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WHY DO 90% OF THE FRUIT PRODUCING COUNTRIES DO NOT MAKE A DECENT LIVING FROM IT?

I recall the surprised, unbelieving, and then happy, faces of farmers who had already grown accustomed to 50% of the crop loss, and then within a few months, they found that it was possible otherwise.

Summer is coming and the fruiting season is here. Once again, there will be countries where the fruits will grow, ripen, harvest, marketed, and often exported to leading international markets.

In those successful countries, farmers will be smiling and are proudly part of the Middle Class. This is the case in a minority of the fruit growing countries, especially tropical ones.

However, in most countries, fruit growers suffer poverty and sometimes-even hunger. This is even when they grow the same crops!

The big question is, therefore – WHY?

In last week's manifesto, I described *The Enormous Opportunity [And Risk] For Fresh Fruit Growers* ([link](#)).

However, to seize the *Opportunities* a country first need to meet the basic requirement to take advantage of the coming *Opportunities*.

Think, why some countries can charge taxes from fruit growers who earn a good living, while others have to support them financially just to survive the day?

SIMULATION OF 2 ALTERNATIVES

To analyze the reasons that lead to the huge differences between fruit growers in different countries, we will simulate an imaginary country with 10,000 hectares of commercial mango plantations. This will be our *Production Unit*.

Such a *Production Unit* requires investments in planting, treatment, inputs, research, mechanization, logistics, training, etc. At the same time, it constitutes a magnitude that can contribute significantly to the country's economy.

Our economic simulation will consider two types of countries – *Unsuccessful* and *Successful*.

To measure the economic impact we summarize the components that create Positive impacts (in **Green**) and reduce from it components that create a Negative impact (in **Red**).

For example, income to farmers or related industries and service providers created thanks to growing and marketing mango, direct or non-direct investments related to the mango industry, academic research, and extension service, are considered as *Positive Impacts*.

At the same time, reluctant to invest, poverty, shortage of raw material for related industries, chemical residues and farmers' morbidity due to use of sprays, government support, lack of foreign currency (if there is no export), and even damage to the state's image, etc., are considered as *Negative Impacts*.

For the sake of simplicity in presenting complex information, I will use rough figures to indicate trends, and I will ignore some accounting principles. I ask your forgiveness and understanding of the reason for doing this.

For illustration purposes only, recent data relating to Avocado and Mango growers in Kenya is attached. Note that these figures represent over 90% of the fruit-producing countries.

Feel free to use the below example and template with adjusted numbers suitable for your country.

UNSUCCESSFUL ALTERNATIVE

Facts

- Yield per hectare – 5 tons
- Price in Local markets – 0.3 \$/Kg
- Price in Export markets – 0.6\$/Kg. **No export** (or limited).

Potential annual income per 10,000 Ha. – \$ 15M (100% marketed locally)

Current State

- Low yield per hectare.
- Low quality.
- Crop loss (before marketing, due to fruit flies) - 30% to 100%.
- Extensive use of (chemical) sprays.
- The local market is limited in size, capacity, and price.
- Limitations in the ability to produce added value.
- Lack of broad national support infrastructure—research studies, laboratories, nurseries, professional extension services, packaging houses, logistics, cold chain, marketing, investments, etc.

Economic Impact of The Current State

- Low income per hectare –250\$

Actual annual income per 10,000 Ha – \$ 2.5M

Other Impacts: investments, expenses, losses, and non-refundable investments

- Farmers' expenses on outputs and labor - **\$ 2M**
- Chemical residues in fruits and environment - **\$ 100K**
- Crop protection: increased use of pesticides - **\$ 100K**

