Enhancing Rice Productivity through Integrated Rice-Duck Farming System

Philippine Agrarian Reform Foundation for National Development Inc. (PARFUND)
The Conventional Rice Farming in the Philippines

Figure 1. Farmer spraying pesticides in the rice field

Figure 2. Farmer Applying synthetic fertilizers.
The Traditional Form of Rice – Duck Farming

Figure 4. Ducks pastured before planting

Figure 5. Ducks moving out during transplanting
The Integrated Rice-Duck Farming System

- Diminish women’s laborious tasks in the field.
- Good for Environment and Health (No Synthetic inputs) Inhibit Methane Gas Emission
- Guessed Increase in Yield
- Additional and alternative source of food and income from duck eggs and meat.
- Pest Control
- Weeding Effect
- Fertilization Effect
- Stimulation Effect
Weed Control

Photo Credit: Dr. Takao Furuno

With Ducks

Without Ducks
Pest Management

Figure 9. Above, Eggs of golden and figure 10 on the right side showing ducking extending its neck to eat insect pest in rice

Figure 10. Duckling extending its neck to catch insect pest
Figure 11. Comparison of rice plant: with synthetic inputs, organic without ducks and organic with ducks.

Figure 12. Rice with ducks have produces massive tillers.
Fertilization Effect

Yield Increase
5% -10% in year 1
30% in year 3.

Figure 13. Rice with ducks growing massively

Photo Credit: Apollo Pacamalan

Photo Credit: Shiela Mandaguay
Extent of Reach of the Integrated Rice-Duck Farming in Mindanao

Figure 14 A,B, C. Rice duck farming in different parts of Mindanao

Zamboanga del Sur
Photo Credit: Shiela Mandaguay

Bukidnon
Photo Credit: Apollo Pacamalan

Gingoog City
Photo Credit: Apollo Pacamalan
Figure 15  A,B, C.& D Rice duck farming in different parts of Mindanao
Ducks provide natural fertilizer to the soil, control insect pests, remove the weeds, regularly cultivate the soil and stimulate the rice plant to produce more rice tillers.

By releasing a 3-4 days old ducklings in the rice field 5 days after transplanting, farmers will no longer apply synthetic inputs because the ducks presence will replace them.

As a result, rice farmers can expect a 10%-30% increase in yield in three years time.

Figure 16 A above, ducklings being acclimatized in water on the 3rd day from hatching.

Figure 16 B, shows the perfect combination of the 3 days old duckling and the rice seedling ready for transplanting.

Figure 16 C. Two week old ducklings busy doing their work in the rice field.
Basic Practices of Integrated Rice-Duck Farming Technology

1 Farmer = 1 Innovation

Figure 17 A,B,C&D. Different farmers innovation in rice duck farming

Photo Credit: Shiela Mandaguay

Photo Credit: Apollo Pacamalan
Materials Needed

A. Materials to be prepared prior to the duck release are the following:

1. 150 heads of ducklings
2. 2.5 rolls of nets for inclusion (which will cover 1ha) or any indigenous materials
3. Rope #5 (400 m) and tie wire (.5 kg)
4. Bamboo sticks for post
5. Locally available materials for duck housing
6. Waterer (either plastic or made of bamboo poles)
7. Brooding box

Figure 18 A,B,C. Materials needed for rice-duck farming

Photo Credit: Apollo Pacamalan
Duck Inclusion / Net Installation

Figure 19 A,B,C&D. Rice fields enclosed with nets, ready for duck release
Duck Sourcing

I. Duckling Sourcing (Quality, Quantity and Timing)

Figure 20 A&B. Sourcing of duckling from the local balut maker in Bukidnon
Duck Preparation

II. Brooding (Day 1-3)

Figure 21 A&B. Brooding of ducklings

Photo Credit: Apollo Pacamalan

Figure 21 A&B. Brooding of ducklings
Field Release

Figure 22 A, B & C. Ducklings during their first lesson - swimming
IV. Familiarization (Day 6-12)

- From 6\textsuperscript{th} day up to 12\textsuperscript{th} day, open the enclosed portion and allow to ducklings to swim freely into the entire blocks of rice paddies (but not to the entire rice area – see figure 23 A&B).
Field Release

V. Field Exploration and Full Immersion of Ducklings (Day 12- onward)

Figure 24 AB&C. Ducklings are allowed to explore the entire area, crossing dikes within the rice field
Feeding the Ducks

Figure 25 A,B&C. Feeding the ducks with chopped banana trunk coated with rice bran

Photo Credit: Shiela Mandaguay
Ducks Need Shelter

• Keeping the ducks dry and safe from predators during night time

• With enough space so that smaller ducklings will not be trampled or squeezed by bigger ones.
Figure 27 A, B, & C. Different types of duck housing and flooring to keep the ducks dry.

