AERIAL APPLICATION FOR BANANA PLANTATIONS

A. BACKGROUND

A deadly plant disease affecting banana plantations worldwide is an airborne disease called Black Sigatoka by the fungus Mycosphaerella fijiie. This fungus destroys the leaves of banana plants and causes premature ripening of the fruits. Currently, the only effective way for commercial banana growers to control the fungus is through aerial spraying of fungicides. Banana growers have used aerial spraying to combat this disease since the 1960s.

B. BUSINESS AND ECONOMIC CONSEQUENCES

If left untreated, Black Sigatoka can quickly destroy entire banana farms. For the farms, its workers and the local communities relying on the economic benefits of the business, the impact can be economically and financially disastrous. A serious outbreak can effectively halt fieldwork, harvesting, packing and exports for up to nine months until the plantations recover. Companies involved in banana farming could be financially impaired or even go bankrupt should their plantations get destroyed by the disease. The trickle-down impact on communities surrounding the farm can be very devastating financially to individual families and entire communities since few have other sources of income. For consumers, the outbreak of the disease can immediately cut the amount and quality of fruit available in the market, causing prices to go up. For producers, the financial impact of infestation is so great that companies are willing to spend substantial amounts to control the disease. Companies find it worthwhile to spend even as much as 20% of total cultivation costs for aerial application of fungicides.

To illustrate the economic impact of widespread infestation of Sigatoka and the subsequent abandonment of farms in Davao City, shown in Annex 1, Scenario A are computations of the loss of revenues of plantation companies, the loss of Tax Revenues and the estimated loss of farm workers' income on account of unemployment. Please note that the estimated loss of Annual Revenues of Banana Plantations would amount to P2.5 billion pesos, the loss of Annual Business Taxes would amount to P7 million and the wages paid to workers which will have to be foregone on account of farm closures would amount to P734.4 million. Clearly, the Davao City Government should not allow a knee jerk reaction to the situation and should do a more realistic and holistic approach to the concerns of the Davao City community regarding aerial application of fungicides.
C. ALTERNATIVE METHODS OF APPLICATION

Banana farming, for it to be economically viable and competitive in the world market, must work on large areas to be able to extract from such operations the benefits of scale economies. Small farms of 5 to even 50 hectares which are of such size that would permit manual application of fungicides are not able to derive scale advantages which would allow the allocation of fixed developmental expenses over a large production base to effectively reduce the unit cost of production. Hence, small banana farms hardly exist.

For the large scale farms however, manual ground application of fungicides is not an option. The logistical and manpower support needed to apply fungicides on large areas of plantations of more than 100 hectares is not just viable. It will require considerable manpower to be able to cover the area. Supply depots will have to be put in place. Mixing formulation facilities will have to be constructed. All of these facilities and the cost to operate these would substantially bloat the expenses of production.

An alternative to manual application other than aerial spraying is the use of trucks and booms to spray the plants. If this alternative is to be applied, large areas of land will have to be allocated to roads for trucks to go through while applying fungicides. Shown in Annex 1, Scenario B are computations assuming Sigatoka is managed using trucks to apply fungicides. Because of the loss of land area for roads, Annual Revenues of Plantations would drop to P510 million while Annual Business Taxes would drop to P1.4 million only. Earnings of farm workers would drop substantially to P134.8 million compared to the estimated earnings of P734.4 million under Scenario A. As the numbers show, under Scenario A and Scenario B, the other alternative of using trucks to apply chemicals is a poor second to aerial spraying.

The application of fungicides requires that this be done at the break of dawn from 5 a.m. up to 8 a.m. at the latest, to effectively arrest the formation of sigatoka. There is a limited window in the early morning for the application of fungicides. It is therefore imperative that the whole plantation is applied with fungicides during that limited time. If spraying is to be done manually or by the use of trucks, there is a high probability of risk that some parts of the plantation will not be sprayed during the limited time window. The far flung and difficult to access areas would probably not be covered. Infection of the areas not sprayed would be enough to cause an outbreak of the dreaded disease which usually spreads very rapidly throughout the entire farm and neighboring areas. There is therefore no other reliable option but to apply fungicides aerially.
D. PREVENTIVE PRACTICES

The best defense against Black Sigatoka is to keep plants healthy. Maintaining proper spacing between plants, keeping drainage canals clean, controlling weeds and aggressive pruning of infected leaves are all practices applied to keep plants healthy and reduce humidity and thus prevent the spread of the disease.

