

Green Vine



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Sen. the Hon. Vasant Bharath
Outlines Initiatives
 of the Ministry of Food Production, Land and Marine Affairs
 in his **2010/2011 Budget Contribution**

On Wednesday 22nd September, 2010 Senator the Honourable Vasant Bharath made his contribution to the Budget 2010/2011 debate. In his contribution he highlighted some of the initiatives that would be undertaken by his Ministry over the next financial year. In this issue of the GreenVine we will highlight some of these initiatives.

Mr. Bharath in his opening statements said that *"The selection of agriculture as the basis of one of the engines of growth in this economy, is based primarily on the recognition that we need in Trinidad and Tobago to control inflation. We need, as a country, to create long term sustainable, productive employment for our people. We need to reduce our food import bill. We need to create food security for our people and we also need to look at diversification of our economy; something that we have long talked about in Trinidad and Tobago."* He continued by saying *"This government has assigned a very high priority to the modernization of the agricultural sector and will immediately introduce new and appropriate technologies, improve infrastructure and generate a wave of new investment in this sector."*

The Honourable Minister advised that over the last few months he met with over 100 farmers' associations, as well as fishery poultry, cattle, sheep and goat associations, cocoa farmers; pineapple farmers, aquaculturists as well as extension staff of the Ministry. **"We have tried to understand what the problems are."**

Taking into account the discussions held during these consultations the following are some of the key areas which will be addressed in the upcoming year.

Land Tenure



As of January 2011, the Ministry intends to disentangle the issue of incentives from land tenure and land title.

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namdevco
 THE NATIONAL AGRICULTURAL MARKETING AND DEVELOPMENT CORPORATION

It provides information to strengthen the managerial and technical capacity of our agribusiness stakeholders and market intelligence in fresh produce and seafood at wholesale, retail and export markets.

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Agriculture Initiatives outlined in 2010/2011 Budget

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No longer will a farmer be required to be regularized to access incentives from the Ministry nor preferential loans, provided he can prove, as a registered farmer, he is currently cultivating at least 30 per cent of his land in the first year, with the proviso that in the second year he will cultivate 50 per cent and in the third year come up to 75 per cent, which is the current percentage rate for regularization. It is expected that this initiative will bring thousands of acres of fertile arable land into production in Trinidad and Tobago, by that one move.

Additionally, the Ministry will computerize the land-management area, as well as embark on an accelerated regularization programme, so that after the three-year period all those persons who have come through the system will be regularized.

Praedial Larceny



This is an issue that continues to plague our hard working farmers and has done so for many years. The Ministry put in place a more effective praedial larceny unit that is effectively trained and better equipped. The success of this unit depends on a collaborative approach that needs to be taken between the police, the farmers, communities and the Ministry itself.

A physical presence is simply not enough to curb this menace and, therefore, the Government intends to introduce the use of technology to assist in this fight. This includes particular types of fencing, alarm systems, camera and lighting and so on. Every farmer who wishes to engage in this technological solution, and who wishes to use technology in the fight against praedial larceny, the Government will match expenditure on a dollar for dollar basis up to the initial value of \$30,000.

Infrastructure and Water Management

The Ministry will build and rehabilitate 100 farm ponds across Trinidad and Tobago in the next 10 months. The quarrying sector has agreed to allow farmers to use the ponds that have been created by their activity. Trinidad Aggregate Products has agreed to allow their pond to service Longdenville farmers.



The Ministry will establish a mobile pumping station in collaboration with several farmers groups in Trinidad and Tobago. One pumping station will be located on the banks of the Caroni River servicing Caroni rice lands, the two acre farms, and also farmers in the Warren/Bejucal area. This initiative will positively impact on 50 farmers and it will service 1,700 hectares of land. Additionally, another mobile pumping station will be used to lift water out of the Horkin drain to service the Orange Grove farmers, bringing another 250 hectares into use.

The Ministry intends to ensure that the majority of farmers in Trinidad and Tobago have access roads. They have already engaged in an extensive exercise to determine which of the areas are at risk, and these will be the ones that will be attended to initially.

Incentives

The Ministry will review and revamp the system of incentives with a view to making it applicable and encouraging. The Minister highlighted two incentives within the new incentive programme as follows:

Fertilizer:

Imported fertilizers will be made available through every agricultural shop in Trinidad and Tobago so that farmers everywhere will have access to this fertilizer.

Tractors:

The Minister proposed an incentive of 15 per cent to the value of \$15,000 over a period of five years the purchase of a second hand tractor through authorized dealers.



To be continued in the next issue of GreenVine



Citrus Budding Guide



Inverted "T" method

1 Rootstock

Varieties Used: Cleopatra mandarin, Volkameriana Lemon
Seeds collected between: December – April
Germination: 3-4 weeks
Rootstock Readiness: Cleopatra (generally 7-9 months)
Volkameriana (generally 6-7 months)

Rootstocks that are pencil size in thickness are best for budding. Budding height should be done at 30cm (12 inches), measured from the base of the rootstock upwards.

- 2 Make a horizontal cut starting 12 inches upward from the base of the rootstock
- 3 Make a one inch vertical cut downwards into the horizontal cut

- 4 Open bark to expose cambium layer

- 5 Select budwood from healthy and disease free parent trees of a desirable variety

Scion

Varieties: Valencia orange, White Marsh grapefruit, W.I. Lime, Portugal mandarin, Rough lemon, pearl tangelo etc.

