AGRONOMY DIVISION

Divisional Scientific Officer: Mrs. K. D. Mohabeer

1.0 Introduction

Agronomy Division has under its responsibility four Experiment Stations, namely, Belle Vue Experiment Station (ES), Curepipe ES, Plaisance ES, and Richelieu ES and hosts trials on organic vegetable production and hydroponics. It provides assistance for the maintenance of Clarisse House and State House compounds.

It has been mandated to produce the national tobacco seed requirement. It assists Horticulture Division in the implementation of its annual vegetable seed production, plant propagation and seed sale programmes. Assistance is also extended to Animal Production Division for its Duck Project and its Pig Artificial Insemination Project.

The major constraints encountered were high absenteeism, limiting and ageing labour force, and labour force being transferred from seed production activities to the surveillance of the premises.

2.0 Belle Vue ES

Located in the West of the country at an altitude of 27 m, it covers an area of 6.5 ha of Low Humic Latosol soil type, with strong clay component and low permeability, of which 2.4 ha are available for vegetable seed production. Its staff and labour force comprised of thirty two persons.

It has produced and sent to Horticulture Division 6.2 tonnes of a mixture of raw seeds, fruits and bulbs, 7092 fruits and 1353 layers.

It has generated about Rs 163000 from the sale of vegetables and fruits and of ducks and duck eggs.

3.0 Curepipe ES

Located in the centre of the country at an altitude of 550 m, it covers an area of 28 ha of Humic Ferruginous Latosol soil type of which 5.3 ha are available for vegetable seed production. Its staff and labour force comprised of seventy five persons.

It has produced and sent to Horticulture Division 2 tonnes of a mixture of raw seeds and fruits, 218 fruits and 1750 ornamental plants.

It has generated about Rs 28277 from the sale of vegetables and fruits and of ornamentals.
4.0 Plaisance ES

Located in the South-East of the country at an altitude of 15 m, it covers an area of 8 ha of Latosolic Reddish Prairie soil type of which 2.3 ha are available for vegetable seed production. Its staff and labour force comprised of twenty five persons.

It has produced and sent to Horticulture Division 11.8 tonnes of a mixture of raw seeds, fruits and bulbs, and 727 fruits.

It has generated about Rs 85000 from the sale of vegetables and fruits, and of vegetable seeds.

5.0 Richelieu ES

Located in the North-West of the country at an altitude of 66 m, it covers an area of 28 ha of Low Humic Latosol soil type of which 4.7 ha are available for vegetable seed production. Its staff and labour force comprised of thirty five persons.

It has produced and sent to Horticulture Division 7.1 tonnes of a mixture of raw seeds and fruits, 15.2 kg of tobacco seeds, and 2142 fruits.

It has generated about Rs 77000 from the sale of vegetables and fruits, and of tobacco leaves.

6.0 Organic agriculture

Trials were set up to assess the effectiveness of cow manure compost, green waste compost, and poultry litter compost on carrot, beet root and cucumber.

The different composts were prepared by Mr. Wan Yan Sheng, Chinese agronomist attached to the Division for organic agriculture. Basically, there were four ingredients common to all of them, namely, dry tree leaves, vegetable waste from Vacoas market, water and soil. They only differed in the fifth ingredient after which the composts were named. However, the fifth ingredient of green waste compost consisted of a mixture of green (i.e. fresh) weeds and goat manure.

Pests were controlled by Neem-a-Life, a neem-based product, Spinosad applied to host crops, namely, maize and grass bushes, and yellow sticky trap. Weeds were controlled manually.

The trial with carrot Victoria started in January and ended in May. The yields of the three compost treatments were not significantly different at 5%, oscillating between 26.1 and 27.4 t/ha in contrast to 18.2 t/ha of the no-compost treatment. They fell within the normal range of 23-30 t/ha that can be expected in conventional agriculture where chemical fertilizers are used, as cited in Guide Agricole.

The trial with beet root was scrapped following poor germination of the seeds.
Bean Long Tom was sown in July as rotational cover crop to maintain the soil fertility of the experimental plots. The yield was 5.6 t/ha.

The trial with cucumber Local White started in October and ended in December. The yields from the composts are shown in Table 1 and the difference between those with the same suffix is not statistically significantly at 5%.

**Table 1: Yield of cucumber**

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Mean Yield (t/ha)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poultry litter compost</td>
<td>$45_a$</td>
</tr>
<tr>
<td>Green waste compost</td>
<td>$41_b$</td>
</tr>
<tr>
<td>Cow manure compost</td>
<td>$39_b$</td>
</tr>
<tr>
<td>No compost</td>
<td>$17_c$</td>
</tr>
</tbody>
</table>

The yields were in sharp contrast to the 19 t/ha that can be expected in conventional agriculture where chemical fertilizers are used, as cited in *Guide Agricole*.

**7.0 Hydroponics**

**7.1 Trial to compare two propagation media and two growth media**

A trial was set up in September 2010 to compare propagation media, namely, sawdust with coconut coir, and growth media, namely, gravel and wood chips, with hybrid tomato Fu Feng as test crop.

Sawdust was mainly derived from Meranti wood (*Shorea* species). Coconut coir was obtained by breaking up the coconut coir slab Biogrow™ and using the powdery fraction only.

Gravel was the common 1.25 cm Ø rock chips used in the building sector. Wood chips consisted of a mixture of wood shavings and pieces, about 2.5 by 5.0 by 0.5 cm³, used as bedding material in the animal production sector.

Fertigation pump failure resulted in the loss of seedlings of the gravel component of the trial and, consequently, the scrapping of that component.

Weekly harvest started in January and ended in April. Although coconut coir provided a better environment for the seedling, which ended up slightly taller and larger, in contrast to sawdust, the difference in the yields of these two components were not statistically significant. The yields
of both treatments oscillated around 80 t/ha, which compared favourably with the 20-35 t/ha normally obtained in conventional agriculture, as cited in *Guide Agricole*.

**7.2 Tomato planting density trial**

Suckering has been a standard recommendation in high planting density to avoid mutual shading among plants. However, it is a labour-intensive and time-consuming activity and needs to be carried out consistently: any delay simply implies the use of additional resources to remove overgrown suckers.

An attempt was made to compare yield among three planting densities without recourse to suckering. The recommended planting density of 3.13 plants/m$^2$ was compared with those of 2.08 plants/m$^2$ and of 1.56 plants/m$^2$ with tomato Heinz 1370 as test crop.

Seeds were sown in February. Weekly harvests started in May and ended prematurely due to disease in June, just two weeks from a five-month crop cycle. The yield of the treatments oscillated around 22 t/ha and the difference among them was not statistically significant at 5%.

The low yield can be attributed partly, at least, to the recurring suboptimal performance of the fertigation pump, which resulted in the underfeeding of the crop. However, low planting densities can be interesting because they require less seeds and eliminate the risk of disease spread by suckering.

**7.3 Melon planting density trial**

At high planting densities vine trimming must be carried out to eliminate mutual shading among plants. An attempt was made to assess lower planting densities without recourse to vine trimming, and three planting densities, namely, 3.13 plants/m$^2$, 2.08 plants/m$^2$, and 1.56 plants/m$^2$ were compared.

Seeds of hybrid Chinese (or Oriental) melon Silver Light were sown in February and the harvest period spanned from April to May. The yield of the treatments varied from 16.2 to 19.1 t/ha and the difference among them was not statistically significant at 5%.