

## **Trinidad and Tobago Project Profile: “Mitigating the Threat of Invasive Alien Species in the Insular Caribbean”**

In Trinidad and Tobago through the implementation of this project the country aims to broaden its approach to dealing with IAS, by strengthening existing national measures and fostering regional cooperation frameworks. Along with participation in the development of national and regional strategies, Trinidad and Tobago will also address three of its most pressing IAS problems (*Perna viridis* (Green Mussel), Red Palm Mite, Frosty Pod Rot) through pilot projects; relating to prevention, management and eradication. In the three (3) pilots there is a strong emphasis on capacity building among all stakeholder groups (public and private sector), as well as increasing awareness of IAS issues among the general public. Additionally, the pilots are designed so that their findings and lessons learned will be readily applicable to other sites, including other Caribbean states, enabling replication of the methodologies.

On completion of the project, Trinidad and Tobago expects to have gained increased technical capability in IAS matters. A unit in the public service dedicated to managing the threats of IAS, and improved regional networking in the field of IAS monitoring, surveillance and management.

*The Current Full Size Project (FSP) phase began in Trinidad in April 2010 and has a duration of four years.*

### **Component 1**

Under this component a National Steering Committee was established in May 2010, to oversee the implementation of the project in Trinidad and Tobago. The first meeting of the Committee was held on Friday 7<sup>th</sup> May 2010. The committee is comprised of a range of stakeholders and includes representatives from:

- Research Division, Ministry of Food Production, Land & Marine Affairs
- Forestry Division, Ministry of Food Production, Land & Marine Affairs
- Fisheries Division, Ministry of Food Production, Land & Marine Affairs
- Institute of Marine Affairs (IMA)
- Environmental Management Authority (EMA)
- Trust for Sustainable Livelihoods (SUSTRUST)
- University of the West Indies, St Augustine Campus (UWI)
- Petroleum Company of Trinidad & Tobago (PETROTRIN)
- Point-a-Pierre Wild Fowl Trust
- University of Trinidad & Tobago (UTT)
- Division of Agriculture, Marine Affairs, Marketing & the Environment, Tobago House of Assembly

A consultant has been recruited to prepare a draft National Invasive Species Strategy (NISS) for Trinidad and Tobago. The NISS structure has been outlined and approved by the National Steering Committee.

### **Component 2**

Trinidad and Tobago is contributing to the establishment of a Regional Strategy through its active participation in all Regional Activities such as the Regional IAS Consultation, which was held in Trinidad in June 2010 and the Regional IAS Working Groups.

### **Component 3**

#### Public Education & Awareness:

There is a public education / awareness component built into all of the pilot projects and will take the form of public service announcements, dissemination of fliers (pest alerts), posters, magazines and stakeholder training

### **Component 4**

This component is led by the Research Division, Ministry of Food Production, Land & Marine Affairs. The activities under this component are supported by the University of the West Indies and the Point-a-Pierre Wildfowl Trust.

### **Preventing the Entry of *Moniliophthora roreri* (Causal agent of Frosty Pod Rot of Cocoa) into Trinidad & Tobago.**



This project is aimed at protecting the cocoa growing areas in Trinidad and Tobago from *M. Roreri* through the strengthening of the detection and interception of the disease at the various points of entry; the establishment of systems and protocols for the speedy eradication of the disease if detected and the continuous monitoring of the ports of entry and cocoa growing areas for the presence of the disease.

The project is of extreme importance because the disease is now present in Venezuela and thus poses a serious threat to Trinidad and the other Caribbean countries. This is of significance since the disease can reduce crop yield by 60% thus if introduced into Trinidad it would affect the islands production of its world renowned 'fine flavored cocoa'. Therefore given the increase in movement of persons and materials, both intentionally and unintentionally as well the extensive damage this disease causes; it is pertinent that the measures be put in place to both prevent the entry of the disease as well as quickly eradicate it should it be detected in Trinidad.

In order to achieve its objectives the project has a comprehensive public awareness programme, which involves the participation of all key stakeholders, namely farmers, agricultural officers, manufactures and forestry officers. One of the key elements of the public awareness is the training of stakeholders in the identification of the disease. Therefore as part of the project, Mr. Assim Dilbar, Plant Pathologist, Research Division conducted a preliminary training for farmers on Frosty Pod Disease on Cocoa, in collaboration with the Cocoa & Coffee Industry Board, on February 27<sup>th</sup> 2009, as well as a follow up session in December 2009.



