Potential and Constraints for Intensive Land Use with Pond Irrigation in Northeast Thailand

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1, Background and Purpose

- In NE Thailand, sugarcane or cassava is important cash crop for the farm household economy.
- But there are also such serious problems as increased soil erosion, and depletion of soil fertility by successive planting.

- The integrated (or mixed) farming introducing vegetables or fruits, and agro-forestry would be paid more attention nowadays. These are both more sustainable and also give farmers more independence from the agribusiness companies.
- But it is not easy for farmers to change the farming systems.
In this report,

the potential and constraints
for the development of intensive land use
based on vegetables or fruits production
with irrigation from farm pond,
using the case study of a typical village in
Northeast Thailand
2. Characteristics of the Research Site

Topography around Khon Kaen Province

- Upland
- Upper paddy
- Lower paddy
Fig. 1 Location of the Research Site

Thailand

North

Northeast

Central

Khon Kaen Province

Nong Saeng

South

Bangkok
Fig. 2  Land Use in the Research Site
3, Current Status of Agriculture in the Research Site
Fig. 3  Distribution of Farm Households Based on Number of Farm Ponds / Household

![Bar chart showing the distribution of farm households based on the number of farm ponds. The chart categorizes households into five groups: None, 1 Pond, 2 Ponds, 3 Ponds, 4 Ponds, and ≥5 Ponds. Each group is represented by different colors: Gvm.+Own, Own, Gvm., and None.](chart_image)
Fig. 4  Uses of Farm Ponds and Proportion Generating More Than 5,000B Gross Income
Fig. 5  The Depth and Month When Pond Water is Shallowest

![Bar chart showing the depth and month when pond water is shallowest. The x-axis represents the months of March, April, May, and June, while the y-axis represents the number of ponds. The chart indicates that April has the highest number of shallow ponds. Total number of ponds: 99.](image)
Fig. 6  Ratio of Farms by farming Type

- sugarcane: 55.6%
- sugarcane + cattle: 20.4%
- sugarcane + cassava: 7.4%
- sugarcane + rice: 3.7%
- cattle: 5.6%

cf. Enterprises $\geq 80\%$ of gross amount
<table>
<thead>
<tr>
<th>Total amount of debt</th>
<th>Number of farm</th>
<th>Average repayment</th>
</tr>
</thead>
<tbody>
<tr>
<td>D=0</td>
<td>3 (5.5%)</td>
<td>0</td>
</tr>
<tr>
<td>D&lt;10,000B</td>
<td>5 (9.1%)</td>
<td>3,358 B</td>
</tr>
<tr>
<td>10,000≤D&lt;50,000</td>
<td>20 (36.4%)</td>
<td>26,807 B</td>
</tr>
<tr>
<td>50,000≤D&lt;100,000</td>
<td>22 (40.0%)</td>
<td>53,123 B</td>
</tr>
<tr>
<td>100,000B≤D</td>
<td>5 (9.1%)</td>
<td>71,030 B</td>
</tr>
</tbody>
</table>

4. Examples of Diversification into Intensive Crops
<table>
<thead>
<tr>
<th></th>
<th>Agri Labors</th>
<th>Cultivated Land (rai)</th>
<th>Number of Pond</th>
<th>Gross income for sale (Bart)</th>
<th>Marketing</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Total</td>
<td>Paddy</td>
<td>Upland</td>
<td>Orchard</td>
</tr>
<tr>
<td>A</td>
<td>4</td>
<td>58</td>
<td>15</td>
<td>38</td>
<td>5</td>
</tr>
<tr>
<td>B</td>
<td>4</td>
<td>66</td>
<td>17</td>
<td>49</td>
<td>-</td>
</tr>
<tr>
<td>C</td>
<td>3</td>
<td>60</td>
<td>13</td>
<td>47</td>
<td>-</td>
</tr>
<tr>
<td>D</td>
<td>2</td>
<td>45</td>
<td>10</td>
<td>15</td>
<td>20</td>
</tr>
<tr>
<td>E</td>
<td>3</td>
<td>40</td>
<td>10</td>
<td>20</td>
<td>10</td>
</tr>
<tr>
<td>Avg</td>
<td>1.97</td>
<td>40.8</td>
<td>13.2</td>
<td>23.8</td>
<td>1.6</td>
</tr>
</tbody>
</table>

< Direct Sale >

The products transported and sold by oneself

Farmer

Information on market and consumers’ preferences

Consumers (or Retailers) in market
< Sale to shipper >

Farmer → Sipper → Wholesaler

the product transported by sipper
Information on market
Seeds, Fertilizer
<Sale through farmers’ group>

The investment and the product transported by group

Farmer → Farmers’ Cooperative group → Wholesaler

Credit, Information on technology and market etc
5. Prospects for a Pathway of Transformation from Present Constraints
Some kind of supporting system is necessary

Farmers have very little information about technologies and marketing, as well as materials for production
<table>
<thead>
<tr>
<th>Type</th>
<th>Characteristics</th>
<th>Prospects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct Sale</td>
<td>➢ Do everything by oneself</td>
<td>Difficult to establish and maintain the stable linkage with consumers</td>
</tr>
<tr>
<td></td>
<td>➢ Time consuming</td>
<td></td>
</tr>
<tr>
<td>Sale to Merchant</td>
<td>➢ Most often seen</td>
<td>Only real option to sell the products</td>
</tr>
<tr>
<td></td>
<td>➢ Just like laborer</td>
<td></td>
</tr>
<tr>
<td></td>
<td>➢ Less profitable</td>
<td></td>
</tr>
<tr>
<td>Farmers’ Group</td>
<td>➢ Most desirable</td>
<td>Difficult to organize and manage</td>
</tr>
<tr>
<td></td>
<td>➢ Do everything cooperatively</td>
<td></td>
</tr>
</tbody>
</table>