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Research Article

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Maximum Yield Potential in the Context of Sustainability. Is it Compatible?

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Abstract

Farmers increasingly learn to use less and less mineral fertilizers, pesticides and reduce the number of driving through the field, etc. Is it possible to farm sustainably and get high yields? To answer this question, it needed to know the main features of sustainable farming and what determines a high yield. Firstly, the key features of sustainable farming are compliance with the norms of nutritional elements (N, P, and K). Secondly, a 50 percent reduction of the pesticides. The key factors of high yield are: 1. Crop rotation. It should include as many plants as possible. 2. Selection of stable plant varieties. Stable varieties that have been in the market for many years and have been grown under various conditions should be selected. The selection of varieties is large; therefore, only certified seeds should be chosen. 3. Selection of eff active products. Not all products provide a yield supplement. Different products should be tried and find the ones that are useful. 4. Algorithms for different crop technologies. It is very important to apply diff event technologies algorithms in various crops based on the needs. 5. Smart solutions in adapting to the changing nature. Nature changes and changes the way crops are growing. Smart solutions are those that are made after evaluating a lot on information based on nature changes. Maximizing yield is compatible with sustainable farming, only the main goals mentioned above need to be implemented.

Keywords: Sustainability, Yield, Clean Food

Through my 12 years of farming practice I never had the same technology or the same field trials. Every year I tried different ones and were searching how to grow up 10 t winter wheat, 4 t winter rape and 9 t winter barley. But sustainability has appeared in my way. Therefore, I have asked myself - is it possible to farm sustainably and get high yield results?

Sustainability, green course, with less to get more, climate changes - all these words accompany farmers every day, including me. Little by little, farmers learn how to use les mineral fertilizers, pesticides, reduce the numbers of trips through the field, etc. But how to be friendly with nature and have profitable farming business?

I will mention what I think are the key features of sustainable farming and what determines a high yield. Knowing this, I will make connections. The key features of sustainable farming firstly are keeping the active material norms. The maximum nitrogen (N), phosphorus (P2O5) and potassium (K2O) rates of active substances that can enter a hectare during a calendar year. Secondly, the reduction amount of pesticides 50 % and the last is having clean food on our tables. Based on information of Eurostat, Lithuanian research center for agriculture and forestry I see that the use of fertilizers products and chemicals is decreasing, according to ES Commission food testing, we see cleaner food products on our tables too. But is it possible to farm sustainably and get high yield results?

Let's dig deeper into the criteria for maximum yield. Let's review the key factors of high yield according to me. They include:

- Crop rotation.
- Selection of stable plant varieties.
- Selection of effective products.
- Algorithms for different crop technologies.
- Subtle solutions in adapting to the changing nature.

Crop Rotation

It should include as many members as possible, such as: beans/peas, winter canola, winter and spring wheat, winter and spring

barley, maize, cover crops, winter cover crops, perennial grasslands, etc. More different plants – more diversity of good microorganisms in soil.

Selection of Stable Plant Varieties

There are many varieties on the markets. All the companies give the farmers the results from various trials and say that their varieties are the best. However, I think that we should choose stable varieties that have been on the market for many years and have seen everything. Let's take for example: winter wheat breed Etana, it has been on the market for a very long time. However, this variety has proven over the years that its yield is quite stable. With this principle, we should choose winter rapeseed, winter barley, etc. It is also very important to mention - the selection of breeding is enormous, so the seeds must only be certified in order achieve the maximum yield.

Selection of Effective Products

There are also many numbers of similar products on the market. However, analog products are not equal to each other. Not all products give a harvest supplement. We have to try the products and discover the ones that really bring benefits. Believe me, there are very good products that help to solve certain problems. For example: winter barley often has a low weight. There is a time and a product that solves this.

Algorithms for Different Crop Technologies

All farmers have their own technologies. They apply their technologies year after year without changing much. However, in my opinion, it is very important to apply different technology algorithms in different crops. I use different technologies every year and for today I have a formula for growing 10 t winter wheat or 4 t winter rapeseed or 9 t winter barley. Understanding the nuances of different plant growing technologies is the most important thing.

Subtle Solutions in Adapting to the Changing Nature

Nature changes and changes the way we grow crops. Not every agronomist is skilled and understands that the truth written in the textbook does not always match the nature of that year. The further we go, the more we see the vagaries of natural conditions. Subtle solutions I call the solutions we make after evaluating a lot of information. For example: this year we had a very early harvest, a lot of rain. Some farmers thought that it is very good, I will be able to sow rapeseed early on august 2. But this is where subtle solutions come into play. The farmer must understand that we often have warm and long autumns. Winter canola sown very early gets infected with plasmolysis, there is a chance of root tuber, it is necessary to regulate 2 times (more chemistry is used), canola overgrows, the roots start to rot, etc. In order to get a high yield and avoid bad things, we have to make subtle decisions.

I am not a scientist but I am very near that. I wanted to share my view, based on 12 years of practice from my own and my client's farms, and answer the main question. Based on my not precisions production trials and long practice, I can answer, that maximum yields are compatible with sustainable farming, just need to understand and keep the things I mentioned before.