**Field training on handling of cocoa pods and recognition of diseases associated with cocoa.**



**Cocoa farmers at a Cocoa Training Field day in Moruga, information being shared on frosty pod disease of cocoa (December 2009).**

**Component 5**  
IAS Management

This component consists of two pilot projects, which are led by the Research and Forestry Divisions of the Ministry of Food Production, Land and Marine Affairs and the Institute of Marine Affairs. The activities under this component are supported by the University of the West Indies, the Environmental Management Authority and the Point-a-Pierre Wildfowl Trust.

**Management and Control of the Marine Invasive *Perna viridis* (green mussel) in Trinidad and Tobago.**

*Perna viridis* was first observed in Trinidad in 1990 and has now spread to the neighbouring countries such as Venezuela (1995), Margarita (1996) and Jamaica (1998). The organism is believed to have been transported from Trinidad to the other areas in the ballast water of ships and / or ship hull fouling. This is of particular concern given the increasing levels of trade occurring globally.



Research has indicated *Perna viridis* has been classified as one of the ten most damaging species and has significant human health, environmental and economic impacts. It is a very aggressive invasive and has been able to successfully outcompete many of the other fouling organisms thus causing a disruption in community structure and trophic relationships within marine environments.

The main goal of this project is to conserve the ecological balance of the marine and coastal ecosystems of Trinidad and Tobago by the development of strategies to manage and control the spread of the marine invasive *Perna viridis* (green mussel). The specific objectives of the project include an ecological assessment of the current distribution, community structure and the occurrence of natural predators; an economic assessment of the impacts and the cost of its control as a fouling organism and the determination of an effective control of *P. Viridis* as a fouling organism.

Given the nature of this invasive it is pertinent that management and control measures be developed to reduce the impact it is presently having in the country. The project entails carrying out both an ecological and economic assessment of *perna viridis*, training in the management of the organism and the development of a management plan to effectively reduce its impact.

**The maintenance of the native biodiversity of the ESA – Nariva Swamp by the production and transplanting of IAS free-palm seedlings**

The Nariva Swamp is the largest freshwater wetland in the Caribbean and occupies an area of 6,234ha.

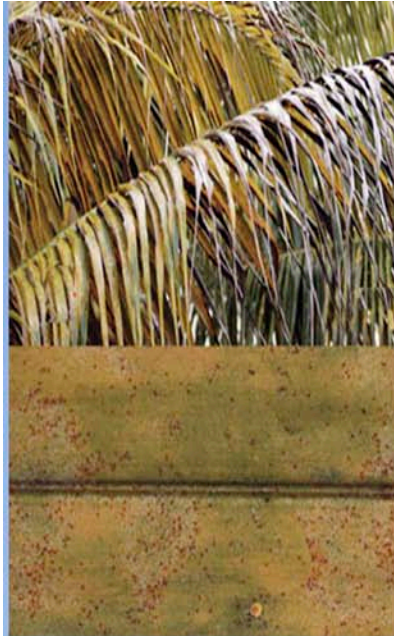


It has the most varied vegetation of the wetlands in Trinidad and Tobago with distinct zones of tropical forest, swamp forest, palm forests, mangroves swamp, marshlands and open waters. The swamp is protected from the harsh elements as well as the intrusion of the Atlantic Ocean by a thin sand barrier populated by coconut plants.

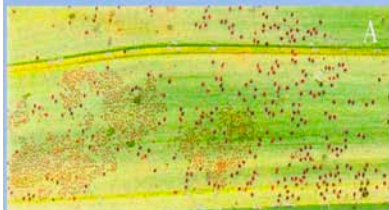
The Swamp is of both ecological and economic importance to the country and was declared a RAMSAR site in April 1993 and a protected area under Section 2, Forests Act, Chapter 66:01.



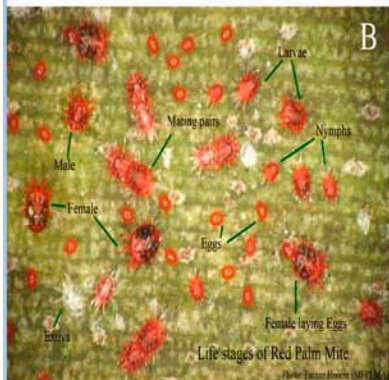
The red palm mite (*Raoiella indica*) is a parasitic mite, which is invasive to the Caribbean region. It was first observed in the region in 2004 in Martinique and has since spread to 11 countries including Trinidad and Tobago. The mite was first observed in Trinidad in 2007 and recent surveys have indicated that it is now widespread throughout the island. It is believed that this infestation is as a result of the wide range of plants the mite can inhabit, its means of dispersal and its highly reproductive capacity.