Scion selection: Intermediate budwood, between round mature to young angular twigs preferably from the second flush

- 6 Remove one bud
- 7 Insert and slide bud upward under bark (eye facing upward)
- 8 Wrap bud securely with plastic



Patch or Chip Method

- A Make a notch on the bark. Above the notch, remove an inch of the outer bark downwards into the notch, exposing the cambium layer
- B Size and cut a bud to fit the portion of bark removed
- C Securely place bud on the notch, ensuring cut surfaces make cambium contact. Wrap with plastic as in 8

Tape removal: Inverted "T" method- Between 14-21 days, Chip or Patch method- Between 21- 28 days.

Rootstock cut-back: The portion of the rootstock above the bud is cut back one week later once the bud remains green after un-taping. If the bud appears brown after un-taping the rootstock is reused.



**Established plant
in 2-3 months**



FIX THE SOIL *for Sustainable Agriculture*

AN INNOVATIVE MODEL

Soil fertility management is a critical issue to be addressed as we set about to revitalize our agricultural sector.

One of the key planks to sustained agricultural production is maintenance of soil fertility, if we are to ensure consistent supplies with the twin objectives of ensuring a good standard of living for the farmer and affordable food for the population.



This is a challenge we have to address and overcome, especially as heavy clay soils can be found on approximately 100,000 ha land in the country, (Persad et al, 2007¹). Further, 70% of these lands have been allocated for state lands farms. The lands allocated to the ex-Caroni workers have a pH 4.5 or less, which means that these soils have a high level of acidity and are nutrient poor. The soils on these lands must be built up if they are to achieve high levels of productivity.

Notwithstanding what might seem to an almost impossible task, one man, Mr. Ramgopaul Roop has been able to successfully transform nutrient poor land into a profitable farming enterprise, growing multiple crops.

This farmer and his family have been able to successfully develop 1.29 ha of sugar cane lands at Carlsen

Field which produces year round, a range of fruits and vegetables. This farm has been described as ***"a diversification dream that has eluded many agriculturalists"***.

Mr. Roop, a graduate of ECIAF, worked for 13 years in the Ministry of Agriculture as an Extension Officer before he left to venture out on his own. He tried a number of different activities before he decided to settle into farming as a business. In 1994, he established Rocrops Agrotec as an innovative smallholder farm.

This land at Carlsen Field has been occupied by his family since 1962. The first thing Mr. Roop

did was to get a soil test done. The results indicated that it was an extremely acidic soil, with a pH of 3.5 with low/very low availability of plant nutrients. Physically, these heavy clays suffered from impeded drainage in the wet season, desiccation and cracking in the dry season and were dense and compact on the surface and subsoil.

Mr. Roop was not deterred by the results of the soil test. He made strategic alliances with key researchers from the Ministry of Agriculture, Soil and Land Capability Department, Research Division, Centeno, UWI and other agricultural agencies, as he set out to ameliorate his soil.

This farmer philosophy is that ***"there are no simple "silver bullet" solutions to the complex problems of land degradation and soil management. It takes years to fix the soil."***

A number of initiatives were implemented to transform the lands. These included:

- ▶ Land reformation, sub-soiling and tillage in order to improve the soil's physical conditions including drainage.
- ▶ Application of high levels of agricultural limestone to lower the soil acidity levels, and improve the soil structure. The recommendation was to improve the soil pH from 3.5 to 6.5 incrementally over a two year period. Subsequently the pH values were maintained by frequent testing and amelioration.
- ▶ Application of fertigation techniques to ensure adequate and balanced nutrition for sustainable production of high of quality vegetables at high crop density.
- ▶ Development of water resources and application of micro and low-pressure irrigation systems to ensure dry and wet season uninterrupted productions. Roop has established a pond (56m x 39m x 5m) outfitted with a 1.5hp electrical pump, a media filter with a backwash feature and micro filtration system. The water is recycled throughout the field and flows back into the pond. The pond is designed with a spillway in order to discharge excess water into the receiving environment.
- ▶ Irrigation was also implemented to control the crops micro environment, reduce plant

stress and conserve resources.

- ▶ Application of organic manure and mulches to protect the stability of the soil structure, improve water retention in the soil and increase fertilizer efficiency.
- ▶ Integrated Pest Management (IPM) strategies that incorporate crop rotation, natural pest enemies, natural pesticides and minimal use of agricultural pesticides.
- ▶ Low input farming which protects the ground water by reducing the use of agro-chemicals, including pesticides and fertilizers.

Today, this farm is used as a demonstration farm, showing farmers how to manage these challenging soils to ensure sustainability of both land and income in the long term.

Visits are made by agricultural students from UWI, UTT, farmers and agriculturists from the region. It is a focal point for technology transfer in sustainable agriculture.

Production data shows consistent increases in marketable yield and crop quality from 1995 to 2010. Correspondingly, there has been significant improvement in all key soil fertility parameters evaluated over the study period.

The success of farm has also been recognized when Mr. Roop was the recipient of the Agricultural Entrepreneur of the Year Award (2001) and first place winner in the category of Integrated Agriculture in 2001.

Rocrops Agrotec has developed a reputation for

high quality produce. The business has an established clientele comprising of exporters, processors, consumers, grocery chains and food outlets which demand a year round supply of primary products.



