Papaya Case Study

Synopsis/Executive Summary

This case study explores in detail the application of the ecoganic® farming system to a papaya grower in far north Queensland. The soil health and requirements of a papaya crop are somewhat different (yet the same in many ways) compared to what is needed to grow healthy, sustainable bananas. This case study explores the unique challenges of a typical papaya grower and the advantages/benefits he was able to achieve by adopting the ecoganic® growing system.

Introduction

Jamie Hitchings has been farming for 20 years and struggling to get a decent price for his papayas and bananas in a very competitive marketplace.

It wasn't until Hitchings turned thirty and started to appreciate the risks involved with using various chemicals in the growing process, that he began to take it all more seriously. He was worried about his own health and also the impact using all these chemicals might have on his young family. More and more there is a growing awareness in the industry about the unique cancer risks for older farmers, and Hitchings became curious about how he could reduce his reliance upon pesticides, miticides and fertilizers.

He'd even tried to "go it on his own" -- he stopped using organophosphates after learning in a course how it builds up in your body over time and can cause cancer. However, it wasn't easy and he still had to compete based on price with the other traditional high yield farmers who were using chemicals to increase output and speed up the growing cycle.

Hitchings approached Frank Sciacca to learn more about ecoganics® and to determine if it could help him reduce his reliance upon chemicals and command a better price for his fruit.

Findings

After over 20 years of traditional farming, Hitchings soil lacked balance and diversity. His soil health and farming practices directly inhibited him from putting enough carbon back into the soil to grow a healthy, sustainable crop.

Hitchings carbon levels were initially recorded at 0.50, which meant his crops were almost entirely reliant upon fertilizers for their primary source of nutrition.

Over time, Hitchings watched his carbon markers grow from 0.5 to 1.8 -- which reduced his reliance on fertilizers and also increased the value and sustainability of his land to produce healthy crops for many years to come.

Technology is important but it is not the only factor to consider when determining what will propel Australian farmers forward. Nature plays a vital role and we are still discovering how the introduction of various micro organisms, fungi, insects etc. can balance the soil biodiversity, minimize the use of chemicals and promote sustainable farming well into the future.

Hitchings was able to achieve a 20-30% price increase (variations due to seasonality and market factors) as a direct result of converting to ecoganics®.

Discussion

Ecoganics® is a balanced farming system created by Sciacca that works with nature to produce a healthy product while also protecting and strengthening the farm eco system. Traditional farming involves using chemicals that sterilize the soil and kill insects (both beneficial and pests). This then leaves the crop dependant on synthetic fertilisers for its primary source of nutrition. These practises have a negative impact on the soil, organisms, insects, birds, larger wildlife and the waterways.

In order to help Hitchings fortify and build upon the natural capital he had on the farm, the two worked together to first measure and quantify the overall health and potential of the farm eco system. The scientific testing and verification that is built into the ecoganic® growing system is crucial - it's what separates this unique and sustainable farming systems from all others.

Insects and organisms are collected and independently tested every two weeks by an entomologist (and the soil is sampled and tested twice yearly by the Department of Primary Industries) to monitor all biological and chemical aspects. In addition to providing independent verification of the health of the soil and what has been applied to it, the testing delivers a multitude of insights about the balance and diversity of the soil -- these insights hold the key to what needs to be done to naturally restore the soil back to ideal growing conditions.

One of the key findings that came out of all this testing was this - after over 20 years of traditional farming, Hitchings soil lacked balance and diversity. Here's why this was a crucial finding -- his soil health and farming practices directly inhibited him from putting enough carbon back into the soil to grow a healthy, sustainable crop.

So you may be asking yourself, "why is this important"?

Carbon stripping can occur after years and years of using various chemicals and fertilizers. As yield is pushed for produce size and speed to market, the use of fertilizer goes up and this strips the soil of carbon. The nitrogen in the fertilizer makes plants grow bigger more quickly, but it depletes the soil of carbon, which is the natural building block (primary food source) for all plant life.