- Farmers' loss of income and erosion of profits - \$ 100K
- Government support of fruit growers (projects, etc.) - \$ 0.5M
- Poverty is perpetuated - \$ 100K
- Morbidity and poisoning among farmers - \$ 100K
- Reluctance of stakeholders (farmers, state, investors, etc.) to invest - \$ 200K
- Related industries - underdeveloped and suffering from raw material low quality or shortages and erosion of profitability - \$ 200K
- An increasing need for financial support of fruit growers - \$ 100K
- Low food production and the occasional need to import - \$ 100K
- Undeveloped academic research and extension services(affected by the low economic impact of the industry) - \$ 100K.
- Lack of foreign currency (no-export) - \$ 100K
- Damage to the state's image (inability to export reflects on the state) - \$ 100K
- Investments in 'local solutions', e.g. packing-house/juice factory, goes down the drain - \$ 100K
- Increasing state loans - \$ 100K

Annual expenses, losses, and non-refundable investments- \$ 4.1M (note the overall Negative impact of the above components)

Financial Balance

To calculate the actual economic value of a Mango *Production Unit* for the state economy, we sum the *Actual Income*, plus the Negative impacts, plus the Positive ones.

$$\$ 2.5M+ (- 4.1M) = - \$ 1.6M$$

Note that under the *Unsuccessful Alternative* scenario the country's economy is **losing** about \$ 1.6M for every *Production Unit* of 10K Ha. of mango plantations.

Meaning, the Mango industry is creating a **Negative Value** at the state level.

Root Cause

Root Cause encapsulates **Why** the problems accrue in the first place.

Root Cause could be a technical problem, leading to business problems, creating existential problems.

In the *Unsuccessful Alternative* scenario, the *Root Cause* is a technical problem of **inability to effectively control fruit flies**, according to the required international standards and regulations.

That leads to a business problem; 50% yield loss and inability to export, which lead to existential problems; the inability of the country to keep its economic development and its need to continuously support fruit growers.

Farmers in fruit fly-infested areas are losing on average up to half their crops each year to the tiny pests, said Onesmus Mwaure, a research assistant at the Nairobi-based International Centre of Insect Physiology and Ecology (ICIPE).

In Kenya. Source: REUTERS

Why fruit flies are the *Root Cause*?

Because, if fruit flies were effectively managed, farmers wouldn't lose 30% to 100% of the yield, farmers would be able to export, get a higher income, stakeholders would be happy to invest and hence promote the fruit industry together with related industries.

SUCCESSFUL ALTERNATIVE

The *Root Cause* analysis predicts that when fruit flies are effectively managed the fruit industry is finally having the most critical prerequisite to becoming a *Successful* one.

Hence, in the following simulation, we will analyze what happens to the economy when fruit flies are well managed (i.e. no infestation).

Facts

- Yield per hectare – 20 tons.
- Price on Local markets – 0.3 \$/Kg.
- Price at the Export markets – 0.6 \$/kg.

***Potential* annual income per 10,000 Ha. – \$ 90M** (based on the export of 50% only!)

Current State

- Medium yield per hectare i.e. 20 tons
(note, high-yield would be over 40 tons/Ha. i.e. Israel)

- Produce at export-quality.
- Crop loss (before marketing) - 5% (**none!** due to fruit flies).
- Minimal or without the use of chemical sprays.
- Marketing to Export and Local markets
- Premium value (price) - for premium quality produce.
- Sufficient and advanced national infrastructure.

Economic Impact

- Medium income per hectare – 9,000\$

Actual annual income per 10,000 Ha – \$ 90M

Other Impacts: investments, expenses, losses, and non-refundable investments

- Farmers' expenses on outputs and labor - **\$ 10M**
- No chemical residues in fruits and environment - \$ 0.0M
- Crop protection: increased use of eco-friendly methods - **\$ 10M**
- Government support of fruit growers (projects, etc.) - **\$ 0.5M**
- Poverty/hunger - \$ 0.0M. **No poverty**
- No morbidity or poisoning among farmers - \$ 0.0M
- Stakeholders (farmers, state, investors, etc.) are eager to invest - **\$ 30M**
- Related industries –sufficient raw material and growing profitability - **\$10M**
- High food production and no need to import - **\$ 0.5M**
- Developed academic research and extension services (value-added) - **\$5M.**
- Political stability- **\$ 1M**
- Ample and available foreign currency (to import know-how, services, and technologies) - **\$ 10M**
- Improved state's image - **\$ 0.1M**
- Investments in 'local solutions', e.g. packinghouse/juice factory - **\$ 1M**
- Decreasing state loans - **\$ 0.1M**