The crops produced on the farm include dwarf Pommecythere (Golden Apple), Callaloo Bush, Limes, Coconuts, Herbs and Spices and Peppers. Rocrops has demonstrated its profitability with a return on of 44%. The farm provides employment for at least four workers.

Mr. Roop's vision is to see a level of professionalism developed to promote agricultural techniques and practices which are economically sound and environmentally friendly with the potential to contribute to rural development and food security of Trinidad and Tobago.

Mr. Roop has clearly shown that no challenge is too huge to overcome. It takes patience, proper planning and developing alliances with key partners.

1 Seunarine Persad et al, 2007 Soil and Water Constraints to Food Crop Production in Trinidad and Tobago- Challenges and Opportunities for Small Farms



Mr. & Mrs. Roop harvests limes for deliveries

REVIEW OF AUGUST WHOLESALE FRESH PRODUCE PRICES AND VOLUMES

Root Crops



Item		Prices		% Change	Volumes		% Change
		Jul - 10	Aug - 10	Jul/Aug	Jul - 10	Aug - 10	Jul/Aug
Carrot	kg	11.81	10.95	-7%	112,901	89,949	-20%
Cassava	kg	4.46	4.48	0%	54,879	49,288	-10%
Dasheen (Local)	kg	10.79	12.71	18%	2,638	163	-94%
Eddoes (Imported)	kg	19.95	13.52	-32%	21,591	41,413	92%
Sweet Potato (Local)	kg	12.73	15.57	22%	50,338	26,167	-48%
Ginger	kg	70.79	56.12	-21%	7,031	13,916	98%
Yam (Common)	kg	4.42	4.19	-5%	2,326	779	-67%

Condiments & Spices



Item		Prices		% Change	Volumes		% Change
		Jul - 10	Aug - 10	Jul/Aug	Jul - 10	Aug - 10	Jul/Aug
Celery	bdl	38.49	24.35	-37%	14,434	14,499	0%
Chive	bdl	40.85	42.39	4%	15,116	13,877	-8%
Hot Pepper	kg	25.60	51.34	101%	11,095	10,636	-4%
Pimento (M)	kg	20.49	41.80	104%	3,068	2,333	-24%

Leafy Vegetables



Item		Prices		% Change	Volumes		% Change
		Jul - 10	Aug - 10	Jul/Aug	Jul - 10	Aug - 10	Jul/Aug
Patchoi	bdl	5.54	5.72	3%	32,350	22,626	-30%
Spinach	bdl	4.96	5.23	5%	13,732	12,448	-9%
Cabbage (Local) (Gn)	kg	10.23	9.02	-12%	53,303	53,509	0%
Callaloo bush (open)	bdl	4.04	3.61	-11%	47,035	36,465	-22%
Callaloo bush (roll)	bdl	5.03	4.56	-9%	10,500	10,950	4%
Lettuce (M)	Head	4.67	3.82	-18%	20,400	15,885	-22%

Vegetables



Item		Prices		% Change	Volumes		% Change
		Jul - 10	Aug - 10	Jul/Aug	Jul - 10	Aug - 10	Jul/Aug
Bodi Beans	5 lb bdl	23.39	18.21	-22%	16,932	15,109	-11%
Cucumber	kg	3.41	3.68	8%	160,315	132,038	-18%
Melongene (M)	kg	6.81	7.59	11%	16,289	11,934	-27%
Sweet Pepper (M)	kg	23.20	19.90	-14%	6,402	9,328	46%
Tomato (M)	kg	21.73	12.68	-42%	39,159	62,197	59%
Pumpkin	kg	3.88	3.03	-22%	155,067	143,518	-7%

Root Crops

Prices of Eddoes and Ginger, imported from CARICOM countries such as St Vincent and the Grenadines and Grenada, showed marked reductions in prices in the range of 21 to 32% as

supplies almost doubled in August when compared to July. Local Sweet Potato and Dasheen prices rose by 22 and 18% as their volumes fell by 48 and 94% respectively.

Condiments and Spices

The prices of both Hot Pepper and Pimento continued to increase during the month of August as supplies continued to fall as a result of reduced productivity in the fields due to heavy rainfall. Hot Pepper prices peaked

in August at \$1,200/40lb bag at the Northern Wholesale Market. The price of Celery fell by 37% whilst volumes were virtually unchanged from the previous month.

Leafy Vegetables

There was an overall 14% reduction in the volume of Leafy Vegetables entering the Wholesale market in August. With the exception of Patchoi and Spinach, all items in this category showed price

reductions in the range of 9 to 18%. Lettuce had the most significant price reduction of 18% falling from \$4.67 to \$3.82/head. Patchoi and Spinach prices rose by 3 and 5% respectively.

Vegetables

There was a significant reduction (42%) in the price of Tomato in August when compared to July. Prices fell from \$21.73 to \$12.68/kg,

a difference of \$8.95/kg. Volumes rose by 59%. Prices fell in the range of 14 to 22% for Bodi Beans, Sweet Pepper (M) and Pumpkin.

Fruits

Overall, there was a 10% increase in price of this category. Papaya showed the most significant price increase of 31% as the volume of Papaya entering the Wholesale Market fell by 41%.

Farmers report that this shortfall in supplies was due to toppling of trees and increased levels of disease in the fields due to the heavy rainfall being experienced.

