many variables. The use of sound management practices, involving common sense and gardening skill, coupled with favorable weather and economy of scale contribute to making vegetable gardening profitable if this is the sole purpose of the activity.

Table 2 indicates the costs of production in this particular study. Different managerial decisions, purchasing habits, and cost allocations to various factors of production alter production costs, increasing or decreasing economic savings accordingly.

Data in Table 2 indicate a return to labor of $1.08 per hour. In order to increase return to labor value, either labor efficiency must be increased (do more in less time) or the value of the product must be greater. As gardening knowledge and experience increase, one can improve labor efficiency and hence get greater returns to labor. However, the home gardener can do little to adjust retail market value of produce. The implication is that food is still a real bargain because it can be purchased rather cheaply in the marketplace.

As gardening for many is fun and a hobby, a dollar per hour return to labor makes it a productive use of leisure time. Alternative forms of recreation can be quite expensive as compared with gardening.

A current trend in vegetable gardening is that towards community or rent-a-garden projects for those not having their own land. In such instances, distance traveled to and from the garden for crop care and harvesting varies considerably. Transportation to and from gardens increases vegetable production costs and should be carefully considered in deciding whether or not rent-a-gardens can be economically profitable.

Admittedly for many, the value of a home garden is more than economic savings. In situations where economics are of primary concern, however, the gardener must be aware of factors contributing to economic success. Variables affecting gardening success include manipulative and technical skill, efficiency of labor, climatic conditions, soil types, cropping patterns, scale of operation, and use of the product once harvested. The findings of this study indicate that the economic savings of a home vegetable garden is dependent on the value placed on labor, the size of the garden, and the productivity of the crops.

If garden labor is considered as healthy exercise, a non-marketable item, and the garden is in the backyard, then labor and transportation can be excluded as gardening expenses. In this case a home garden can provide a savings based on the conditions in this study. However one must be at home most of the summer and have facilities for storing food not immediately consumed in order for savings figures to be realistic. Preserved food from the garden can increase savings when winter produce prices are high.

For those with a rent-a-garden, transportation expenses can be an important economic concern when the garden is far from the residence. Travel expenses can quickly minimize or eliminate economic savings of a vegetable garden. Large, productive gardens and car pooling increases chances for making economic savings from distant gardens.

<table>
<thead>
<tr>
<th>Table 2. Economic summary of producing vegetables in a 13.9 m² plot, Columbus, Ohio, 1975.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Costs</td>
</tr>
<tr>
<td>-------</td>
</tr>
<tr>
<td>$90.45</td>
</tr>
</tbody>
</table>

7Different gardener managerial decisions, purchasing habits and cost assignments can alter production costs, increasing or decreasing economic savings accordingly. 8Calculated on 5 year straight line basis.

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In Vitro Propagation of Gloxinia from Leaf Explants

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Additional index words. Sinningia speciosa, tissue culture

Haramaki (1) reported that apical sections from vegetative shoots could be used to propagate gloxinia in vitro.

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2Assistant Professor.

The number of plants that could be produced from a single tuber was limited, however, since new vegetative shoots were individually placed on medium. More plants could be produced from a single tuber if leaf explants instead of shoots were used. In this paper I report an in vitro method to propagate gloxinia from leaf explants.

Healthy mature leaves removed from vegetative plants of gloxinia (Sinningia speciosa Lodd. Fyffiana group cv. Etoile de Feu) were surface sterilized by washing in 70% ethanol with 0.5% Tween 20 for 2 min, rinsing with sterile distilled water, washing in a 2.75% solution of sodium hypochlorite with 0.5% Tween 20 and rinsing with sterile distilled water. Explants about 1 cm² were cut from leaves and placed in individual culture tubes on Murashige and Skoog (2) medium containing kinetin concn between 0.3 and 0.7 mg/liter and indoleacetic acid (IAA) concn from 1.6 to 1.8 mg/liter.

Shoots readily form at the cut ends of veins or over the central vein region wotj a cultures placed under Gro Lux lamps at a light intensity of 3klx with a 16 hr photoperiod (Fig. 1). Shoots about 1 cm long were transferred to a MS medium containing 0.2 mg/liter of both kinetin and IAA to induce rooting (Fig. 2). Rooted shoots (Fig. 3) are transferred to soil in pots and covered
with inverted beakers to maintain a humid environment. The humidity is gradually lowered by raising the beakers, allowing the plants to adjust gradually.

