.i. was not observed at 30-50 depth at 7 DAT.

- Fenthion a.i. was observed in the depth of 0-15 cm at 14 DAT. Even at trial day, in depth of 30-50 cm, fenthion was not determined because of its high Koc value. The highest concentration of fenthion a.i. was determined in 0-15 depth at trial day. Fenthion a.i., has high Koc value and low solubility, can not infiltrate to deeper in soil.

Results in farmsoil

- In farmsoil, high concentrations of active ingredients were obtained 0-15 cm depth at trial day.

- The highest concentration was obtained in dichlorvos a.i. because of its Koc value. From this specification, dichlorvos was observed in the depth of 30-50 cm at 49 DAT.

Results in farmsoil

- Malathion a.i. was determined in depth of 0-15 cm at 21 DAT (days after treatment). In depth of 15-30 and 30-50cm, malathion was observed at trial day. This a.i. was not observed in these depth at 7 DAT.

- The highest concentration of fenthion a.i. was observed in the depth of 0-15 cm at trial day. Even at trial day, fenthion was not determined in depth of 30-50 cm.

Results in water

- Dichlorvos a.i., has low Koc value and high solubility in water, infiltrated to deeper in biobed, and dichlorvos a.i. determined in water sample.

CONCLUSIONS

- In the result of this study, it was concluded that biobed should be used to reduce pesticide-contaminated waters during filling, mixing, and cleaning of sprayers in Turkey.

- In 2010, our biobed research team started two new projects about using of organic materials instead of peat in Turkey. One of them is usage of ginned cotton seed and, the other is usage of sludge from wastewater treatment. These projects are to be funded by Cukurova University Research Project Unit.

Project Team


Thank You