Fruits



Item		Prices		% Change	Volumes		% Change
		Jul - 10	Aug - 10	Jul/Aug	Jul - 10	Aug - 10	Jul/Aug
Banana (Imported)	kg	9.49	9.55	1%	35,370	80,655	128%
Papaya	kg	4.64	6.09	31%	23,857	14,146	-41%
Pineapple	kg	8.81	10.19	16%	25,129	17,055	-32%
Watermelon	kg	4.76	4.70	-1%	88,814	62,451	-30%

USA TERMINAL MARKETS WHOLESALE PRICES (US\$) AUGUST 2010



	Miami Terminal Market			New York Terminal Market		
	Pumpkin (50 lb Bag)	Hot Pepper (8 lb Box)	Papaya (35 lb Box)	Pumpkin (50 lb Bag)	Hot Pepper (8 lb Box)	Papaya (35 lb Box)
Belize			\$15.00 - \$22.00			\$22.00
Costa Rica	\$18.00			\$23.00 - \$26.00		
Dominican Republic	\$21.00 - \$22.00	\$14.00 - \$15.00	\$20.00	\$20.00 - \$24.00	\$22.00 - \$24.00	
Florida	\$17.00 - \$20.00					
Guatemala			\$20.00			\$22.00 - \$24.00
Jamaica	\$23.00 - \$28.00					
Mexico						\$25.00 - \$28.00
New Jersey		\$14.00 - \$15.00			\$18.00	
North Carolina		\$14.00 - \$15.00				
Netherlands					\$28.00	
Panama	\$18.00 - \$19.00		\$20.00 - \$22.00			

Hot Pepper - Habanero/Scotch Bonnet Type; Papaya - Maradol Type

Source: USDA Market News Service. NOTE: The prices quoted above are the prices received by the importer/distributor in the respective markets. An exporter from Trinidad and Tobago would receive about 65% of the above prices when he ships the product (Cost and Freight landed port)

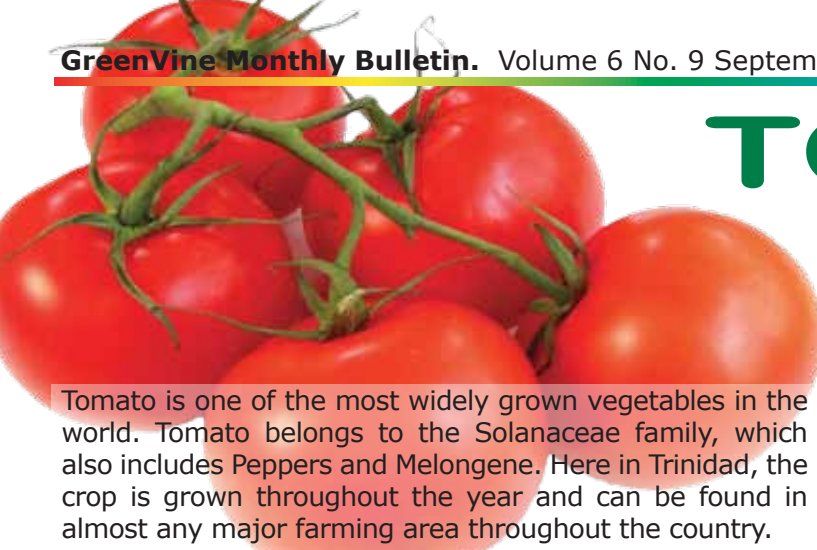
COMPARISON OF WHOLESALE PRICE FOR SELECTED SEAFOOD ITEMS



Commodity	Unit	Port of Spain Wholesale Fish Market			Orange Valley Wholesale Fish Market		
		Jul - 10	Aug - 10	% Change	Jul - 10	Aug - 10	% Change
Ancho	kg	31.55	27.09	-14%	30.86	NA	-
Bachin	kg	20.51	18.47	-10%	NA	17.64	-
Blanche	kg	4.41	3.82	-13%	NA	NA	-
Brochet	kg	16.06	15.98	0%	22.05	NA	-
Carite	kg	30.30	25.71	-15%	27.66	26.76	-3%
Cat Fish	kg	4.24	4.29	1%	8.82	NA	-
Cavalli	kg	17.64	16.07	-9%	19.66	18.08	-8%
Cro Cro	kg	7.43	7.10	-4%	6.34	6.35	0%
Cutlass Fish	kg	NA	5.51	-	NA	NA	-
Herring	kg	NA	NA	-	NA	3.31	-
King Fish	kg	38.81	35.85	-8%	36.74	33.75	-8%
Mixed Fish	kg	10.53	10.63	1%	3.82	4.02	5%
Moonshine	kg	17.27	16.54	-4%	15.87	15.25	-4%
Red Fish	kg	33.07	31.60	-4%	34.49	33.62	-3%
Salmon	kg	23.15	22.39	-3%	24.25	24.15	0%
Shark	kg	15.26	13.65	-11%	13.81	13.65	-1%
Shrimp (M)	kg	40.49	38.42	-5%	33.35	32.45	-3%

TOMATO (Lycopersicon esculentum)

PRODUCTION GUIDE



Tomato is one of the most widely grown vegetables in the world. Tomato belongs to the Solanaceae family, which also includes Peppers and Melongene. Here in Trinidad, the crop is grown throughout the year and can be found in almost any major farming area throughout the country.

Depending on the variety, a farmer with good crop management practices can easily achieve up to 60,000 pounds per acre. It can be considered one of the more labour intensive crops; however, with good management it can be very rewarding.