Without sufficient carbon, the produce takes on more water content, which directly impacts the taste, texture and shelf life. Good carbon markers are essential to healthy sustainable growing. Unfortunately, it takes time and money to put carbon back into the soil. However, in addition to the health and sustainability benefits, there are strong financial incentives to put more carbon into the soil.

In nature and a balanced ecosystem, ants, worms, beetles, nematodes and other micro-organisms recycle vegetation and put carbon back into the soil. Chemicals (whether they be synthetic or organic) kill these organisms which means there is no natural mechanism to return carbon to the soil. Ecoganics® is the only growing system in the world which directly

supports and encourages your natural capital (micro-organisms, insects, birds and other wildlife) to return carbon to the soil.

Since the soil is measured every fortnight, you receive timely and specific insights which allow you to proactively manage the health of your soil and respond to challenges quickly and effectively. The ecoganics® team have access to a team of 10 scientists and a growing team of farmers with experience across many different types of crops and growing conditions.

In the case of Hitchings and his papaya farm, as imbalances were detected, the team worked together to find organic solutions or natural predators to build up his soil health. Over time, Hitchings watched his carbon markers grow from 0.5 to 1.8 -- which reduced his reliance on fertilizers and also increased the value and sustainability of his land to produce healthy crops for years to come.

Prior to adopting the ecoganic® growing system, the fruit spotting bug was a significant issue for Hitchings (as it is for many papaya growers and other produce crops). The proboscis of the fruit spotting bug taps into the stem of the plant (at the top) or the fruit itself. This stops the growth of the tree, invites disease, and also causes the plant to stop producing fruit altogether. After consultation with Sciacca and the entire team, the natural predator to the fruit spotting bug (the wasp) was introduced. The wasps lay eggs inside the eggs of the fruit spotting bugs, which kills the fruit spotting bugs before they can damage the plants. In addition to being a quick, chemical free solution, the wasps also have the additional positive impact of contributing to fertilization of more fruit trees which boosts the capacity of the farm.

As another example, phytophera is a common fungal disease among traditional and organic farmers that is very active in the wet months in far north Queensland. It attacks the root of papaya plants. It disseminates plants and can quickly kill an entire plantation if not managed properly. Most traditional and organic growing systems defer to fertilizer and weed management as the primary method to keep phytophera under control - but it is not a solution, nor is it particularly cost-effective.

On the other hand, fungal diversity, through carefully managing soil health, is a cost effective and vital natural strategy which is extremely effective for managing and preventing phytophera. As ecoganics® carefully measures and tracks the nutritional components and various types of nutrients in the soil, the nuances of soil health and biodiversity shed much needed light on the natural solutions for problems such as phytophera.

For example, traditional farming may recommend that all weeds and grasses be eliminated in order to give the papaya plants the best chance to grow. However, science is showing that certain weeds and grasses when left in the plantation, develop deep roots which encourage nemotode diversity, balance the soil, and actually prevent phytophera from taking hold in the first place.

Ecoganics® is focused on natural balance. It's about removing synthetic or organic coping mechanisms (which often introduce unintended consequences and deplete soil health), when nature has demonstrated a capacity to provide the perfect solution.

Conclusion

Hitchings' land had been in constant production for over 50 years (20 of those by Hitchings) -- before ecoganics®, the soil was virtually dead -- extremely low carbon levels, heavy reliance on fertilizers and he was struggling to control pests (even with insecticides and miticides). The bugs were evolving faster than companies could create chemicals to kill them.

As Hitchings discovered, insects and organisms have been eating other insects and organisms and replenishing carbon in the soil for millions of years. When he stopped killing beneficial bugs and organisms and sterilizing the soil, it became easier to manage problems and grow healthy, sustainable papaya crops.

He was also able to increase the price of his papayas by 20-30%, which also had a material impact on the bottom line of his farm.