Annual expenses, losses, and non-refundable investments - \$ 37.2M (note the overall Positive impact of the above components)

Financial Balance

To calculate the actual economic value of a Mango *Production Unit* for the state economy, we sum the *Actual Income*, plus the Negative impacts, plus the Positive ones.

$$\text{\$ 90M} + \text{37.2M} = \text{\$ 127.2M}$$

Note that under the *Successful Alternative* scenario the country's economy is **benefiting** an additional \$ 127.2M for every *Production Unit* of 10K Ha. of mango plantations.

Meaning, the Mango industry is creating a huge **Positive Value** at the state level.

CONCLUSIONS

We see that the huge value gap between farmers in different countries, and therefore between the countries, is not a result of the 'act of God' or access/lack of access to technology.

“Most of the fruits you see with a ripening colour are not ripe,” he said. “(They) have been punctured by fruit flies and are in the process of rotting and eventually falling off.”

In Kenya. Source: [REUTERS](#)

The gap is a direct result of the ability or inability to **effectively manage fruit flies**.

As simple as that!

Fruit flies are therefore ***The Root Problem***.

I presented two scenarios, under the same starting conditions, i.e. 10,000 hectares of commercial mango plantations.

The main difference between the two scenarios was the level of effectiveness in which fruit flies were managed.

Under each simulation scenario for a *Production Unit*, a different Economic Value was created –

Value under ***Unsuccessful*** scenario is **Negative** (- \$ 1.03M).

Value under ***Successful*** scenario is **Positive \$ 127.2M**.

The financial gap between the scenarios for a single mango *Production Unit* (10K Ha.) is therefore

\$ 127.2M - (- \$ 1.03M) = **\$ 128.23M**

That clearly explains why some countries need to continuously support their farmers, with no visible hope on the horizon for a change, while others, with no 'fruit fly issues', continuously improve their economy and their farmers' livelihood.

For this simulation, I used numbers that reflect the low side of the gap, e.g. relatively high price per Kg in the Local market and low price per Kg in Export markets. It means that we can expect the real gap caused by fruit flies to be much greater.

Fruit-fly damage costs farmers an estimated 50 billion Kenyan shillings (\$472 million) every year, according to the government's Horticultural Crops Directorate.

In Kenya. Source: REUTERS

When farmers can't effectively manage fruit flies, they are doomed to harsh life and inability to grow their potential to the fullness. The same goes for the state level.

This reality, where fruit flies are not managed well, there is no (or is limited) export, and hence the fruit industry with its related industries hardly survive. It is typical to many countries, including India, China, and most African countries.

Fruit Flies

What makes fruit flies so unique?

Fruit flies infest many fruits and vegetable crops. Many fruit fly species are considered as Quarantine Pests!

In 2014, the Kenya Plant Health Inspectorate Service (KEPHIS) imposed a ban on the export of home-grown mangoes to lucrative markets such as the European Union and the United States due to the high levels of fruit flies in the shipments.

In Kenya. Source: REUTERS

Nowadays, while we confront the COVID-19 pandemic it is easier to explain why regulators around the world are afraid of Quarantine Pests or Diseases.

It is even more evident with a pest/disease that is having a reputation for aggressive invaders/contagious. Many fruit fly species belonging to the *Ceratitis*, *Bactrocera*, and *Anastrepha* families are considered aggressive – *high damage level - invaders*.

State Level

Downside - under *Unsuccessful* fruit fly control regime the state is losing annually in the range of **millions** USD per *Production Unit* and related domains.

Upside - under *Successful* fruit fly control regime the state is annually increasing its income from the *Production Unit* and related domains in the range of **tens or hundreds of millions USD**.

Consider, how many families does the 'gap' of tens/hundreds of millions USD can support? How many new workplaces it can create?

Hundreds or maybe thousands of additional working places, with a better salary in the agri-industry, in related industries, in-services, etc.

