

## **Economic business model for nature-inclusive agriculture**

### **Current in-house business management**

Just like other dairy farmers in the Netherlands, I am challenged to produce my dairy (by)products in a sustainable way in harmony with the environment and residents. We milk 100 dairy cows and additional young cattle on approximately 50 hectares of clay soils, where we grow grass and maize, and 17 hectares of natural land (depreciated land). Since my farm is located at a distance of 500 m from a village with 5000 inhabitants, we have to take into account these residents during certain activities, e.g. in harvesting work and applying manure in our fields. We also set an example as a farmer. Together with the Campina milk cooperative, we organize open farm visit days. We also provide farm education for a primary school, because we want to strengthen the connection between the citizens and the farms.

We combine 50 hectares of mainly grassland where we grow grass in a conventional way with 17 hectares of nature conservation land in a nearby area in Zeist. This economically efficient milk production with a healthy herd, combined with nature management, will help me with future-proof agriculture and will ensure social acceptance.

We created herbs and flower borders around my pastures to increase biodiversity. Especially insects are attracted by this herbal and flower strip around my pastures. These flower strip are highly appreciated by local residents. Because we have a strong preference to work in a nature-inclusive way, we use a number of techniques for nature conservation, such as creating wet land (semi-wet soils with 5 centimeters of flooded water). Postponing first cut mowing until the chicks of meadow birds are bigger. Marking manure-free plot borders on our farm leads to more biodiversity of the pasture. Therefore, insects and native, endangered meadow birds, such as black-tailed godwit, redshank have more breeding opportunities. For the above initiatives, we get a minimum compensation for loss of production, but it is not enough to compensate for full loss of production and the required extra labor.

The Nuffield scholarship was able to support me with new ideas and insights on how I can implement nature on my farm in an economical, sustainable, circular and socially accepted way.

### **Reason for Nuffield research**

For my Nuffield research I have gathered knowledge all over the world with a focus on dairy farming. For a broader perspective I also visited companies in similar sectors. It was especially important to gain insights into the similarities and differences in dairy farms and other agricultural farms between countries. We are currently positioning ourselves in the Netherlands as an efficient, high-tech producing country compared to the rest of the world. Almost every country has to deal with the same questions, but in very different ways due to economic, cultural, political and demographic conditions. Although the Netherlands is a small country, with many inhabitants, it has a leading agricultural sector that is seen as an example by many other countries. This is something to be proud of, but at the same time, we need to keep innovating to maintain this position.

When I gave training on feed and waste management for dairy farmers in Sri Lanka, I once again realized the effectiveness of working with foreign farmers in different countries, cultural backgrounds and challenges. Participating in a Nuffield fair would develop my personal insights on different ways of farming and help me with my own future-proof farm.

## Findings and insights

The most striking findings regarding the integration of nature and agriculture I have seen in Italy, where sheep farms certainly cooperate with nature and then often with grazing to prevent forest fires. Here they have the same problems with the revenue model. Another example that is really the ultimate example for me is the cork forests in Spain. Here you can see that a completely new ecosystem is created with an increase in flora and fauna through the cooperation between nature and agriculture.



*cork forests in Spain*

In North and South America I have experienced that there are problems like, groundwater subsidence and contamination of groundwater due to a lack of organic matter in the soil. Often technical solutions are sought, such as efficient pumping or applying fertilizer in smaller quantities. I think it's better to solve directly at the source, where the problem arises and how you can work on a higher organic matter.

More specifically, in my research, I have taken into account different sustainability factors and their impact on the pricing of consumer products in different markets. During my Nuffield study period, I investigated these factors and effects at various agricultural farms in different countries such as Argentina, Belgium, the United States (California), Chile, England, Italy, Austria and Sri Lanka.

I soon found out in my project that nature-inclusive agriculture is also an international topic. Every country I have visited deals with it in different ways, but often driven by daily problems that are becoming more and more common. An example of this is the decreased pollination of the fruit trees in California, due to too few insects.

A surprising finding is that some climate changes have different regional effects. As an example, the same amount of precipitation in shorter time windows leads to lower groundwater levels and drought in California, while in Argentina this results in higher groundwater levels and contamination of groundwater with fertilizer and pesticide. From this example, we can conclude that we need to

look at the different effects on the agricultural system in an international and a local context, taking into account specific local circumstances.

Between different agricultural sectors and individual entrepreneurs, I also see different approaches to sustainability both internationally and locally. Some entrepreneurs recognize the need to change their activities, while others choose to continue in more traditional ways. I also experienced this in the Netherlands.

Another important finding is that farms that have control over the processing and marketing of their own products are better able to make money from sustainability factors. This is due to both higher margins in the processing of products and their closer position to consumers and the ability to communicate their story and in this way create value. Looking at earning model, I've heard the same story everywhere; primary production is hardly or not at all profitable, while the processing is. Therefore, farms that process milk themselves and deliver directly to consumers have a viable business model. Contact with end users for these farms also has a positive effect on monetization on sustainability factors, as companies can communicate a sustainable story across the value chain. This is partly a factor of favor and how these products are perceived, largely due to consumers who buy directly from producers and are more aware and sustainability-oriented than the average consumer. These are suitable business models for nature-inclusive agriculture, but especially for a niche market. For my research, I would like to find alternative business models that offer a solution on a larger scale that I can apply in my own dairy farm, must suit me and at the same time yield extra profit. This problem is clearly much more complicated.