Varieties

There are many varieties available on the market. Some of the more common ones are: Hybrid 61[®], Kada[®], Diane[®], Commodorro[®], Gem Pride[®], Heatmaster[®] and Akash[®]. Although there are several varieties available, it is wise to select which variety is most suitable to your conditions.

Land Preparation

Optimum soil pH for tomato is 6.0 to 7.0. Disorders such as blossom end rot are more common when soils are of a pH lower than 5.5. Tomatoes prefer a well-drained soil because they are sensitive to water logging and also perform well with soils high in organic matter. Lime and a deep placement of fertilizer (e.g. 12:24:12) can be incorporated into the soil at land preparation.

Planting and Spacing

Before seedlings are transplanted in the soil, they should be treated using a solution consisting of an Insecticide: Imidacloprid (e.g. Admire[®], Commando[®]) Fungicide: (e.g. Banrot[®] together with Rizolex[®]) and Plant Starter (e.g. 10:52:10 or 15:30:15 together with Rezist[®])

Depending on the location a soil insecticide should be applied a day before planting (to prevent damage from mole crickets and cut worms). Seedlings are normally planted at a spacing of 1-1.5 ft within rows and 2.5- 3 ft. between rows.

Staking

Staking is done using wooden stakes when the plant is 2-3 weeks old. This practice provides support and keeps the fruit and

foliage off the ground. Staking can increase fruit yield and size, reduce fruit rot, and facilitate easy spraying and harvesting of crop.

Fertilizer Management

A combination of organic and inorganic fertilizers can be used. As previously stated composted organic matter can be incorporated into the soil prior to planting. Some common fertilizers used in tomato production are 12:24:12, 12:12:17+2, 13:13:21, Nitro-Bor[®] etc. The farmer should take note of Calcium availability throughout the life of the crop to prevent Blossom-end rot.

Diseases

Tomatoes suffer from many fungal, bacterial, and viral diseases. Depending on the season, there are some pests and diseases that are more prevalent in the dry season just as in the rainy season. Some common fungicides used in tomato production are: Bellis[®], Acrobat[®], Phyton[®], Cuprosan[®], Alliete[®], Rovral[®] etc.

Late blight is caused by *Phytophthora infestans*. This is one of the most common tomato diseases worldwide. This disease causes dark, water-soaked, greasy lesions on stems and foliage. A whitish-gray, fuzzy sporulation can be seen on the undersides of leaf lesions and directly on stem lesions during periods of high moisture. A soft rot of fruit can also be observed.

Early blight caused by *Alternaria solani* is the most common fungal disease of tomato foliage. Leaf symptoms appear as round to oblong, dark brown lesions with distinct concentric rings. Lesions are generally surrounded or associated with a bright yellow chlorosis.

Bacterial spot lesions can be observed on leaves, stems and fruit and occurs during all stages of plant growth. Leaf lesions usually begin as small water-soaked lesions that gradually become necrotic and brown in the center. Lesions can be seen on leaves and fruit, especially during the rainy season. Copper compounds, pathogen-free seed, and furrow irrigation are used to control this bacterium.

Bacterial wilt, caused by *Ralstonia solanacearum*, can last in the soil for several years and has been responsible for taking whole fields out of production. Bacterial wilt is recognized by a rapid wilting of the tomato plant, often while the plant is still green. Wilted plants will eventually die.



Early Blight

Bacterial Spot

Bacterial Wilt

Southern
Stem Blight

Fusarium Wilt

Leaf Curl Virus

Southern stem blight caused by *Sclerotium rolfsii* is a common destructive disease of tomatoes. The fungus attacks the stem of the plant near or at the soil line and forms a white mold on the stem base. Infected plants wilt and slowly die. Vascular discoloration can be observed on stem tissues above the lesion. These diseases are best managed by rotating with non-Solanaceous crops and using raised beds to improve drainage.

Fusarium wilt is a soil borne disease of tomatoes that is generally a problem in specific fields where the pathogen has been introduced. The disease is initially brought into a field on infested seed, plant stakes, transplants or infested soil on equipment. Symptoms usually appear during hot weather and after fruit set has begun.

Symptoms appear as a yellowing and wilting on one side of the plant at first, usually during the hottest part of the day, followed by the eventual complete yellowing and wilting of the plant. Death of the plant is the final result.

Gemini Virus or Tomato Yellow Leaf Curl Virus

Virus diseases have been a severe limiting factor in tomato production for several years. Most virus diseases cause stunting, leaf distortion, mosaic leaf discoloration, and spots or discoloration on fruit. Virus diseases are almost always transmitted by insect vectors, and the severity of a virus disease is usually tied to the rise and fall in the populations of these vectors from season to season and within a given season. These diseases are prevented by killing insect vectors and using resistant/tolerant varieties.



Tomato fruitworm

Thrips

Leaf Miners

Pinworms

Insect Pests

Several insects attack tomato. Insects, such as whiteflies, thrips, and aphids, can transmit viruses to young tomato plants. Some of the common insecticides used in tomato production are: Admire®, New Mectin®, Pegasus®, Bio Neem®, Larvin®, Agree®, Pirate® etc.

Root-knot nematodes (*Meloidogyne spp*) can cause serious economic damage to tomatoes. These tiny wormlike organisms live in the soil and feed on the roots. Not only do they cause physical damage that interferes with the uptake of water and nutrients, but they allow the establishment of other diseases.