Keep Them Dry
## Cost Comparison

<table>
<thead>
<tr>
<th>Farm Activities</th>
<th>Rice-Duck</th>
<th>Conventional</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1&lt;sup&gt;st&lt;/sup&gt; crop</td>
<td>2&lt;sup&gt;nd&lt;/sup&gt; crop</td>
</tr>
<tr>
<td>1. Land Preparations</td>
<td>1,800</td>
<td>1,800</td>
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<tr>
<td>2. Seed bed preparations/ Broadcasting</td>
<td>600</td>
<td>600</td>
</tr>
<tr>
<td>3. Transplanting</td>
<td>2,500</td>
<td>2,500</td>
</tr>
<tr>
<td>4. Cost of Herbicides - 1 quart</td>
<td>850</td>
<td></td>
</tr>
<tr>
<td>5. Cost of Bilocide for Snail 1 qrt</td>
<td>850</td>
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</tr>
<tr>
<td>6. Cost of Pesticides - 3 quarts</td>
<td>2,250</td>
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<tr>
<td>7. Cost of Fertilizers -</td>
<td>6,000</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3 sacks Urea, 1,200/sack</td>
<td>3,600</td>
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<tr>
<td></td>
<td>3 sacks 21-0-0, 750/sack</td>
<td>2,250</td>
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<tr>
<td></td>
<td>3 sacks Complete, 1,400/sack</td>
<td>4,200</td>
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<tr>
<td></td>
<td>1 sack 0-0-60, 650/sack</td>
<td>650</td>
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<tr>
<td>8. Cost of Foliar spray - 1 quart</td>
<td>130</td>
<td></td>
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<tr>
<td>9. Labor of spraying</td>
<td>1,200</td>
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<tr>
<td>10. Cost of nets 400 m 5 years / 10 crop</td>
<td>500</td>
<td>500</td>
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<tr>
<td>11. Cost of Ducklings 150 heads</td>
<td>4,500</td>
<td></td>
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<tr>
<td>12. Net Installation</td>
<td>150</td>
<td></td>
</tr>
<tr>
<td>13. Cost of Feeds @ 200/week</td>
<td>2,400</td>
<td>2,400</td>
</tr>
<tr>
<td>14. Cost of Seeds</td>
<td>600</td>
<td>600</td>
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<tr>
<td><strong>Total Cost/crop season</strong></td>
<td><strong>13,050.00</strong></td>
<td><strong>8,400.00</strong></td>
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<tr>
<td><strong>Total in 1 year (2 crop season)</strong></td>
<td><strong>21,450.00</strong></td>
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</table>
Average Yield Performance of Rice Duck Farm in Lagonglong, Misamis Oriental

Yield (Tons/ha.)

- 2006
- 2007
- 2008
- 2009
Other Benefits

1. Environment
2. Health
3. Beneficial to Women
4. Food Security in the Households
5. Rice Sufficiency in the Country
<table>
<thead>
<tr>
<th>Stakeholders</th>
<th>Action</th>
<th>Goal</th>
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<tbody>
<tr>
<td>Regional Department of Agriculture</td>
<td>Conversion to Rice-Duck Farms - Learning Farms - Demonstration farms</td>
<td>Increase Yield &amp; Income</td>
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<tr>
<td>LGUs</td>
<td>Farmers Training Program</td>
<td>Provide Alternative Food Sources</td>
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<tr>
<td>Church Organization</td>
<td>Research and Documentation</td>
<td>Organic Market (Producer-Consumers linkage)</td>
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<tr>
<td>NGOs/Private-public networks /Pos / PI</td>
<td>Market Linkage and Development</td>
<td>Improve Agriculture Governance through Rice Duck Farming</td>
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<tr>
<td>Government-line Agencies (DAR)</td>
<td>Agri-Governance</td>
<td>Favourable National and local policy on organic rice production</td>
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<tr>
<td>Research Institutions / Academe</td>
<td></td>
<td>Impact on Health and Environment</td>
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QUACK! QAUCK! QUACK!

Philippine Agrarian Reform Foundation for National Development Inc. (PARFUND)
• Research Design C/o CASNR
• Visit to Lagonglong – (PARFUND B&L; Transport – CARAGA State University) January 7-8 (10 – 15 pax)
  – Date January (first week)
• Agreement, Manuals, Reading Materials (e mail tonight –C/o PARFUND)
• Demonstration farm
• - Land Prep (nets, duck house, Seeds –c/o CSU) December 11- 20
• Seed sowing – Dec 22- 23
• Transplanting (2nd week January 11-16)
• Ducklings (January 11 – Duck hatching)
• -Jan 11-13 Brooding
• Jan 14-15 – Release / Acclimatize the ducks
• Jan 16 onward – complete release
• Jan. 7 – 8 (Conceptual framework)