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## **Control of Pineapple Wilt Caused by Mealy Bugs: An initial Application of Anti-Pathogen Plant Extract to Queen Pineapple in Camarines Norte, Philippines**

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### **I. Introduction**

Pineapple is scientifically known as *Ananas comosus* L.Merr. It is one of the country's most popular fruit and one of the top earners of foreign exchange among the country's agricultural commodities. The fruit is typically smaller in size and is known for its crispy texture, rich flavour and distinct sweetness. The leaves are used for fiber and are manually weaved to make piña fabric used by designers.



Fig.1 Queen Pineapple of Camarines Norte(Wikipedia)

## II. Economic importance of pineapple

The Philippines is a leading exporter of fresh and processed pineapple products in the world next to Thailand. In 2010, the two biggest processing plants-Dole Philippines contributed 57.8 and 47.6% shares in US market for canned and fruit cup products while Del Monte contributed 9.0 and 36.7% market shares for the same products. These two companies and a farmers' cooperative in **Basud Camarines Norte** are the biggest fresh pineapple exporters in the Philippines with roughly 65% of fresh pineapple shipment. According to the Department of Agriculture, 92% of the pineapple in Bicol comes from **Camarines Norte** which supplies from 30,000 to 50,000 MT per cycle of 12 to 15 months. At present, Japan serves as the biggest export market for the Philippines.

## III. Pests and Diseases

Like most crops pineapples are infested by a variety of insect pests. Commonly known pests that affect pineapple plants are mealy bugs, scale insects, thrips, fruit borer, bud moths, midges, fruit flies, white grubs, beetles, weevils, termites and mites. In many countries, mealy bugs are considered the most important insect pest of pineapple as it causes serious crop damage.

Mealybug causes wilt disease (also called pineapple wilt or quick wilt) is the leading cause of economic loss in pineapple. It is characterized by a loss of turgidity in the leaves resulting to reddish colouring, wilting and drying of the affected leaf portions. Infected plant also shows stunted growth and poor root development.



Fig. 2 a. Mealy bug infested Q.Pineapple fruit and b. Mealy bug attacking pineapple root ([www.google.com.ph](http://www.google.com.ph))

According to studies, soil and climatic factors, crop stages and crop management practices affect the intensity of mealy bug infestation. Some researchers warned that unless the disease is managed, it will be hard for farmers to grow pineapple commercially as in the case of Hawaii and probably to other parts of the world. Because of the alarming damage, farmers turn to insecticide use to control mealy bugs. Pesticide use to control the disease was noted as early as 1920s but despite the serious efforts, it was generally not successful. In the 1930s, wilt was managed by spraying oil emulsions. The advent of the boom spray increased the effectiveness of insecticide applications. After the Second World War, oil sprays were replaced with organophosphorous compounds: parathion, malathion, and diazinon. The safety precautions necessary for using parathion were too costly, and parathion was abandoned for mealy bug control (Carter 1967).

Further, reports said that chemical control of mealy bugs is not easy. For one, the coverage of a pineapple plant with an insecticide is not possible. Mealy bugs tend to be deep in leaf axils, under the sepals of blossoms, or inside of closed blossom cups where they are protected from insecticidal sprays (Jahn 1995). The thick, waxy coating on mealy bugs makes insecticide penetration difficult. Even the use of systemic insecticides was observed to be impractical for mealy bug control.

#### **IV. Application anti-pathogen plant extract.**

In the attempt to find an environmentally safe control for this pest, an initial application of an anti-pathogen plant extract ( Path-Away®) to naturally infected pineapple plantation was conducted twice last March , 2014. Pineapple plants suspected to be infected or those showing the reddish colouring on their leaves were sprayed using a hand sprayer. Plants are on their early fruiting stage so each plant were carefully sprayed covering all parts to ensure proper treatment. After 3 weeks, a noticeable change in leaf color was observed as shown in Figure 3. The reddish color was gone and the pineapple leaves were almost back to its original color. The absence of mealy bugs were also noted to treated plants.

To be able to produce a conclusive result regarding this reaction, a bigger trial is being prepared in several mealy bug infected pineapple plantation in Camarines Norte. This initial result already gave us hope to protect our pineapple to the devastating effects of pineapple wilt causing mealy bugs. To control this disease using this anti – pathogen extract would mean more income and better environment to our farmers and the province as a whole.



Fig.3 a). A suspected mealy bug wilt and b.) Pineapple plant 21 days after treatment

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