Fruits and Vegetables

1. Broccoli
2. Cabbage
3. Cantaloupe
4. Carrot
5. Cauliflower
6. Celery
7. Corn
8. Cucumber
9. Hot Pepper
10. Lettuce
11. Parsley
12. Passion fruit
13. Pineapple
14. Pumpkin
15. Salad Beans
16. Sweet Peppers
17. Tomato
18. Watermelon

TECHNOLOGY PACKS

TOMATO

November 2015

Background

Production decisions concerning how much effort and resources to invest and which farming practices to follow, have consequences and create opportunities for the farm affecting production levels, input costs, time constraints, and the potentially size of the operation. They also may have implications for resource use and environmental quality.

Numerous information exist on the various aspects of production and handling/ marketing of crops and livestock, the majority of which are outdated, not easily understood and lacking the where with all for addressing present day challenges such as good agricultural practices (GAPs) and food safety and climate change that impact on the environment and rural livelihoods. These issues are also closely related to the importance of the role of primary producers in increasing the earnings of all actors along the value chain in supporting the development of a commercially viable and sustainable agricultural industry.

The production of high quality and easily understood information packages is critical as this forms a basis for farmers to obtain financing from lending institutions and to efficiently increase their production through the availability of modern technology. This will also result in a reduction of rural unemployment and will greatly help in alleviating poverty and other associated social ills.

TECHNOLOGY PACKS

TOMATO

November 2015

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Table of Contents

Introduction

This Technological Package (Tech Pack) deals with the production and postharvest aspects of tomato.

Also included in the Tech Pack are appendices:

- Template for cost of production
- List of recommended pesticides and application rates
- Good Agricultural Practices data record sheet.

Notwithstanding the identification of any specific pesticide for the control of pests and diseases, this decision is for the discretion of the Ministry of Agriculture Area Extension Officer and the farmer.

However, the mention of any pesticides and other products used in the Tech Pack should strictly comply with local regulations and all instructions provided by the manufacturer. Also, the use of trade names in the Tech Pack is for the purpose of citing examples and is not meant to either endorse or discredit any particular product.

Botanical Description

Tomato (*Solanum lycopercicon*) belongs to the family Solanaceae. The local name in Creole is Tanmadoz. The tomato can be eaten raw or as an ingredient in many dishes, sauces, salads and drinks. Tomatoes are a rich source of several nutrients. They are well known for their high vitamin C content, but also contain significant amounts of vitamins A and B, niacin, riboflavin, magnesium, phosphorous and calcium. Tomatoes are also a good source of chromium, folate and fibre.

Ecology and Environment

Tomato requires low to medium rainfall, and does well under average minimum monthly temperature of 70 - 75ºF (21 - 23ºC). Avoid water stress and long dry periods as this causes cracking of fruits. Bright sunshine at the time of fruit set helps to develop dark red coloured fruits.

Varieties/Cultivars

Main varieties are Heatmaster, Kada, Hybrid 61, Gem Pride, Caraibe Improved, Calypso, Commodora, F1 TX 54 and Nema 1400.

Seedling Production

In order to produce strong and healthy seedlings, establish a seedling nursery, specifically for seedling production. The area should comprise two sections:

1. A seed germination section which is covered with solid roof to protect the germinating seeds from sun and rain
2. A hardening section with a transparent roof or netting that allows for the penetration of light for hardening the seedlings. Hardening protects seedlings from transplanting shock when planted in the field.

The entire nursery area should be weed free and preferably totally screened with polyvinyl insect netting to protect seedlings from any insect attack and/or transmitted insect diseases. Seeds are sown either in seedling trays containing peat moss as the growing medium or in peat moss blocks (Plates 1 & 2). Though seeds can be directly sown in the field, the success of germination and survivability of most seeds is not guaranteed as both soil pests and diseases can affect them. To achieve 95 - 100% seed germination and strong and healthy seedlings, seedlings produced in nurseries is the preferred option.

