Social Networks Shaping IPM Knowledge and Practice

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Global Examples

Mali, West Africa – export production

Ukraine, ex-Soviet Union – mixed farming

Indonesia, South East Asia – FFS rice
Farm-level decision making is shaped off-farm

There are three types of off-farm agents affecting the range of IPM decisions:

1. those determining pest management options/strategies
   (chemical companies, research and extension)

2. those who affect actual application methods
   (creditors, dealers, shippers, processors, etc.)

3. those concerned with end product consumption
   (consumers, retailers, regulators, etc.)
One of the amazing features of doing commodity network analyses is the fact that actors rarely know much about actors beyond those from whom they purchase raw materials or to whom they sell their products. (footnote 4, Busch and Juska, 1997)

What commonly holds them together are shared knowledge and relations of trust built upon common understandings.
Knowledge Network Analysis

Knowledge is unevenly distributed and issues of availability of resources and of power are important throughout the network (at nodes and across links)

Actor resources and power influence:

- the science to pursue, indeed, whether science is even relevant

- the types of messages which can be effectively delivered
green bean producers in Mali

contract with exporters; who contract with importers; who make routine deliveries to wholesalers and retailers.
Green Bean Production and Marketing Chain with Monitoring System

The Sudano-Sahelian Environment: Source of Inputs and Contamination
# Decision Making Role of Green Bean Exporter in Production Activities

According to Farmer Perceptions (coded on a scale from 0 to 3)

<table>
<thead>
<tr>
<th>Production Activity</th>
<th>No role</th>
<th>Advice</th>
<th>Influence</th>
<th>Decide</th>
<th>Average Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fencing Garden (105)</td>
<td>99.0</td>
<td>1.0</td>
<td></td>
<td></td>
<td>.01</td>
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<tr>
<td>Tilling (105)</td>
<td>99.0</td>
<td>1.0</td>
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<td></td>
<td>.01</td>
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<tr>
<td>Seedbed Preparation (104)</td>
<td>98.1</td>
<td>1.9</td>
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<tr>
<td>Seeding (105)</td>
<td>36.2</td>
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<td>1.9</td>
<td>6.7</td>
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<tr>
<td>Fertilizing (105)</td>
<td>45.7</td>
<td>44.8</td>
<td>9.5</td>
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<td>Weeding (105)</td>
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<td>4.8</td>
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<td>Watering (105)</td>
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<td>.10</td>
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<tr>
<td>Pesticide application (105)</td>
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<td>31.4</td>
<td>50.5</td>
<td>8.6</td>
<td>1.58</td>
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<tr>
<td>Seed treatment (66)</td>
<td>37.9</td>
<td>19.7</td>
<td>18.2</td>
<td>24.2</td>
<td>1.29</td>
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<td>Harvesting (105)</td>
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<td>43.8</td>
<td>2.9</td>
<td>19.0</td>
<td>1.07</td>
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<td>Sorting (105)</td>
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<td>31.4</td>
<td>58.1</td>
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<td>Packing (106)</td>
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<td>7.5</td>
<td>25.5</td>
<td>66.0</td>
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<td>Stocking (106)</td>
<td>1.9</td>
<td>3.8</td>
<td>11.3</td>
<td>83.0</td>
<td>2.75</td>
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<td>Transporting (106)</td>
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<td>8.5</td>
<td>84.9</td>
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<td>Sales and weighing (106)</td>
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<td>1.9</td>
<td>7.5</td>
<td>90.6</td>
<td>2.89</td>
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</table>
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Envisioned Structure of Institutional Relationships for Plant Protection

Ministry of Agriculture and Food

International Organizations

Central State Station of Soil Fertility and Plant Protection

Oblast Agricultural Department

Oblast Plant Protection Station

Pesticide Producing Firms

District Plant Protection Station

Pesticide Distributors

Research Institutes

Forecasting Stations

Producers of agricultural products

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Stakeholder Network Building
## Determinants of Pesticide Spraying Practices, Two Regression Models

<table>
<thead>
<tr>
<th>Independent</th>
<th>Spraying on a Fixed Schedule</th>
<th>Spraying for an Economically Significant Pest Problem</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Full Model</td>
<td>Reduced Model</td>
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<tr>
<td>Age of Farm Decision Maker</td>
<td>.071</td>
<td>-.092</td>
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<tr>
<td>Education of Farm Decision Maker</td>
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<td>.141</td>
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<tr>
<td>Type of Farm</td>
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<td>.255**</td>
</tr>
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<td>Pesticide Dealer’s Advice</td>
<td>.380**</td>
<td>.368**</td>
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<tr>
<td>Agricultural Agent’s Advice</td>
<td>-.064</td>
<td>.086</td>
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<tr>
<td>Amount of Time Seeking Information</td>
<td>-.108</td>
<td>-.095</td>
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<tr>
<td>Diversity of Information Sources</td>
<td>-.087</td>
<td>-.184*</td>
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<tr>
<td>Adjusted R²</td>
<td>.235</td>
<td>.233</td>
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<tr>
<td>Model Significance</td>
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<td>.000</td>
</tr>
</tbody>
</table>

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Analyzed Structure of Institutional Relationships for Plant Protection
Farmer Field Schools

A form of adult education based on experiential learning

Farmers observe and experiment with the modification of the ecology of their crops, learning about:

- population dynamics
- distinguishing pests and beneficials
- crop damage-yield relationships

And gaining self-confidence and skills in how to:

- cooperate and communicate with peers
- make more complex crop management decisions
Pesticide Expenditures in Indonesia
(in thousands of rupees inflation adjusted)

From: Feder, Murgai and Quizon, 2003

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Lessons Learned

1. One cannot blindly assume that once a message has been transmitted – and received– that it will be retained. Constant attention to the network sustaining the practice(s) is necessary.

2. There are competing knowledge systems for pest management. IPM practices within a network can be transformed by dominant network actors or groupings.
Thank you