Thrips may be present in tomato fields throughout the growing season, but they are more prevalent in the dry season. Plant injury is caused by both nymphs and adults puncturing leaf and floral tissues and then sucking the exuding sap. With severe infestations, these areas can interfere with photosynthesis and result in retarded growth.

Aphids are small, soft-bodied insects that may feed on tomato plants from time of planting until last harvest. Aphids cluster in shaded places on leaves, stems and blossoms. Heavy infestations can result in production of honeydew, which gives rise to sooty mold.

Spider mites appear to be developing into a more consistent pest. They generally feed on the underside of leaves, but can cover the entire leaf surface when populations are high. They appear as tiny, reddish, greenish or yellow moving dots on the undersides of

leaves. Greatest damage to tomatoes occurs during dry, hot weather, which is favourable for development of extremely large mite populations.

Adult **whiteflies** are tiny (about 1/8 inch) insects with white wings, a yellow body and piercing-sucking mouthparts. Adults are found on the underside of leaves, where they feed and lay eggs. While adults can cause direct damage by feeding, this pest causes irregular ripening of fruit and can transmit severe viral diseases, including tomato yellow leaf curl. They are more prevalent in the dry season.

Among the most serious pests of tomatoes is the **tomato fruitworm or corn earworm**. The larvae vary greatly in colour from a light green to brown or nearly black and are lighter on the underside. They are marked with alternating light and dark stripes running lengthwise on the body. Early instar larvae have stout hairs, which gives them a somewhat spiny appearance as compared to the smooth skin of most other caterpillars found on tomatoes.

Tomato pinworms are small moths with a somewhat speckled appearance. Damage is caused by the caterpillar; however the most important damage occurs when larvae enter fruit. Larvae may enter fruit of any maturity. Larvae generally bore into fruit under the calyx, and the entry holes are difficult to detect. Once larvae have been feeding for a while, brown granular frass can often be seen at the edge of the calyx.

Weed Management

Weeds compete with tomato plants for light, nutrients, water and space as well as interfere with harvesting practices. Additionally, weeds can harbour deleterious insects and diseases. If weeds are left uncontrolled, severe infestations can reduce yield at least 50 %. Common herbicides used in Tomato production are Sencor® and Carzone®.

Harvesting

Tomato fruit can be harvested at different stages, depending upon distance and time needed to market the fruit. Poor care and handling of fruit after harvest will lead to poor fruit quality. Minimize throwing, dropping or squeezing the fruit. Avoid fruit injury and do not mix damaged with undamaged fruit. Tomatoes should only be harvested when they reach the mature-green stage. If tomatoes are harvested any earlier, the fruit will fail to ripen normally.

Grading and Sorting

Tomatoes must be graded to achieve uniform shape, colour and size. Fruits are normally sold according to size: small, medium and large.



Nutrient benefits of Tomatoes

Tomatoes (*Lycopersicon esculenta*) are a good source of Vitamin C, Vitamin A and potassium. The quantities of each nutrient depend on the variety, stage of maturity of the vegetable and the method of preparation. For example the Vitamin C content of green tomatoes is twice that of ripened tomatoes.

A 100g serving of tomatoes (a medium sized tomato) can provide 32 % of the daily recommended allowance for Vitamin C. Similarly it can also provide 32%, 12% and 10% of the daily recommended allowance for Vitamin A, Vitamin K and potassium respectively.

The presence of a particular phytochemical compound Lycopene is responsible for giving tomatoes its characteristic red colour. This compound according to many researchers has powerful anticancer properties. It is especially known to guard against prostate cancer. The availability of lycopene is greater in heated or processed tomatoes (e.g. sauce, soups) than in raw tomatoes.

Wholesale Prices (\$/kg)

	2008		2009		2010
	Jan - Jun	Jul - Dec	Jan - Jun	Jul - Dec	Jan - Jun
Wholesale	8.67	17.23	10.15	11.54	11.66
Retail	14.01	23.41	15.92	16.92	16.71

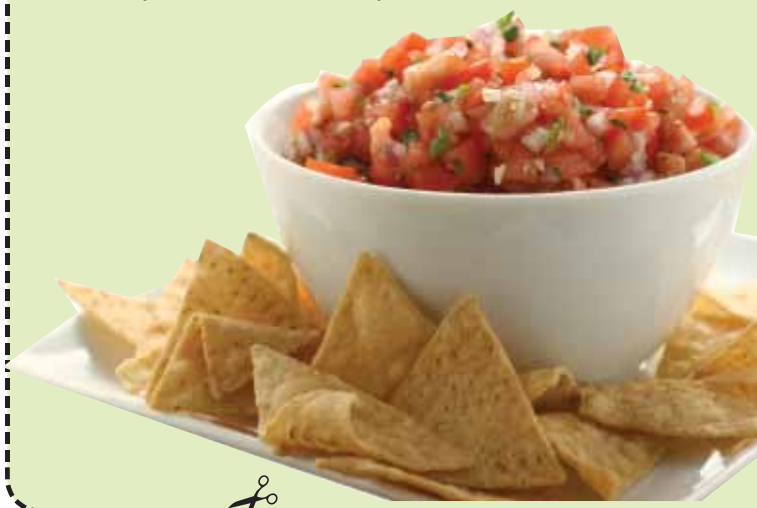
Tomato Salsa

Ingredients

- 15 plum tomatoes
- 1 green sweet pepper
- 1 red sweet pepper
- 3 pimentos
- 1 onion
- 1 bundle chives
- 7 cloves garlic
- 3 bundles shadon beni
- 1 lime
- 3 tbsp apple cider vinegar