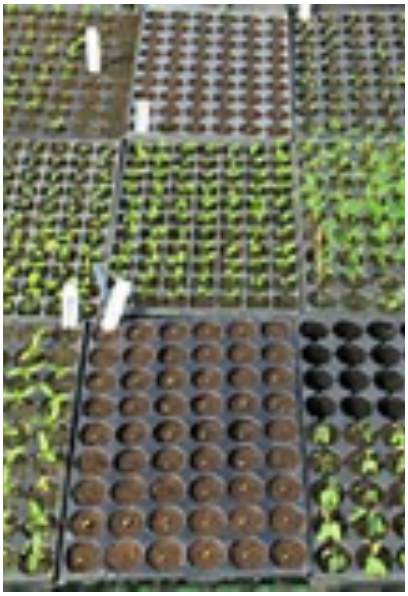

Plate 1 Seedling production in seed trays

Plate 2 Seedling production in nursery

Plate 3 Hardening seedlings

The following practices should be adopted in the production of strong healthy tomato seedlings:

- When purchasing seed material obtain from a reputable source
- Read the label on the seed package. Ensure that the seeds are 90 - 100% viable which must be indicated on the label and is in keeping with the expiratory date
- Use seedling trays for sowing seeds. Ensure that they are sterilized by immersing into commercial bleach solution 1 tablespoon/gallon (5 cc/litre) of water
- Use peat moss as the planting medium
- Treat the planting medium with a broad spectrum fungicide, 6 ounces of Banrot in 15 gallons of water (170 g/68 litres), before placing in trays
- Seedling trays should be placed on raised platforms
- Make a planting hole in each cell and plant one seed per hole
- Water seeds to aid germination
- Spread peat moss lightly ensuring that the seeds are covered
- Cover trays with saran netting to hasten germination
- Place trays in the seed germination section of the nursery
- Remove the covering of saran netting at the first sign of germination

- Water seedlings at least twice per day
- Apply plant nutrient as a foliar spray once per week when seedlings are ½ inch (1.2 cm) in height
- Spray seedlings with insecticide and fungicide once per week for pest and disease control
- Apply fertilizer solution, Tropi-Gro 1 tablespoon/gallon (5 cc/litre) of water twice per week when seedlings are 1 inch (2.5 cm) in height
- Harden seedlings by placing them in the hardening section of the nursery for 3 hours during the early morning and late evening, for 2 - 3 days (Plate 3)
- Expose seedlings to full days of sunlight until ready for transplanting
- Transplant seedlings when they are 3 inches (7.6 cm) tall.

Land Preparation

Tomato can be grown under two types of production systems: "Open Field" or "Protected Agriculture".

For both systems, the soil should ploughed and rotavated to produce good tilth (Plate 4). The area should be well drained. Organic matter can be incorporated during ploughing. In "open Field" form beds 6 feet - 8 feet (1.8 - 2.4 m) wide and 6 - 7 inches (15 - 17 cm) high with good drainage. Prior to planting it is advisable to spray the area with a good insecticide as a precautionary measure against any insect pest in the soil.

Plate 4 Flat lands prepared for planting

Under “Protected Agriculture” the land should be rotavated to a fine tilth and formed into 4 foot (1.2 m) beds. Soil should be left uncovered or covered with plastic mulch as a ground cover (Plate 5).

Plate 5 Using plastic mulch as a ground cover

Spacing and Planting

The crop can be grown year-round but higher yields are obtained in the dry season. Seedlings should be planted in rows 4 feet (1.5 m) apart with plants 18 - 24 inches (45 - 60 cm) apart within the row giving 2,500 – 3,500 plants/acre (6,000 - 8,000 plants/ha). To minimize transplanting shock, transplant the seedlings late in the afternoon. Press the soil firmly around the root. Irrigate the plants lightly immediately after transplanting.

Plate 6 Transplanting tomato seedlings

Trellising

In both “Open Field” and “Protected Agriculture” production systems, a trellis system is established to provide support for the growth of plants and to keep them upright, so as to bear the load of fruit on the plant when they come into production. Stakes should be planted 6 feet (2 m) apart along the sides of each row.

