Technology Description

Vegetable intercropping under coconut palms is one of the popular intercropping practices in rural areas for many good reasons. This intercropping practice requires short period of planting time, smaller area (vacant spaces between coconut), provides additional income to coconut farmers and nutritious food for farm communities.

Vegetable intercropping such as tomato, eggplant, sweet pepper, squash, okra, ginger etc. is highly recommended under coconuts aged one to six years old or 26-60 years old. These vegetables can be intercropped in plots under the interrows of coconuts.

Benefits of coconut-vegetable cropping system:

1. Vegetable crops can be planted anytime of the year. There is stable and continuous demand as it is consumed daily in everyone's dining table.
2. Its nutritive value and health benefits are well-known.
3. Intercropping coconut with different kinds of suitable vegetables intensifies land use which increases returns on cash inputs.
4. Provides labor utilization pattern and income distribution.
5. Alleviates poverty and improves fund Security in rural areas.

Procedure:

Land preparation – Clear/underbrush interspaces under coconut trees and remove all stumps, plow and harrow 2x or 3x to remove weeds. Secure area against animals and other hazards.

A. Solanaceous crops (tomato, eggplant, sweet pepper)

1) Nursery preparation– prepare seedbeds measuring 1 x 5 m, sterilized soil by any of the following methods: a) burn straw over the seedbed b) pour boiling water into the seedbed c) bake or sterilize soil and place in seed boxes d) drill the seeds and cover lightly with soil d) water daily during dry period until ready for transplanting
2) Plot preparation – prepare furrows 75 cm apart, 2.0 meters from the coconut trees
3) Transplanting – water the seedbed thoroughly to loosen the soil, pull carefully the seedlings to avoid injury, transplant seedlings in prepared furrows, preferably in the afternoon.
4) Distance/System of planting:
   * tomato - 0.75 m between hills, straight planting
   * eggplant – 0.50 m bet. hills, zigzag planting
   * sweet pepper – 0.75 m bet. hills, straight planting
5) Select any of the following recommended varieties (from EWSCI):
   a) Tomato – Diamante F1, Marimar F1, Maxima F, Improved Pope, Cardinal
   b) Eggplant – Domino F1, Casino F1, Jackpot F1, Batangas Long Purple
   c) Sweet pepper – Majesty F1, Bless F1, All Season, Trinity F1
   d) Hot pepper – Django F1, Sinigang, Hotshot
6) Maintenance – Off-bar(hilling-up of furrows) two weeks after transplanting, apply recommended fertilizer at different growth stages, apply pest/disease control measures.

7) Harvesting
   a) Tomato – harvest when 1) mature green as fruit starts to show cream streaks at the bottom end; 2) breaker-blossom end turns pinkish or reddish; 3) red ripe – full red skin color is attained.
   b) Eggplant – harvest when fruit reaches 2/3 of its maximum size for the variety before fruit hardens or shows streaks of unusual color
   c) Pepper – harvest as 1) mature green(fruit waxy and shiny); 2) breaker (fruit turns yellow or reddish); 3) red ripe (fruit skin is red)

B. Cucurbitae Crops (Ampalaya, patola, upo cucumber, calabaza, watermelon, muskmelon)

1) Distance/System of planting
   a) Ampalaya – 1 m between hills x 2 rows distance at 3 m apart in between 2 rows of coconut trees, straight planting
   b) Cucumber – 0.50 m between hills x 3 rows at 1 m apart in between 2 rows of coconut trees
   c) Watermelon- 1 m bet. hills x 3 m between rows, under open area between two coconut areas (3-5 m distance apart)

2) Recommended varieties (from EWSCL, Allied Botanical Corp.)
   a) Ampalaya – Galaxy F1, Jade Star L F1, Jade Star XL F1, Sta. Rita EW Select, Trident 357, Condor Poseidon F1, Condor Sta. Rita OP
   b) Cucumber - Ambassador F1, Governor F1, Champ F1, Green Beret F1, Jackson 27 F1, Poinsett
   c) Patola – Hercules F1, Esmeralda
   d) Upo – Dalisay F1, Tambuli, Maxi
   e) Watermelon- Sweet Senorita, Sweet
16 F1, Sugar,Baby OP,Goody Ball F1
3) Method of planting – direct seeding is recommended for these vegetable crops (plant 1 seed per hill at 1-2 cm deep)

Some new technologies for a productive vegetable farming:

a) use of trellises/trellising nets for better fruit quality & less disease occurrence, best for ampalaya, cucumber, tomato, upo, patola

b) drip irrigation and other practical irrigation systems – improve yield and reduce labor

c) use of seedling tray – better growth of vegetable seedlings

d) use greenhouses – protect vegetables against strong rain and insect pests

e) Boron fertilizer – essential element for most vegetables, lacking in many Phil. soils, recommended for ampalaya & watermelon for fruit setting/pollination of flowers

f) use of plastic mulch – secure vegetable production during rainy season, reduce weeding labor cost e.g. as in watermelon planting

g) use of yellow greased billboard – as repellant to insect pests

Table 1. Summary of 3-yr average of cost and returns of coconut + eggplant + ampalaya + cabbage in 3-yr period cropping model (Land use intensity = 1.75 has:
1 ha coconut, 0.3 ha eggplant, 0.3 ha ampalaya, 0.15 ha cabbage) *

<table>
<thead>
<tr>
<th>Economic Index</th>
<th>Coconut</th>
<th>Eggplant</th>
<th>Ampalaya</th>
<th>Cabbage</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Cost</td>
<td>P8,950</td>
<td>P24,144</td>
<td>P26,492</td>
<td>P8,999</td>
<td>P68,525</td>
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<tr>
<td>Yield (kg)</td>
<td>2,000</td>
<td>2,538</td>
<td>1,726</td>
<td>1,760</td>
<td>8,024</td>
</tr>
<tr>
<td>Gross Income</td>
<td>P30,000</td>
<td>P28,444</td>
<td>P27,642</td>
<td>P13,257</td>
<td>99,343</td>
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<tr>
<td>Net Income</td>
<td>P21,050</td>
<td>4,300</td>
<td>1,150</td>
<td>4,318</td>
<td>30,818</td>
</tr>
<tr>
<td>Benefit-Cost Ratio</td>
<td>2.35</td>
<td>0.18</td>
<td>0.04</td>
<td>0.48</td>
<td>(ave) 0.76</td>
</tr>
<tr>
<td>Prodn.Cost/kg</td>
<td>P 4.47</td>
<td>9.52</td>
<td>15.3</td>
<td>5.07</td>
<td>P34.36</td>
</tr>
</tbody>
</table>


COCONUT-BASED FARMING SYSTEM FOR INCREASED PRODUCTIVITY

Department of Agriculture
Philippine Coconut Authority
Research, Development &
Extension Branch (RDEB)
Davao Research Center
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VEGETABLE INTERCROPPING UNDER COCONUT PALMS

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