**WITCHES’ BROOM DISEASE OF COCOA**

**WHAT IS WITCHES’ BROOM DISEASE?**

Witches’ Broom is a disease of cocoa caused by the fungus *Moniliophthora perniciosa* on cocoa. The infection causes numerous broom-like shoots to sprout, thus the term “Witches’ Broom”.

Brooms when formed are alive and green, but eventually die giving the characteristic dry Witches’ Broom attached to the tree.

In the dry season, the fungus cannot grow or multiply. In the wet season however, the fungi in the dead brooms multiply. The spores produced are spread by air currents and infect young cocoa tissue. All actively growing parts of the plants can be affected for example:

a) vegetative shoots on fan branches
b) flower cushions
c) pods.

**WHAT ARE THE SYMPTOMS OF WITCHES’ BROOM DISEASE?**

i) Symptoms on Vegetative Branches:-
   a) *Fan brooms*: Fan Brooms are produced on fan branches either at the tip of a shoot or on side shoots (*figure 1*).
   b) *Grown through brooms*: Vigorous chupons and fan branches sometimes grow away from the infection and produce “grown through” brooms. The shoot above the broom is healthy but always dies when the broom dries up (*figure 2*).

ii) Symptoms on Flower Cushions:-
   a) Flower cushions produce vegetative shoots resembling brooms.
   b) *Star blooms*: Larger than normal flowers called star blooms, “Star blooms” appear on flower cushions. These do not produce pods.

iii) Symptoms on Pods:-
   a) *Distorted pods*: Pods that are infected at a very young age appear distorted (*figure 3*).
iv) **Effect on Trees:**
Cocoa trees infested with Witches’ Broom disease are weakened. This leads to losses in yields.

### HOW CAN WITCHES BROOM DISEASE BE CONTROLLED?
Witches’ Broom disease of cocoa can be managed by using measures to reduce moisture in the field.

1. Remove and burn all diseased brooms, pods and flower cushions once per year, preferably at the end of the dry season (May).

**NOTE:** In the removal exercise, make cuts about 6 cm (2.36 inches) into the healthy tissue of the tree.

2. Use recommended spacing.

3. Use recommended Trinidad Selected Hybrids (TSH) varieties with high yielding characteristics and known tolerance to the disease.

4. Control weeds.

5. Carefully monitor the shade conditions within the canopy. Shade helps by slowing down growth and therefore reduces the amount of tissues available for infection.

6. Construct and maintain effective drainage since too much moisture increases fungal growth.

7. Apply a copper based fungicide to protect pods as recommended.

8. Prune trees to prevent excessive vegetative growth.

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