Plate 6 Trellis system for tomato in Protected Agriculture

When plants are about 12 - 15 inches (30 - 38 cm) high, tie lines about 10 inches (25 cm) above the ground on stakes at each side of the row to prevent plants from toppling. A second and third set of lines can be installed if required as plants continue to grow (Plate 6). Alternatively, use a twine to support each plant vertically along the row, to an affixed twine, running 8 feet (2.5 m) horizontally above each row of plants (Plate 7).

Plate 7 Trellis system for tomato in open Field

Pruning

Pruning helps maintain a balance between vegetative and reproductive growth. It also keeps plants and fruits off the ground, helping to control diseases. If tomato plants are not pruned, or are only pruned very lightly, they will produce excessive vegetative growth with reduced fruit size. The pruning process involves the removal of all the suckers up to the one immediately below the first flower cluster. A single pruning will usually be adequate.

Irrigation

Irrigation water, especially from streams and ponds, should be sent for analysis to ensure that the water is not polluted or saline. It must be of good quality for irrigation.

Tomato is a deep-rooted crop therefore it exploits a lot of soil area for moisture; however, it is not a drought-tolerant crop. Insufficient water will result in the formation of undersized fruit, fruit with blossom-end rot and fruit with growth cracks resulting in a large number of rejects. The tomato crop therefore requires an adequate supply of water from establishment to harvest and particularly during fruit production. The best and most efficient method for supplying continuous water is with a drip irrigation system (Plate 8). Ensure that transplants are placed close to the emitters.

Plate 8 Drip irrigation system for tomato production

Fertilization

Specific kinds and rates of fertilizers must be determined from the results of soil and leaf analyses. Composted manure if available should be applied to the soil to help with the uptake of nutrients from inorganic fertilizers; it adds organic matter to the soil, enhances soil structure and growth of micro-organisms. All manure should be well composted to ensure that harmful microorganisms and weed seeds are destroyed.

In "Open Field" production systems, apply 200 - 400 lb/acre (225 - 450 kg/ha) of 12:12:17+2 at planting. In order to maintain the vigour of the plant apply 200 lb/acre (224 kg/ha) of Calcium Ammonium Nitrate after fruit set and as fruit development begins.
With "Protected Agriculture" NPK fertiliser (20:20:20) is applied every week at the rate of 0.5 gallon (2l)/hr through a drip line fertigation system.

Weed Control

Proper weed management begins at the land clearing and land preparation stage during which time the 'stale seed bed technique' is applied. This involves clearing the land from brush, deep ploughing and rotavating and then allowing weeds to re-grow. A systemic herbicide (Round-up) is then applied 2 weeks before transplanting when weeds are actively growing and are about 3 - 4 inches (8-10 cm) high. The weeds are allowed to fully die covering the topsoil and acting as a mulch suppressing further growth of weeds. Transplanting is then carried out at a high plant population, which can also suppress future weed growth. After the crop has been established further weed control should be done manually or by applying a contact herbicide (Gramoxone) with the use of a shield to protect the plant from spray drift. During full crop growth only hand weeding should be practiced.

Plastic Mulch

An alternative method of weed control is the use of plastic mulch (Plate 10). Plastic mulches can be used commercially for hot pepper production. Plastic mulch is used to reduce weed pressure,

and conserve moisture and fertilizer. Most often drip irrigation is used in conjunction with plastic mulch.