Instructions

- 1 Cut tomatoes, sweet peppers, onion, pimento and garlic into small cubes and set aside.
- 2 In a separate bowl thinly slice chives and shadon beni and set aside.
- 3 Juice lime in a separate bowl ensuring to remove all seeds and pulp.
- 4 Add apple cider vinegar to juice from lime and combine well by whisking for a few minutes.
- 5 In a large bowl combine all freshly cut ingredients and apple cider and lime mixture.
- 6 Gently toss all ingredients and add salt and black pepper to taste.
- 7 Refrigerate for approximately ½ hour and serve with your favourite chips or salt crackers.



AVERAGE PRICE COMPARISONS JULY VS AUGUST 2010 ACROSS THE VARIOUS MARKETS

Commodity	Unit	NWM Jul 10	NWM Aug 10	Farmers' Markets Jul 10	Farmers' Markets Aug 10	Municipal Markets Jul 10	Municipal Markets Aug 10	Vege- Marts Jul 10	Vege- Marts Aug 10	Super- markets Jul 10	Super- markets Aug 10
ROOT CROPS											
Carrot	Pack	5.37	4.98	7.06	6.84	6.27	6.52	6.63	7.15	6.03	6.82
Cassava	Kg	4.46	4.48	6.20	6.28	7.34	7.14	7.68	7.55	10.50	10.02
Dasheen(Local)	Kg	10.79	12.71	15.69	16.01	16.92	15.10	15.11	14.55	25.02	20.97
Eddoes (Local)	Kg	23.76	11.39	23.43	16.82	28.85	17.55	22.90	12.13	42.50	28.72
Sweet Potatoes (Local)	Kg	12.73	15.57	17.44	18.97	17.21	18.07	16.59	17.95	20.10	22.72
Sweet Potatoes (Foreign)	Kg	15.72	15.76	NA	NA	20.53	20.84	19.11	20.95	21.92	22.26
Ginger	Kg	70.79	56.12	79.64	66.14	79.54	75.90	76.13	80.21	83.23	94.54
CONDIMENTS AND SPICES											
Celery	Bndl.	1.92	1.22	2.95	2.30	3.14	2.43	3.34	2.70	3.95	3.50
Chive	Bndl.	1.70	1.77	2.72	2.67	2.62	2.71	2.90	2.86	3.39	3.39
Hot Peppers	Each	0.47	0.88	0.49	0.93	0.57	1.16	0.52	1.07	0.59	1.20
Shadon Beni	Bndl.	0.65	0.53	1.78	1.56	1.86	1.46	1.59	1.48	2.08	1.86
Pimento	Each	0.23	0.45	0.25	0.42	0.39	0.62	0.44	0.62	0.48	0.79
LEAFY VEGETABLES											
Lettuce (M)	Head	4.67	3.82	4.46	3.64	5.93	5.09	6.05	5.44	6.97	7.09
Patchoi	Bndl.	5.54	5.72	5.94	5.68	7.29	7.29	7.05	7.04	8.37	8.04
Amaranthus spp. (Spinach)	Bndl.	4.96	5.23	5.12	5.38	6.83	6.60	6.42	6.55	7.03	7.33
Cabbage(Local) (Gn)	Kg	10.23	9.02	12.20	11.25	12.98	12.29	14.18	13.26	15.68	15.52
Callaloo Bush (open)	Bndl.	4.04	3.61	5.12	4.99	5.53	5.37	5.72	5.42	5.98	5.79
Callaloo Bush (roll)	Bndl.	5.03	4.56	6.96	6.62	6.88	6.74	6.98	6.71	7.38	7.23
OTHER VEGETABLES											
Bodi beans	Bndl.	4.68	3.64	5.40	4.54	5.33	4.31	6.11	4.62	6.65	6.04
Caraille	Kg	10.92	9.99	13.01	12.52	13.79	13.67	14.91	15.63	17.97	18.94
Cauliflower	Kg	20.25	16.97	21.62	20.86	28.68	24.90	27.31	23.61	36.39	33.87
Cucumber	Kg	3.41	3.68	6.82	6.27	7.28	6.65	7.33	7.16	11.67	10.05
Christophene	Kg	25.39	25.20	25.91	23.89	34.05	32.56	34.21	34.57	48.18	43.67
Melongene (M)	Kg	6.81	7.59	9.81	10.14	10.09	10.90	10.19	11.01	15.34	14.81
Ochro	Each	0.43	0.30	0.48	0.41	0.61	0.50	0.65	0.47	0.61	0.60
Pumpkin	Kg	3.88	3.03	5.85	5.45	6.42	5.51	6.79	6.66	7.48	7.68
Plantain (Ripe)	Kg	10.08	10.48	12.43	12.77	13.91	13.80	14.83	15.37	18.64	18.58
Sweet Pepper (M)	Kg	23.20	19.90	24.80	27.25	30.47	23.82	30.77	24.62	33.71	33.41
Seim Beans	Kg	22.42	20.50	24.36	22.71	27.99	25.57	28.12	26.50	34.04	31.37
Tomato (M)	Kg	21.73	12.68	24.75	19.18	27.84	16.56	28.49	18.03	38.02	29.57
FRUITS											
Dry Coconuts	Each	3.06	3.44	4.07	3.82	4.77	4.80	4.79	5.33	5.22	5.34
Banana (imported)	Kg	9.49	9.55	10.87	10.38	12.06	12.04	12.15	11.56	11.82	12.16
Papaya	Kg	4.64	6.09	8.80	9.61	9.19	9.84	9.86	10.40	12.40	12.31
Pineapple	Kg	8.81	10.19	9.77	11.83	12.31	13.86	11.61	12.90	15.12	15.80
Watermelon	Kg	4.76	4.70	6.65	6.43	7.15	6.65	7.14	8.73	8.04	9.28
CITRUS											
Lime	Each	0.62	0.45	0.86	0.67	1.10	0.86	1.07	0.99	1.58	1.23
Grapefruit	Each	1.60	2.20	NA	NA	3.00	NA	2.76	2.50	2.50	2.54
Orange	Each	1.26	2.00	1.53	1.74	1.64	2.39	1.82	2.48	2.27	2.75