This technique permits the clonal propagation of large numbers of gloxinia plants from a single parent plant. From 1 to 10 plants are formed per explant and a single leaf can supply over 100 explants. Over 90% or more of plants from this technique are identical to the parent but a few show variations in leaf color, some having light margins.

Fig. 2. Shoot with roots from gloxinia leaf explant.

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In Vitro Propagation of Peperomia ‘Red Ripple’ from Leaf Discs

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Additional index words. tissue culture, kinetin, NAA, peperomia

This paper reports a method of propagating Peperomia ‘Red Ripple’ from leaf discs in vitro.

Newly formed but fully expanded leaves from greenhouse-grown stock plants were sterilized 20 min in 0.5% sodium hypochlorite (10% Clorox) and rinsed twice in sterile distilled water. Several leaf discs about 1 cm² were cut from each leaf with a sterile scalpel and single discs were placed in 20 x 150 mm disposable test tubes on a Schenk and Hildebrandt (2) salt medium containing 30 g sucrose and 6 g/liter agar. Tubes were incubated at 27°C under 1 klx of light and a 16 hr day.

A factorial experiment was initiated with 10.0, 5.0 and 2.5 mg/liter kinetin and 5.0, 0.5 and 0.005 mg/liter NAA. After 10 weeks incubation, treatments with 10.0, 5.0 and 2.5 mg/liter kinetin and 0.05 mg/liter NAA or 10.0 mg/liter kinetin and 0.5 mg/liter NAA had produced numerous (>50) shoots at the periphery or the leaf sections (Table 1). The high kinetin/NAA ratio consistently promoted shoot initiation whereas increasing the level of NAA led to excessive callus development, root formation, and media discoloration (Fig. 1). NAA at 0.5 mg/liter only promoted shoot initiation at the highest kinetin level (10.0 mg/liter). NAA at 5.0 mg/liter caused production of dark brown or black callus and roots regardless of the kinetin level and shoots rarely developed.

Newly formed shoots were removed from the initial explant and subcultured on a medium with 2.5 mg/liter kinetin and 0.05 mg/liter NAA. Within 6–10 weeks they proliferated into several (5–10) more shoots. Shoots were transferred to liquid culture in 50 ml erlenmeyer flasks and shaken at 80 rpm for rooting. Root formation was induced by reducing the kinetin level to 0.01 mg/liter while maintaining 0.05 mg/liter NAA. Plants were rooted and ready to transplant after 2–3 weeks (Fig. 2).

Rooted plants were rinsed in sterile

Table 1. Growth and development of Peperomia ‘Red Ripple’ leaf discs after 10 weeks on a Schenk–Hildebrandt culture medium.

<table>
<thead>
<tr>
<th>Hormones (mg/liter)</th>
<th>Kinetin</th>
<th>NAA</th>
<th>Media discoloration</th>
<th>Callus production</th>
<th>Root production</th>
<th>Shoot production</th>
</tr>
</thead>
<tbody>
<tr>
<td>10.0</td>
<td>5.0</td>
<td>+++</td>
<td>+++</td>
<td>+++</td>
<td>+++</td>
<td>1–10</td>
</tr>
<tr>
<td>5.0</td>
<td>5.0</td>
<td>+++</td>
<td>+++</td>
<td>+++</td>
<td>+++</td>
<td>0</td>
</tr>
<tr>
<td>2.5</td>
<td>5.0</td>
<td>+</td>
<td>++</td>
<td>+++</td>
<td>None</td>
<td>1–10</td>
</tr>
<tr>
<td>10.0</td>
<td>0.5</td>
<td>+</td>
<td>++</td>
<td>None</td>
<td>&gt;50</td>
<td>11–50</td>
</tr>
<tr>
<td>5.0</td>
<td>0.5</td>
<td>+</td>
<td>++</td>
<td>None</td>
<td>None</td>
<td>&gt;50</td>
</tr>
<tr>
<td>2.5</td>
<td>0.5</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>&gt;50</td>
</tr>
<tr>
<td>10.0</td>
<td>0.05</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
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<tr>
<td>2.5</td>
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<td>None</td>
<td>None</td>
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<td>None</td>
<td>&gt;50</td>
</tr>
</tbody>
</table>

1 Visual rating of 5 replications.

2 Resembles Peperomia pseudorufescens C. DC. according to Dr. Peter Hyypio of the L. H. Bailey Hortorium. The plant is commercially grown and propagated as Peperomia ‘Red Ripple’.

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