Plate 9 Use of plastic mulch for weed control measure

Advantages of using plastic mulch:

- Plastic mulches will reduce light penetration to the soil. Weeds cannot survive therefore, the cost of weed control is drastically reduced
- Soil water loss is reduced under plastic mulch, and more uniform soil moisture is maintained and irrigation frequency can be reduced. The growth of plants on mulched soil can be twice that of plants that are not mulched. Because larger plants will require more water, mulching is no substitute for irrigation
- Excess water runs off the impervious mulch, and fertilizer is not lost beneath the mulch by leaching, so that fertilizers are optimally used
- The soil under plastic mulch remains loose, friable and well aerated. Roots have access to adequate oxygen, and microbial activity is enhanced
- Cultivation is eliminated, except in the area between the mulched strips, which reduces the frequency of mechanical root pruning. Weed growth in these areas can be controlled by cultivation or by use of a chemical herbicide
- Plastic mulch also keeps the fruit cleaner by reducing soil spatter. When using drip irrigation, the incidence of disease is often reduced because the foliage stays drier.
- Use of reflective mulches reduces the population of certain insect pests, which are vectors of viruses
- Water is shed from the row area by the raised tapered bed so that excess water runs off by the fields, thus reducing drowning and other excess soil water stress.

Disadvantages of using plastic mulch:

- Yellow and purple nut sedges are not controlled by black plastic mulch, and suitable

fumigants/herbicides must be applied if nut sedge is a potential problem

- The use of plastic mulch will increase the cost of production for a given crop. These costs should be offset by reduced weed control expense and increased income due to better quality fruit and higher yields.

Mulch film is nearly impervious to carbon dioxide, which is necessary for photosynthesis. Research has shown that high levels of carbon dioxide may build up under the plastic mulch. Because the film does not allow the gas to penetrate, it has to escape through the holes punched for the plants and a 'chimney effect' is created, resulting in carbon dioxide for the actively growing leaves.

Pests and Diseases

The major pests and diseases, symptoms and control/management affecting tomato are indicated in Table 1.

Table 1 Causal agents, symptoms and control of pests and diseases of tomato

Pest & Diseases	Symptoms	Control/ Management
 Plate 10 Aphids	Symptoms are stunting, deformation, gall formation, withering and dying of plants. Leaves may become curled, wrinkled or cup shaped. The symptoms may be due to the feeding or viral diseases spread by the aphids. Honeydew secreted by the aphids encourages the growth of sooty mold (black in colour) on the leaves.	The pest can be controlled using contact or systemic insecticides.

Pest & Diseases	Symptoms	Control/ Management
 Plate 11 Leaf Miners	Leaf miners are the larvae of various beetles, flies, moths and sawflies. The adult lays eggs on the leaf and the larvae burrow into the leaf and tunnel through it, feeding and leaving a transparent trail. If you look closely, you can often see a dark dot at the end of one of the lines.	The pest can be controlled using contact or systemic insecticides.
 Plate 12 Tomato Fruit Worm	Symptom seen as damage of insect larva eating the fruit.	The pest can be controlled using contact or systemic insecticides.
 Plate 13 Stink Bugs	Symptoms are cloudy spots on tomato fruit is caused by the feeding of various species of Stink Bugs. On green fruit the damage appears as whitish areas. Individual spots may be 1/16 - 1⁄2 inch (0.1 – 1 cm) in diameter; or the spots may merge and encompass a large area of the fruit surface. On ripe fruit the spots are golden yellow.	• The pest can be controlled using contact or systemic insecticides.

Pest & Diseases	Symptoms	Control/ Management
 Plate 14 Bacterial Wilt caused by a bacterium *Ralstonia Solanacearum*	The bacterium clogs up the stem, preventing water and nutrients from reaching the leaves and the plant wilts and dies. Bacterial wilt is diagnosed by cutting the stem at the base of the plant. Suspend the stem in a glass of water, if it is infected, a white, slimy substance will ooze into the water within just a few minutes.	There are no effective chemical controls for Bacterial Wilt disease. When the plants die, the pathogen is released into the soil, so it's important that you remove diseased plants immediately. Also apply good cultural practices such as: • Crop rotation • Raised beds to improve drainage and control Root Knot Nematodes that weaken plants, leaving them more susceptible to disease • Space plants far enough apart to provide good air circulation • Test soil and maintain a pH of 6.2-6.5 • Wash hands after handling infected plants and sterilize any gardening tool that could have been used in infected soil.