What is the value of an improved diet, better health, and the ability to send your kids to school and later to university?

A country with more than a single *Production Unit* can see a rapid change within a short time, especially as the workforce is based on the agri-industry.

Do you want to know how big can be the *upside* of an advanced agri-industry?

Just look at Israel that only 72 years ago started, having agriculture as its primary industry and its main export component. It is thanks to the agri-industry that Israel is doing well today, while it long shifted its economy to other advanced technologies. However, we remember that it all started in the first 10-20 years of the young country.

PERSONAL NOTE

It was 1989 when I first met the destructive power of fruit flies. That year I have suffered 10% to 50% yield loss in my own fruit orchards due to those little flying pests. It was devastating... and it changed my life.

I understood the difficulties involved in fruit fly control, and the consequence plus the enormous impact it is having on the farmers' and the country's economy.

This is where I developed my social and economic philosophy toward pest management, and in particular, fruit fly management.

The outcome of that experience led me to the understanding that the world is missing something to bridge the gap.

The gap is quite obvious; it is between the current situation that although spraying a lot, the fruit **growers are losing 50% of their yield due to fruit flies** (and much more of their income), and between the desired future where there is **no spraying and no fruit fly infestation**.

With deep social and environmentally conscious, I set up the goal of Biofeed -

Improve Farmers' Livelihood By Increasing Quality Production, Free of Bio and Chemo Hazards, Grown In A Safe Environment, So Consumers Can Enjoy Healthier Food.

But setting up the goal was not enough, nor is developing a breaking through technology.

Being a farmer myself, and understanding the agri-industry, I know that to turn the above vision into a reality we have to provide the farmer with a complete full-proof solution.

The result is a solution of a 'full-package' that is based on my insights and experience as a farmer, the breaking-through technology of Biofeed, the novel protocol approach developed based on my academic studies on fruit fly ecology and metapopulation ecology, and many years of Biofeed team proved results in consulting and leading fruit flies campaigns.

The three elements of the 'full-package' contains;

(1) Protocols, (2) Technology, and (3) Management (of the *change*).

By providing these three elements, Biofeed managed to revolutionize the crop protection domain of quarantine flying pests of open field crops.

Myself, and my team, are ready to assist you in *your journey* toward a successful applying and implementation of fruit fly effective management. To learn more visit - bit.ly/FreeDomeOutlook

Your feedback and thoughts are precious to me. Please share your thoughts with me and the manifesto with someone who needs to see it.

For questions regarding a particular country/situation please contact me at nisraely@biofeed.co.il or text me +972-5423425 (WhatsApp).

*For a greener world
Free of sprays
Full of joy*

See you soon,
Nimrod



P.S.

The greater the threat/danger is, the greater is the change to come. Hence, opportunities also become greater.

The COVID-19 crisis creates great changes. Changes always create opportunities for those who think and act fast.

P.P.S.

For many years, Biofeed understands that *a full solution* must include a state-of-the-art technology combined with a suitable protocol. Therefore, we tailor-made a solution to a situation, where there will always be the usage of the Technology plus Protocol and support in its Management –

- 1 – *FreeDome* to ensure effective fruit fly control, and
- 2 - *Fruit Fly Certified Trade Zone* to enable regulators, exporters, importers, and farmers alike to gain mutual trust, confidence, and peace of mind in their present and future.

P.P.P.S.

In 2020 we will apply an area-wide multidiscipline *Fruit Fly Certified Trade Zone* project. Now is the time to contact us and make sure your country will have its own *Fruit Fly Certified Trade Zone* project in 2021.

P.P.P.P.S.

Available on-line additional information –

* Join me on [LinkedIn](#) for many more posts and updates.

* Previous [articles](#).

* The unfinished historical series [The Agricultural Gap](#). About the 11,000 years history of agriculture, starting with *The Agricultural Revolution* all the way to nowadays and the Agri-industry Revolution.

***Change Begins With A Decision
That The Existing Reality Is A Choice
And Not A Decree Of Fate***