Agricultural contaminants: Farm Practices in Pesticide use

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Pesticide Use in Rice bowl of Kerala and human health – South Asian Network for Development and Environmental Economics

Pesticide use and crop productivity in food crops of Kerala-Kerala State Council for Science, technology and Environment

Supply Side Analysis of Pesticide Markets in Kerala-Evidences from Retail Traders

Kerala State Council for Science, technology and Environment
Pesticide Scene in India

Largest manufacturer of basic pesticides in Asia

12th globally

226 products

Insecticides 75%, Fungicides 12%, Herbicides 10%
Export oriented

Production – 80-85 MT

Imports - 19-29 MT

Consumption – 42-45 MT

EXPORTS – three times cons.

2.38% CAGR(US,EU,AFRICAN)
Can we relax?

Is it due to decline in consumption, in real sense?

Less quantity..more toxic, persistent?
Kerala Scene-
Trend of Pesticide consumption in Kerala
Pesticide consumption in Kerala during 2010-11

- Fungi: 73%
- Insect: 15%
- Weed: 11%
Growth rates

Fungi- -3.12%
Insect-- -16.46%
Weedi - -7.12%

Total- -7.55%
Concerns

Increasing share of weedicides

While toxic and more persistent chemicals show a very high growth rate in consumption, the chemicals that exhibit a decline in consumption are safer and more in number, but less in the extent of decline.
Sale Policy
Retailing - India

1,78,979 retail outlets

90% private
7% Cooperative

Only in 11 states public sector presence
In NE states (Mizoram, Meghalaya and Nagaland) public sector has a major share in pesticide retailing.

In HP 42% public and cooperatives (58% private).
Private Sector ruling the retail market-60%...
Poor Quality control arrangements .............

<table>
<thead>
<tr>
<th>Date</th>
<th>Sample analysed</th>
<th>Sample found poor</th>
<th>Action taken</th>
</tr>
</thead>
<tbody>
<tr>
<td>1997-98</td>
<td>1784</td>
<td>6</td>
<td>Nil</td>
</tr>
<tr>
<td>1998-99</td>
<td>1505</td>
<td>23</td>
<td>Nil</td>
</tr>
<tr>
<td>1999-2000*</td>
<td>1281</td>
<td>2</td>
<td>Nil</td>
</tr>
<tr>
<td>2000-01</td>
<td>1698</td>
<td>-</td>
<td>Nil</td>
</tr>
<tr>
<td>2001-2002</td>
<td>1591</td>
<td>3</td>
<td>Nil</td>
</tr>
<tr>
<td>April 2002-July 02</td>
<td>554</td>
<td>-</td>
<td>Nil</td>
</tr>
</tbody>
</table>
Micro level Behaviour-Farm practices
Risk management...

Risk assessment

*Chances of pest attack?......*

*yield risk perceptions...very high*

why take risk?

Preventive than Curative..
Most toxic pesticides are preferred.

<table>
<thead>
<tr>
<th>Colour</th>
<th>Category</th>
<th>Frequency (%)</th>
</tr>
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<tbody>
<tr>
<td>Green</td>
<td>Slightly toxicity</td>
<td>5</td>
</tr>
<tr>
<td>Blue</td>
<td>Moderately toxic</td>
<td>25</td>
</tr>
<tr>
<td>Yellow</td>
<td>Highly toxic</td>
<td>48</td>
</tr>
<tr>
<td>Red</td>
<td>Extremely toxic</td>
<td>22</td>
</tr>
</tbody>
</table>
Banned chemicals are used—Calcium Carbide for uniform ripening and Endosulphan.
Use of pesticides banned for use in Fruits and Vegetables (monocrotophos)-
Methoxy Ethyl Mercury Chloride- prescribed for restricted use (!!...) only
waiting
Period....
Why should we wait??
Not for banana??? Why?

No mechanism to ensure crop specific use

Restricted use ??? What`s it?
No arrangements to ensure restricted use..

No problem there…why here?
No checks for cross boarder transfers…..
Application Practices
More than recommended dose

83% 156% 53%

83% 156% 53%

55%

usage

Metacid  Acataf  Monocrotophos  Malathion

trade name

average

Recommended Dosage / per ha
Water—oh it is much less than recommendation.

-66%
Indiscriminate / unscientific use

Chemical / Dosage / Time

Method / Spurious

........../Mixtures of chemicals.
No suggested gadgets/precautions
Careless disposal
Punishment for noncompliance—against whom?

Farm owners?

Farm workers?

Agri. Officers?

Traders?
Agent of consultation on the use of chemical pesticides

<table>
<thead>
<tr>
<th>Agent</th>
<th>Paddy</th>
<th>Banana</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No of respondents</td>
<td>No of respondents</td>
</tr>
<tr>
<td>Own decision</td>
<td>5(12.5)</td>
<td>6(15)</td>
</tr>
<tr>
<td>Friends</td>
<td>7(17.5)</td>
<td>4(10)</td>
</tr>
<tr>
<td><strong>Dealer</strong></td>
<td><strong>19(47.5)</strong></td>
<td><strong>18(45)</strong></td>
</tr>
<tr>
<td>Agricultural Officials</td>
<td>9(22.5)</td>
<td>12(30)</td>
</tr>
<tr>
<td>Total</td>
<td>40 (100)</td>
<td>40(100)</td>
</tr>
</tbody>
</table>
Wrongly Targeted Trainings…to be focused on farm workers/sales person

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<td></td>
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<tr>
<td>*12</td>
<td><strong>Are you aware of pesticide toxicity</strong></td>
<td>49</td>
<td>51</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td><strong>Are you able to understand the level of toxicity, reading the sign on the label</strong></td>
<td>0.6</td>
<td>99.4</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td><strong>Have you attended any trainings / workshops / discussions on pesticide use and care</strong></td>
<td>1.41</td>
<td>98.59</td>
<td></td>
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</tbody>
</table>
From beginning to end

Decision making on pesticide use…

Choice of the chemical

Agent of consultation

Concentration of the chemical

Mixing practices

Spurious chemicals/mixtures

Spray practices…..
Some corrections...
Technological Efforts-research focus

Realistic estimates of risk/chances of pest attack

Alternate methods

Bioagents (weed control)

traditional wisdom
Infrastructure

Monitoring Mechanism in pesticide retailing

*public sector presence*

*Licensing system to be changed*

Demand pull-

*Testing facility*(cheap,quick,easy) for *pesticide residue in agri. products*
Education programme

- **farmer education** through targeted trainings
- **to dealers** and farm workers
- **Consumer awareness**
  Awareness regarding the legal status of the chemicals-
  Information to be displayed on board in front of the sale points, farmer’s clubs and Agricultural Offices. **The punishment for violation may also be publicized**

# Training support to Farm Workers and Sales persons.
Welfare Programme

registry of trained applicators at Panchayat level.

They may be provided with protective gadgets at subsidized rates-

WORKER WELFARE PROGRAMMES

Regular pest monitoring
Waste Management

The disposal pattern of used containers may be scientifically managed. The producers may be directed to collect the empty containers back.
Better Management

At panchayat Level.-
environment management