E. FUNGICIDE APPLICATION

Good agricultural practices alone, however, are not sufficient to prevent or stop the outbreak of Black Sigatoka. There is the need to apply controlled amounts of approved fungicides (reduced toxicity if at all harmful to humans) as part of strictly managed programs to control the disease. Fungicide standards pre-approved by importing countries for use on bananas have to be strictly followed. Non-compliance to strict fungicide standards risks rejection of the shipment by importing countries.

The total ban of aerial application of fungicides is not the solution to protect the communities from the possible, if any, harmful effects of the chemicals. Prudent set of policies to control aerial applications would be sufficient, viz:

- Minimize use and reduce potency of pesticides used for aerial application.
- Use only pesticides that meet regulatory requirements and are purchased from reputable suppliers.
- Document and report any pesticide intoxication.
- Adhere to practices that will ensure product and worker safety.
- Use effective alternatives with lower toxicity.
- Training of employees on the safe use of pesticides with regular refresher sessions.
- Strict enforcement of prohibitions against working in the farms up to a certain time until the harmful effects of the chemicals on humans has lapsed.
- Safety gear provisions for all employees working with fungicides.
- Regular medical testing of all employees working with fungicides.
- On-site shower and laundry facilities to help minimize exposure to workers involved in fungicide applications.
- Signage in and near banana farms to advise workers and residents of the schedule of spray activities to help avoid accidental exposures.
F. OTHER SAFEGUARDS

There are other safeguards used in the aerial application of fungicides. Fungicides are mixed in closed loop mixing stations to prevent accidental discharge into the environment. Spray planes used are equipped with anti-drift spray nozzles and global positioning systems that allow better targeting of applications. Trees are planted around the farms to serve as barriers against spray drift.

Furthermore, it is normally sufficient to use low-toxicity fungicides to effectively control Sigatoka. There are two types of fungicides used. The first is a protective fungicide which is sprayed on banana leaves to protect the plants from fungal infestation. The second is systemic fungicide which will kill the fungus after infestation. In both cases, materials used are water based and non-toxic agricultural spray oil. The chemicals are practically non-toxic and require no warning labels.

G. CONCLUSION

From the foregoing, it is clear that there are various ways to ensure safe application of fungicide aerially. There is no need for the drastic measure of totally banning aerial spraying. The economic and financial benefits to the community are too substantial and clearly outweigh the minimal risks involved in aerial application of fungicides.
ANNEX 1
PBGEA, Rizal Street, Davao City

ANALYSIS OF POSSIBLE LOSS OF REVENUES, TAXES AND EMPLOYMENT DUE TO THE AERIAL SPRAY BAN

SCENARIO A: IMMEDIATE SHIFT COULD RESULT TO UNMANAGEABLE SIGATOKA THAT MIGHT FORCE PRODUCERS TO ABANDON AREAS

1. Lost Revenues
   Banana Cavendish Areas in Davao City (In Hectares) 5205.10
   Productivity Per Hectare (In 13.5 kg boxes) 4000.
   Estimated Annual Production (In 13.5kg boxes) 20,820,400.
   FOB Price Per Box $ 2.50
   Estimated Annual Revenues $52,051,000.00
   Forex Rate ($1.00:PhP49.00) 49.00
   Estimated Annual Revenues in Pesos PhP 2,550,499,000.00
   Exporters' Business Tax Rate in Davao City 0.00275
   Estimated Annual Business Taxes PhP 7,013,872.25

2. Unemployment Statistics
   Estimated Workers That Will Become Unemployed 7,287
   Estimated Annual Earnings Per Worker 100,786.00
   Estimated Total Annual Earnings 734,427,582.00

SCENARIO B: SIGATOKA IS MANAGED AND ONLY THE AREA NEEDED FOR ROAD NETWORK WILL BE LOST

1. Lost Revenues
   Banana Cavendish Areas To Be Converted to Roads (In hectares) 1,041.02
   Productivity Per Hectare (In 13.5kg boxes) 4,000.
   Estimated Annual Production (In 13.5kg boxes) 4,164,080
   FOB Price Per Box $ 2.50
   Estimated Annual Revenue $ 10,410,200.00
   Forex Rate ($1.00:PhP49.00) 49.00
   Estimated Annual Revenues in Pesos PhP 510,099,800.00
   Exporters' Business Tax Rate in Davao City 0.00275
   Estimated Annual Business Taxes PhP 1,402,774.45

2. Unemployment Statistics
   Estimated Workers That Will Become Unemployed 1,457
   Employment Generated from Operating Boom Sprays (119)
   Net Estimated Workers That Will Become Unemployed 1,338
   Net Estimated Annual Earnings Per Worker 100,786.00
   Estimated Total Earnings 134,854,317.23