Pest & Diseases	Symptoms	Control/ Management
 Plate 15 Fusarium Wilt caused by the fungus *Fusarium oxysporum*	It produces symptoms such as wilting, chlorosis, necrosis, premature leaf drop, browning of the vascular system, stunting, and damping-off. Fusarium Wilt starts out looking like vein clearing on the younger leaves and drooping of the older lower leaves, followed by stunting of the plant, yellowing of the lower leaves, defoliation, marginal necrosis and death of the plant.	Control methods are improved soil drainage, planting resistant varieties, removing infected plants, use of soil and systemic fungicides to eradicate the disease from the soil, and use of clean seeds.
 Plate 16 Tomato Mosaic caused by the Tobacco Mosaic virus	Symptoms include mottling, with alternating yellowish and darker green areas, the latter often appearing thicker and raised giving a blister-like appearance. The leaves tend to be fern-like in appearance with pointed tips and younger leaves may be twisted. The fruit may be distorted; yellow blotches and necrotic spots may occur on both ripe and green fruit and there may be internal browning of the fruit wall.	There are no efficient chemical treatments that protect tomato plant from virus infection. Control of Tobacco Mosaic virus is by reducing and eliminating sources of the virus and limiting the spread by insects. Therefore, sanitation is the single most important practice in controlling Tobacco Mosaic virus.

Pest & Diseases	Symptoms	Control/ Management
 Plate 17 Tomato Leaf Curl caused by the Tomato Yellow Leaf Curl virus transmitted by whiteflies	New leaves become cupped and pale green in colour. In addition the entire plant may exhibit stunted growth, yellowing leaf edges, purplish veins on the undersides of leaves and decline of fruit production.	There is no treatment for virus-infected plants. Removal and destruction of plants is recommended. Since weeds often act as hosts to the viruses, weed control can reduce virus transmission by insects. As the virus is transmitted mechanically on garden tools, it also helps to disinfect tools that have come into contact with diseased plants.
 Plate 18 Bacterial Leaf Spot caused by a bacterium *Xanthomonas campestri*	The disease is expressed as numerous spots (brown and black) on the infected leaves. The spots have a central depression on the upper leaf surface and slightly raised brown areas centrally on the lower surface. The spots on the fruits are raised and have distinct holes.	Control measures are through draining soils well, controlling weeds, crop rotation, keeping fruits from soil contact, burning residues from infected fields and spraying with suitable fungicides.

Pest & Diseases	Symptoms	Control/ Management
 Plate 19 Grey Leaf Spot caused by three different fungi, *Stemphylium solani*, *Stemphylium floridanum*, and *Stemphylium botryosum*	Symptoms include tiny black or brown spots or dots. As the disease grows, the leaves become yellow and the spots turn to a brown or grey colour. Numerous spots or holes appear all over the tomato plant leaves. Plants look unwholesome and sick.	Control is by prevention, removal and destruction of infected leaves, plants, plant debris, and volunteer tomato plants. Treat as soon as possible with a fungicide at the first sign of spot, when fruit sets (as a preventative measure) or when conditions indicate a strong potential for it to develop. Wet weather, dew, and an excess of overhead watering will help the fungi to germinate quickly.
 Plate 20 Blossom End Rot caused by environmental factors that affect the supply of water and calcium in the developing fruits.	The symptoms start as sunken, dry decaying areas at the blossom end of the fruit, furthest away from the stem.	Blossom end rot is not caused by a pathogen. It is a physiological disease and therefore cannot be controlled by application of fungicides and insecticides. The control is dependent upon maintaining adequate supplies of moisture and calcium to the developing fruits.

Good Agricultural Practice (GAP) related to the use of pesticides, requires farmers to maintain up to date records on the application of pesticides to the crop. These records should include trade names, application rates and dates of application. During the harvesting period use pesticides with a very short harvest interval.

Harvesting/Maturity

Generally tomato comes into production 2.5 - 3 months after transplanting depending on the variety. Harvesting is usually spread over a 3 - 4 week period. Fruits should not be harvested before they reach the green mature stage.