UNITED AGAINST HUNGER



World Food day is celebrated every year on the 16th October to commemorate the founding of the Food and Agriculture Organisation of the United Nations (FAO) in 1945. World Food Day aims to heighten public awareness of the plight of the world's hungry and malnourished and to encourage people worldwide to take action against hunger. More than 150 countries observe this event every year.

Hunger affects every part of a person's life. It limits children's ability to grow physically and mentally. It multiplies the effects of diseases such as AIDS, dengue, TB, and cancer. It consumes suffering people's energy so that they cannot work to help provide shelter, clothing, education, and medical care for their families. The poor spend most of their money just trying not to starve. Hunger is not a standalone problem. It is the result of systemic poverty, and it contributes to the continuation of poverty.

However it is 100% preventable!!

We all have a part to play in stopping hunger and poverty. How about starting by eating wisely, choosing nutritious local foods and eating less? Less wastage which in turn you can use to share with those who cannot afford to buy. Look around, there are many in your community with whom sharing a meal may be the lifeline they need to relieve hunger.

Of course along with this, and for a more long term benefit, would be teaching them to plant and, depending on location, rear livestock. This can be done on relatively small areas of land, and in any available container.

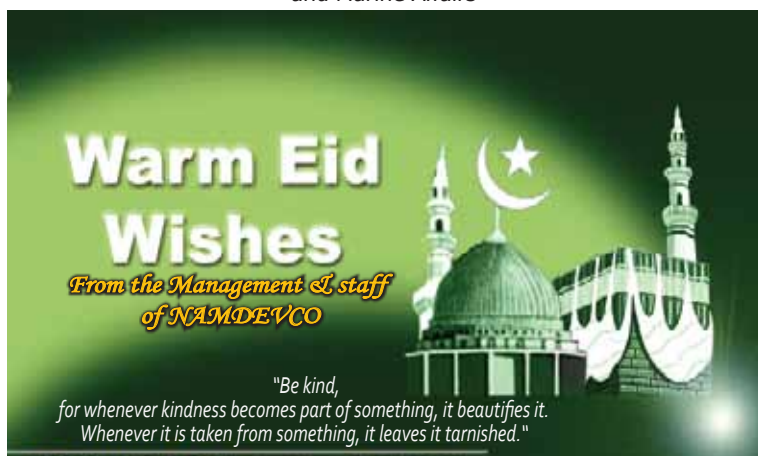
Agro entrepreneurs can 'adopt a family' within their community. Initial assistance can be providing items from your enterprise. This can be followed by supplying 'seed' inputs of planting material and fertilizers along with safe chemicals and technical guidance to allow them to produce their own food.

Use of agroprocessing to extend the life of produce when harvested facilitates food availability during the off-season. Management practices such as crop rotation, interplanting and wise pest management decisions minimize costs and result in a wider range of produce to meet nutrient requirements.

The importance of education, both formal and informal, as a means that poor persons can use to improve their economic status has to be emphasized. The wise use of money in order to obtain the most out of a little has to be understood and implemented.

On this World Food Day 2010, when there have never been so many hungry people in the world, let us reflect on the future. With willpower, courage and persistence – and many players working together and helping each other – more food can be produced, more sustainably, and get into the mouths of those who need it most.

Contributed by Ms Pauline Dowlath, Director, Extension Training and Information Service, Ministry of Food Production, Lands and Marine Affairs



Deputy Chief Executive Officer: Mr Elbert Johnson

Editor: Mr Aziz Mohammed

CONTACT US

The National Agricultural Marketing and Development Corporation (NAMDEVCO)

SS Erin Road, Debe

Tel: 647-3218/3467

Fax: 647-6087

Email: namdevco@tstt.net.tt

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COMMENTS AND QUESTIONS TO THE EDITOR ARE WELCOME

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OFFICES

Southern Wholesale Market: Tel: 647-7478

Fax: 647-6087

Northern Wholesale Market: Tel/Fax: 645-9073

Port of Spain Fish Market: Tel/Fax: 627-7656

Orange Valley Fish Market: Tel/Fax: 679-2281

Piarco Packinghouse: Tel: 669-7092

Fax: 669-7091

Farmers' Market: Tel: 645-7377