

# Current Research on Human Risks of Pesticides in Ethiopia

Yalemtehay Mekonnen, Prof.  
Faculty of Life Sciences  
Addis Ababa University  
Email: [yalemt@bio.aau.edu.et](mailto:yalemt@bio.aau.edu.et)

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# 1. Introduction

- The world population depends on agriculture products: crops, cereals, vegetables, fruits etc.
- Food security is assured by how much a country produces/ provides for its citizens
- Ethiopia with its dense population of 80 million is challenged by the need for high productivity

# 1. Introduction cont'd

- Naturally plants are attacked by pests, thus affecting yield
- Application of pesticides for better yield has been in practice for over 40 years in the country
- **Question is?** Has it been ONLY useful for high yield or is there any SIDE EFFECT on human/animal health & the environment??

## 2. Pesticides

- A substance or mixture of substances intended for preventing, destroying or controlling pests, including vectors of human and animal diseases, unwanted species of plants or animals causing harm during production, processing, storage, transport or marketing of food, agricultural commodities, wood and wood products or animal foodstuffs, or which may be administered to animals for the control of insects, arachnids or other pests in or on their bodies...” (FAO, 1990)

## 2. Pesticides cont'd...

- Use of pesticides in agriculture dates back to the times of the early history of agriculture practices
- Discovery of DDT by Paul Mueller in 1939 as an effective insecticide made a landmark for the discovery of many other pesticides in the later years

## 2. Pesticides cont'd...

- Chemical pesticides are broadly categorized as **organic (97%)** and **inorganic**
- Most commonly used synthetic organic pesticides are grouped into **organochlorines** (chlorinated hydrocarbons), **organophosphates (OP)** and **carbamates**

# 3. Human Health Risks

**Acute** toxicity normally occurs shortly after contact with a single dose of poison (enzyme inactivity)

**Chronic** toxicity occurs when an organism is exposed to repeated small and non-lethal doses of potentially harmful substances (birth defects, cancer, hormone imbalance etc.)



# 3. Human Health Risks cont'd...

- Contamination of Environment

Pesticides such as **DDT** could not breakdown rapidly by microbes and persist for a long time in the environment and build up their concentration along the food chain

Pesticide residues are transported to wider geographical areas contaminate water, soil...

# 4. Highlight on Research

**Hypothesis:** Chemical pesticides affect human health

**Objectives:**

- Determine indicator enzymes
- Evaluate respiratory status
- Assess **K**nowledge, **A**ttitude and **P**ractice (KAP)

## 4. Highlight of Research cont'd...

- **Northern Omo State Farm (1997)**
- 81 pest control workers exposed to Ops (Chlorpyrifos & Profenifos). Cholinesterase levels lower after pesticide spraying,
- improper use of PPD,
- lack of personal hygiene,
- ignorance of toxicity of pesticides

## 4. Highlight on Research cont'd...

- **Upper Awash** (2001, 2002)
- (Awara Melka, Nura Era, Tibila, Zewai)
- 203 farm workers (sprayers, supervisors, technicians, pest assessors) frequent complaints of respiratory symptoms
- Knowledge, Attitude and Practice of pesticide use. Careful work 93%, need of personal protective device (PPD) 7%, Importance of Medical check up 3%

## 4. Highlight on Research cont'd...

### Farms Birr & Ayehu (West Gojjam) (2004)

- 82 farm workers (sprayers, pest assessors, supervisors, mechanics, tractor operators)
- Plasma Cholinesterase (important for nerve function) level lower in sprayers.
- Chronic respiratory problem (cough, wheezing),
- Liver enzymes (ALP) high in Birr

# 5. Research output/ Outreach

- Awareness raising using different professional platforms (associations, societies...)
- Training agricultural workers
- Presenting impact of pesticide use to human health on workshops/conferences etc.

# Travel Workshop (Kombolcha, Nov. 2000)









# Explanation given to workers (Merti, June 1998)



# Photographs

Tseday Farm March,  
2000





Nura Era, 2002



Awara Melka, Hidar 1992



Merti Farm, 1998

# 6. Conclusion/Way Forward

- Pest infestations affect agricultural production
- Pesticides are applied thus agriculture workers are at high risk of exposure
- **Women's** role in agricultural production places them at significantly higher levels of exposure than men

## 6. Conclusion/ Way Forward cont'd...

- Individual pesticide users/applicators need awareness of the unwanted ill effects of pesticides
- MoA and concerned stakeholders have to take serious consideration of how to safely use chemical pesticides to control pests.



## 6. Conclusion/ Way Forward cont'd...

- Formulation plant(s) established in Ethiopia have to follow international standard of safe production of chemical pesticides taking into consideration all aspects; the factory **physical** set up, protection of **workers**, handling, **storage** and other related issues
- Best option to consider: **Environmentally friendly** alternatives to control pests should be introduced and promoted

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