The harvesting operation should be carried out during the early part of the day when temperatures are much cooler and fruits are more turgid. Harvest fruits that are mature i.e. whitish green in colour with a waxy surface and they should separate easily from the stem and show a corky stem scar. Harvested fruit will achieve the full ripened red colour after 7 – 10 days in storage. For the domestic market fruits can be picked almost fully ripe.

Field Handling

Harvested fruits should be placed in clean and sanitized field crates/baskets (Plates 21 and 22), not in bags, and stored temporarily in the shade, protected from the sun and rain. Mature fruits that have fallen on to the ground prior to harvesting should not be collected. Out-grade fruits that are diseased or damaged.

Plate 21 Harvesting tomato in the field

Plate 22 Placing harvested tomato fruits in crates

Preparation for Market

On completion of the harvesting operation, fruits must be transported from the field directly to the storage area. Reject all fruits that show signs of decay, rots, soft spots, sunscald, insect damage, bruises and misshaped or other mechanical damage. Fruits should be washed to remove soil and dried with a damp cloth soaked in a mild solution of commercial bleach 1 tablespoon/gallon (5 ml/L) of water. Do not soak fruits in water and if possible leave the fruit stalks intact.

Yields

Yields vary greatly depending on variety, season and weather conditions. In the dry season yields are 7 - 10 tons/acre (15 - 22 t/ha) with much lower yields of 1 - 3 tons/acre (2.2 - 7 t/ha) in the wet season.

Storage

Hold temporarily in a well-ventilated, shaded area. Fruit will ripen to poor colour at temperatures above 82°F (280C). When fruits have reached a ripe red colour after 7 - 10 days they should not be stored much longer, but if necessary the fruit should be kept at temperatures between 50 – 70°F (10 - 20°C). Tomatoes are adversely affected by exposure to low temperatures. Unripe tomatoes are susceptible to chilling injury below 50°F (10°C). Low temperature exposure also adversely affects the development of flavour and colour.

APPENDICES

APPENDIX I: TEMPLATE FOR COST OF PRODUCTION ANALYSIS: TOMATO

	Input	Quantity	Units	Unit Cost	Total Cost
1.	**Seedling production**				
	Seed material				
	Seedling trays				
	Peat moss				
	Saran netting				
	Fungicide, plant nutrient, insecticide, fungicide, fertilizer (specify names used)				
	Total cost for seedling production				
2.	**Land preparation**				
	Organic matter (if purchased)				
	Insecticide				
	Plastic mulch				
	Trellis material				
	Other land preparation costs (e.g. equipment rental)				
	Total cost for land preparation				
3.	**Crop maintenance**				
	Water/irrigation				
	Fertilizer (specify types used)				
	Weed control (specify chemicals etc used)				
	Pest and disease control (specify chemicals etc. used)				
	Total cost for crop maintenance				
4.	**Harvest/storage**				
	Crates/baskets				
	Other materials (e.g. commercial bleach etc.)				
	Estimate any utility costs				
	Transport to market				
	Total cost for harvest/storage				

APPENDIX I: TEMPLATE FOR COST OF PRODUCTION ANALYSIS: TOMATO

	Input	Quantity	Units	Unit Cost	Total Cost
5.	**Labour**				
	Seedling production				
	Land preparation				
	Crop maintenance				
	Harvest/storage				
	Total cost for labour				
6.	**Rent/insurance**				
7.	**Miscellaneous costs**				
	Total cost of production				

Notes

1. It is recommended that the above data be completed on a per crop basis.

2. The cost of any fixed structures should be considered. For example if a seedling nursery is solely used for to produce tomato seedlings in the year and is expected to last for 10 years, then one tenth of the cost of construction (plus any annual maintenance) should be added at item 7. If, however seedlings for other crops are also produced then these also need to be considered. If tomato seedlings account for half the seedlings in a year, then the annual cost calculated as above needs to be divided by 2. Similar considerations should be given to the cost of any refrigerator, if the crop is stored at a low temperature and to an irrigation system. If the tomato is grown under Protected Agriculture perhaps 1 -2% of the cost of the structure should be added to item 7.

