C. Effects on selected soil (topsoil) properties (1993-2007)

D. Effects on the total productivity of coconut + lanzones (1993-2007)

<table>
<thead>
<tr>
<th>Fertilizer Treatment</th>
<th>Gross Income (Pphp)</th>
<th>Total Cost (Pphp)</th>
<th>Net Income (Pphp)</th>
<th>Net Present Value@18% (Pphp)</th>
<th>Internal Rate of Return@18% (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>FC-1 (1:0)</td>
<td>238,238.00</td>
<td>26,010.12</td>
<td>212,227.88</td>
<td>115,645.63</td>
<td>327.58</td>
</tr>
<tr>
<td>FC-2 (1:2)</td>
<td>199,013.70</td>
<td>25,954.76</td>
<td>173,058.94</td>
<td>115,947.96</td>
<td>237.84</td>
</tr>
<tr>
<td>FC-3 (2:4)</td>
<td>207,384.00</td>
<td>33,949.05</td>
<td>173,434.95</td>
<td>82,822.49</td>
<td>71.35</td>
</tr>
<tr>
<td>FC-4 (4:2)</td>
<td>221,352.00</td>
<td>51,830.70</td>
<td>169,521.30</td>
<td>78,369.74</td>
<td>69.42</td>
</tr>
<tr>
<td>FC-5 (4:4)</td>
<td>200,528.60</td>
<td>51,715.30</td>
<td>148,813.30</td>
<td>62,522.21</td>
<td>53.42</td>
</tr>
</tbody>
</table>

Price/kg (farm gate) : Copra = Pphp 21.00; Lanzones fruit = P10.00

CONCLUSION AND RECOMMENDATION

This long-term coconut + lanzones cropping system proved to be a sustainable farming system with proper ISFM using crop-specific fertilizer as the PCA formulated multi-nutrient mineral fertilizer (14-5-20, 0.02% B, 15.5% Cl, 4.5% S) even at the lowest rate of fertilization (1 kg/coconut tree, 0.38 kg/lanzones tree) which contributed to stable soils contributing to the high total productivity profitability levels of coconut land.

Acknowledgement

The authors wish to express their profound gratitude to:
1) PCA Management
2) FERCHEMEX Company
3) ATLAS Chemical & Fertilizer Company, Inc.
Significance

- Intercropping in coconut farms is widely practiced in the Philippines as well as in many coconut producing countries, but only few farmers yet attained consistent success in increasing their farm productivity.
- As intercropping aims for higher yields of coconut and intercrops to have maximum farm productivity and a profitable return to investment (labour, seeds, fertilizers and farm chemicals), proper cultural practices and fertilization or nutrient management of both coconut and intercrops should be necessary.
- The combined use of organic/natural and inorganic fertilizers or simply called ‘integrated soil fertility management’ (ISFM) which optimizes the beneficial effects and minimizes the weaknesses of both fertilizer sources in coconut-based farming system is relevant for Philippine agriculture, coconut farmers and stakeholders.

Objectives

- To know the effects of increasing levels of a multi-nutrient inorganic fertilizer (14-5-20 with 0.02% B, 15.5% Cl, 4.5% S) applied singly or in combination with increasing levels of organic fertilizer on the productivity of coconut and lanzones intercrop and;
- To determine the effects of these fertilizer treatment combinations on some soil properties; on the leaf nutrient contents of coconut and lanzones intercrop and total productivity of coconut + lanzones cropping system.

Materials and Methods

1) Experimental Site: PCA-DRC Experimental Station, Bago Oshiro, Davao City (07°05’S 125°37’E longitude). Highly suitable coconut growing zone with Type 4 rainfall distribution; tropical wet climate (Koppen-Geiger Climate Classification, Kotte et al 2006)
2) Experimental materials: ‘Laguna’ tall coconut about 35 years old, ‘Pace’ Lanzones variety
3) Fertilizers used: Compounded inorganic fertilizer-IF (14-5-20 plus 0.02% B, 15.5% S, 4.5% S)
Commercial organic fertilizer-OF (3-3-3) (1st to 6th year) and coconut husks (later years)
4) Field layout: coconuts planted in at 8 x 8 m square system; lanzones in between coconut rows at 4m between hills each way

5) Fertilizer Combinations (FC) of inorganic (IF) & organic (OF)- tested on coconut and lanzones

6) Experimental Design: RCBD, 3 replicates, 9 coconut palms and 17 lanzones trees per plot

IF : OF 1:0 1:2 2:4 4:2 4:4

7) Soil type/class: ‘Tugbok’ clay loam (typic Tropudalfs)
8) Data gathered: coconut yield, lanzones growth & yield, leaf nutrients, soil properties, 0 brix of lanzones fruit

Significant Results

A. Effects on Coconut Yield

From benchmark annual yield of 57 nuts/tree (1.6 tons copra/ha) to average yield of 110 nuts/tree (4 tons copra/ha) reached by the best treatment of FC-1 (lowest rate of IF, without OF), PCA-DRC, 1993-2007

B. Effects on Lanzones Yield

- 2001 - Initial fruiting of lanzones under ‘LAGT’ palms i.e. 8 yrs from field planting
- Yearly fruiting thereafter except in 2004
- 2005 - 100% of lanzones produced fruits
- Fruit harvest increased from yr 8 to yr 15 with FC-1 and FC-2 producing higher yields, and quality of fruits (sweetness, O(Brix) improved at lower rates of IF (0.38 kg/tree) & OF.
- The increased in coconut and lanzones yields are clearly associated with crop nutrition of both crops based on leaf nutrient contents (N, P, K, Cl, B).