## **Barriers**

In Europe, we are currently dealing with a system that we have been working towards over decades. It is well known that after the Second World War, we created a clear policy for maximizing food production that is both cheap and of high quality with the help of government intervention. The agricultural sector initially implemented this policy very well, but since about 1980 we have seen undesirable side effects such as large production surpluses (e.g. the famous butter mountains). Today we see a changing EU policy from stimulating production to rural development, income support and sustainability. In the Netherlands, this leads to a further pursuit of scale and efficiency. At the same time, the primary sector has continuously responded to societal pressures through knowledge and innovation. As a result, we have been able to keep costs to a minimum and to continue to roll out new developments, making the Dutch agricultural sector one of the most successful worldwide from an efficiency perspective. We clearly see this trend in company takeovers, for example, in a study between 2001 and 2003 we see a growth of 34% in dairy production after a farm succession (source: CBS). This increase in size is mainly driven by the requirement to be able to bear higher financing costs. In addition, we see the costs of land use in the Netherlands rising much faster than in other countries, which results in a large part of the fixed costs for companies. The fixed costs of a dairy farm in the Netherlands are about 30% higher than for, for example, neighboring countries such as Germany and Poland (source: IFCN), this is also a striking difference for the farms I have visited.

All these factors together form barriers to a viable business model for nature-inclusive agriculture, as this requires more extensive production, which, in combination with high fixed costs, leads to lower margins. Today, maximizing milk production per cow and intensive land use remains the best model for maximizing profits. We often see the costs per liter of milk per hectare of land as a starting point; this is never in favor of nature-inclusive agriculture. Nevertheless, there are examples of farms that can farm extensively with different management methods and still achieve sufficient income. These companies often have lower financing or lease costs or generate income in addition to their core activities in agriculture.

### **Nature inclusivity and KPIs**

Before I started my Nuffield scholarship, I considered adding more sustainable value to products that lead to higher market prices would be the solution to these problems (for example, on the way to Planet Proof). I still believe this could achieve some revenue from sustainability, but it is unlikely that this will close the gap. In the Netherlands we produce for a large international market where everyone implements their concept but ultimately has to be offered at a competitive price. Our products have a lot of value that is not currently earned, but this value has become an operational requirement. We produce our products in the backyard of society and carefully maintain the landscape, if you map this you can attach a value to it. So the idea is that you get paid for a better score on these KPIs

### **Integration of nature**

This is especially relevant for the intensive land use by the Dutch agricultural sector. The Netherlands is a small but densely populated country in a very fertile river delta. Due to the limited available space, land is used intensively, and society is literally intertwined with our business operations. Since society has certain ideas and wishes, we as a sector must respond. Today, we see many of these ideas as a threat, but if we can turn some of them into new business models, we can create common goals that we can work on. For example, a farmer who currently uses land intensively can convert part of his land into nature, which the farmer can maintain and preserve and integrate into his business model. When agricultural land is converted back into nature, this is attributed to nature-inclusive agriculture and lower fixed costs for a farm. Some innovations can act as a catalyst, an example of which is algae cultivation resulting in high-quality protein production with limited land use. When we integrate nature into our operations, we can create multiple co-existing business models. These different models can have synergies when, for example, we are able to produce proteins locally in a circular way that is comparable to or even of higher quality than, for example, protein based on soy, and we are then able to transform more grasslands into more extensive use. Where these lands could be completely transformed and downgraded to nature, this would mean a significant reduction in fixed costs.

### **Conclusion**

My research and travels have given me many new insights and a much broader view of problems that are addressed within my research and beyond. I would like to list a few comments from my international travels that have been particularly important to me.

I have noticed that there are three important common issues in common worldwide, namely the increasingly visible effects of climate change, water issues in general and, finally, the average age of entrepreneurs in agriculture and related difficulties in farm succession.

Because the Contemporary Scholars Conference (CSC) took place in Iowa, I gained a lot of insight into the United States. The US is a remarkable country with a strong agricultural sector and although they are less advanced in sustainability, they are especially proud and not very critical of their way of farming. I have experienced this pride as an obstacle to asking critical questions and discussing with them openly.

South America is a continent with enormous potential, but it also faces serious problems due to unstable governments, corruption and underdeveloped infrastructure. Production here is mainly driven by quantity, but I believe that the sector is able to adapt too.

Europe distinguishes itself by quality products and especially in Italy they succeed very well in marketing and storytelling. Another obvious force is the stable governments and the well-developed infrastructure.

### **What am I going to do myself?**

My own dairy farm is located in Odijk, near the city of Utrecht. The environment is characterized by urban areas, dairy farms and fruit-growing fields that create a varied landscape. If we continue to focus on productivity, we need to be even more efficient with larger land areas with limited obstacles such as trees. But because society also wants to claim this space, there could be a compensation system. My company can serve more purposes, such as ensuring good water quality, water storage, preserving ecosystems and many others. My plan is to contribute to solving social problems and substantiate my contribution with specific scores on well-defined KPIs. For a sound business case other parties will have to pay for the services I provide, based on the mentioned KPIs. The purchasing parties could be the province (government), municipality, water board and recreation. But I am also thinking of commercial companies such as Vitens (tap water producing company) and Vrumona (producer of soft drinks). This would not only ensure more viable business models, but also contribute to greater social acceptance and job satisfaction.

### **Recommendations for other farmers.**

I think it's good to see what area you're farming in. You can respond to this, have sufficient contacts with your environment and come up with a plan to develop a revenue model for this

### **Recognition**

This amazing trip has been a once in a lifetime experience that certainly wouldn't have been possible without the unconditional support of many people and organizations around me. First of all, I would like to thank my loving family, Astrid, Medde, Ivar, Thijs and Florian, without your support and trust I would never have thought of starting something like this. Second, I want to thank my parents for giving me a solid foundation and constantly motivating me (and more than that) to look beyond the boundaries of our own farm. And finally all those who have run my dairy farm in my absence and all the others who have supported me in one way or another during this period. Many thanks to everyone.

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