3. The revenue obtained from sale of the crop should be compared with the cost of production to determine the profit/loss on the operation.

APPENDIX II: LIST OF RECOMMENDED PESTICIDES AND APPLICATION RATES

INSECTICIDES	APPLICATION RATE
Pronto 35 SC	3 - 5 teaspoons/gallon of water
Target	1 - 2 teaspoons/gallon of water
Pirate	½ - 1 teaspoons/gallon of water
Fastac	1 - 2 teaspoons/gallon of water
Caprid	½ - 1 teaspoon/gallon of water
Diazinon (Basudin)	¾ - 1½ pints/acre
Admiral	¼ teaspoon/gallon of water
Dipel	1½ - 2 teaspoons/gallon of water
Aza-direct	1 - 2 teaspoons/gallon of water
Cure	½ - 1 teaspoon/gallon of water
Danitol	1 - 2 teaspoons/gallon of water
Cypro	½ tablespoon/gallon of water
Dimethoate (Perfecthion, Rogor 40)	1 pint/acre
Phosvel	1¼ - 2 pints/acre
Orthene	3.2 ounces/acre
Permethrin (Ambush)	½ teaspoon/gallon of water
Padan 50 WSP	2 - 3 teaspoons/gallon of water
Lannate	1 teaspoon/gallon of water
Decis	½ teaspoon/gallon of water
Kelthane 42%	1¼ lb/acre
Orthene 75S	1 lb/acre
Malathion	½ - 1 pint/acre
Sevin	1½ lb/acre
BT (*Bacillus thruingiensis*)	Label rates
Rotenone	1 - 2 teaspoons/gallon of water
Neem X.	8 - 10 oz/gallon of water
FUNGICIDES	**APPLICATION RATE**
Bellis	2 teaspoon/gallon of water
Acrobat	2 - 4 teaspoon/gallon of water
Mancozeb (Dithane M45)	1.5 lb/acre
Cabendazim	2 teaspoon/gallon of water
Daconil	1½ - 2 pints/acre
Benomyl (Benlate)	6 oz/acre
Captan	2 - 3 teaspoons/gallon of water
Peltar	3 teaspoons/gallon of water
Manzate DF	2 - 4 teaspoons/gallon of water
Bravo	1½ - 2 pints/acre
Tri-Miltox-Forte	3 teaspoons/gallon of water
Botrilex	5 - 200 lb/acre
Kocide 101	2 - 4 teaspoons/gallon of water
Cupravit	2½ lb/acre

APPENDIX II: LIST OF RECOMMENDED PESTICIDES AND APPLICATION RATES

WEEDICIDES	APPLICATION RATE
DCPA (Dacthal W-75)	10 lb/acre
Diphenamide	4 - 10 lb/acre
Paraquat (Gramoxone)	1 - 2 pints/acre
Dymid 80W	5 lb/acre
Atrazine 80 (Gesaprim).	1¼ - 1½ lb/acre
Linuron (Lorox)	1 pint/acre
Prometryn (Caparol)	0.8 - 1.6 lb/acre
Sethoxydim (Poast)	1¼ - 3½ lb/acre
Clethodim (Select)	0.094 - 0.25 lb/acre
Prometryn 50WP (Geagard)	2 - 3 lb/acre
Herbicidal Oil (Stoddard Solvent, Kerosene oil)	40 - 80 gallons/acre

APPENDIX III: GOOD AGRICULTURAL PRACTICES DATA RECORD SHEET

Grower name:							
***Name of applicator**	**Date**	**Brand and product name**	**Rate**	**Size of area/no. of plants treated**	**Total application (amount of the product used)**	**Notes/target pest**	**Start/finish time**

*The applicator should be trained or, if not, supervised by a trained or certified person. Proof of training required.