Yellow and Necrotic leaves with Red Palm Mite



A: Colonies of Red Palm Mite



B: Life Stages of Red Palm Mite

## Layers of Coconut Palm Crown Infested Red Palm Mite



Upper Green Foliage

Middle Yellow Foliage

Lower Necrotic Foliage

Photo: Farish Dorman (NEP/MA)



# RED PALM MITE

## A Threat to: Coconut Palms, Bananas, Ornamental Palms, Heliconias and Gingers



1. Yellowing and Drying of Coconut Leaves



2. Drying of Leaves on Young Coconut Plant



3. Yellowing of Banana Leaf



4. White Exuviae of Palm Mites on the Lower Surface of Coconut Leaf



5. Exuviae and Palm Mites on the Lower Surface of Banana Leaf



6. Colonies of Red Palm Mites on the Lower Surface of Coconut Leaf



7. Red Colouration of Fingers when Rubbed along Infested Leaves



8. Red Palm Mites on the Under Surface of Host Leaf

Prepared by Farzan Hosen AOI. MALMR, Research Division, CES, Centeno, T&T (646-6284). For additional information contact the nearest Agricultural Office. All rights reserved 2007.

The project is aimed at eliminating the Red Palm Mite from the Nariva Swamp thereby conserving the biodiversity of the swamp. This is expected to be achieved through the reforestation of the palm swamp, with plants which are free of the red palm mite and other invasive species; the development of management protocols to manage and control the spread of red palm mite and the monitoring of the Swamp to ensure that re-infestation does not occur.

### **Summary of the project activities to be undertaken within the next six months**

- Completed revision of the Critical Situation Analysis (CSA) on IAS in Trinidad & Tobago
- Development of a draft National Invasive Species Strategy (NISS)
- Participate in regional meeting to prepare outline of Regional Invasive Species Strategy (RISS)
- Training of agricultural officers in the identification and management of *M. roreri*
- Training of stakeholders in the identification and management of *M. roreri*
- Pathway analysis to determine the possible routes of entry of *M. roreri* to Trinidad and Tobago
- Baseline survey to determine if *M. roreri* is present in Trinidad and Tobago
- Baseline survey of the invasive palm pest and indicator palm species in the Nariva Swamp
- Ecological assessment of impact of Red Palm Mite & Coconut Moth
- Ecological assessment of distribution, abundance and community structure of *Perna viridis*
- Economic assessment of *Perna viridis*

The project is being executed in Trinidad & Tobago:

#### **Ministry of Food Production, Land & Marine Affairs**

St Clair Circle

Port of Spain

Trinidad, West Indies

Telephone : 1 (868) 622-1221/5 or 622 5481

Website: [www.agriculture.gov.tt](http://www.agriculture.gov.tt)

Under the direction of Ms. Cynthra Persad, Director of Research.

The project is located at the:

#### **Research Division of MFPLMA**

Central Experimental Station Centeno

Caroni North Bank Road

Trinidad, West Indies

Telephone : 1 (868) 646 - 1646

Email: [research@malmr.gov.tt](mailto:research@malmr.gov.tt)

The Research Division consist of three sub divisions, Crops, Crop Protection and Livestock sub-Divisions as well as two field stations, La Reunion and Aripo Livestock Station, which provide support services to the Division.

The main function of the Research Division is to undertake research in both crops and livestock in support of agricultural development in the country through the provision of free support services to the farming community and general public. The services provided include pest and disease diagnostic studies, soil testing, plant tissue analysis, seed testing, provision of planting material, library and information services and the provision of technical information.

Component 5 (management of marine organism) is spearheaded by the:

***Institute of Marine Affairs***

Hilltop Lane

Chaguaramas

Trinidad, West Indies

Telephone : 1 (868) 634 4291-4 or 634 2479

E-mail: [rkishore@ima.gov.tt](mailto:rkishore@ima.gov.tt)

Websites: [www.ima.gov.tt](http://www.ima.gov.tt)

Component 5 (management of terrestrial organism) is spearheaded by the:

***Forestry Division***

20 Long Circular Road

St. James

Trinidad, West Indies

Telephone : 1 (868) 622 5658

***For More Information please contact:***

**Project Implementation Unit**

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***IAS Hotline:***

If you spot any of the invasive species on the watch list contact the Research Division's **IAS hotline @ 646 6284**