Interview

ELIZABETH LUNIK | SENIOR ANALYST AT RABOBANK

The seeds of change:

from climate resilience to carbon sink

By focusing on protecting natural ecosystems, soil health and soil carbon, says Rabobank farm inputs analyst Elizabeth Lunik, agriculture can not only become more resilient to climate change but also part of the solution.

Q1

What is your role at Rabobank?

I am a senior analyst at Rabobank covering food and agribusiness sustainability topics. I joined Rabobank two years ago to take the opportunity to translate applied research into strategic conversations with our clients and support the bank to finance solutions that enable the transition to more sustainable production, consumption and supply chains. I'm passionate about food production and farm economics and this is a good place to be.

Q2

How is the farm input landscape changing in response to shifting regulatory and consumer demands towards greater sustainability?

The farm inputs landscape is very much influenced by shifting regulatory and consumer demands. Farm input companies in general must be very proactive in relation to the changing regulatory landscape, especially here in Europe. This framework has been getting stricter in terms of nutrient use and crop protection products. More recently, consumers' interest in the transparency and sustainability of food production has really started to be felt through retailers' demands and requests in respect of the downstream supply chain and food production processes.

Q3

So, what inputs will be needed in the future when thinking about regenerative farming?

Regenerative farming really implies a whole new way of farming when compared to the very conventional systems in operation now. So, that's the first place to start. Traditionally, we tend to look at this through a chemical analysis lens but with regenerative agriculture you really need to view it through the biological processes lens. And that means we're going to be using very different inputs than we use today.

So, while there is no agreement as to what exactly we mean by regenerative agriculture and the processes or the outcomes, we do know that we need to look at it very differently.

Take seeds, for example. For the new farming, it's likely that we will need different seed types in terms of diversity and varieties suited to local regions. Also, we will need different types of nutrient management solutions and different types of crop protection.

Even the language we use to talk about regenerative agriculture is distinctive. So, it really means a new paradigm shift for agriculture that balances the drive for productivity with other key goals such as greenhouse gas emissions reduction, biodiversity, eco-system services, water retention, water quality and so on. It's a different paradigm for the farm inputs space as well.

Q4

How can we scale up the adoption of farm inputs positively contributing to sustainability?

Regenerative agriculture is about soil health at its core based on the interactions between field practices, the local plant-microbial interactions and climate. Regenerative agriculture often uses organic residue inputs, minimum tillage practices, cover crops, longer crop rotations and more diverse crop varieties. This also includes Integrated Pest Management (IPM) and residue management. Scaling up regenerative agriculture requires peer-to-peer learning communities and bringing together conventional, organic and regenerative farmers around the topic of improving soil health.

Q5

What technologies and methods can help with this scaling up?

This is a good question because in order to achieve some of the sustainability and environmental improvements that agriculture needs to deliver on, it must also be able to maintain productivity while reducing its environmental impact. So, that means things like fertilizer (nutrient use) efficiency and the precision application of crop protection products becomes even more important.

Some of the technologies are already out there in terms of precision seeding, fertilizer application and crop protection. But adoption is still lagging behind. It really comes down to whether there is an economic return for the farmers to take them up. As regulation and general consumer and societal expectations for sustainable agriculture intensifies, as is happening right now, the impetus for farmers to change also speeds up. And in this process, precision agriculture is likely to become more important.

Secondly, the life sciences are also becoming very important to the application of regenerative farming. New breeding technologies and gene editing on the seed side, for example, are offering different ways to approach abiotic stresses in the field. And also nutrient efficiency is being improved by new technologies and micro-biology solutions.
I think those are really two exciting spaces that can enable regenerative farming to happen at scale.

Q6

What is the current state of play in paying farmers for environmental services?

While there are a couple types of conservation payment and biodiversity schemes out there, many recent efforts are focusing on soil quality and soil carbon as an 'environmental service' that agriculture provides. Land-based sectors including agriculture have recently gained attention because of their potential as a carbon sink.. This is very exciting as a possible revenue source for agriculture and for farmers individually. But it has a lot of very complicated implications and assumptions behind it.

As we know, today agriculture is not included in the regulatory or compliance emissions markets, especially carbon ones, because the sector is very fragmented and it is difficult to measure individual operation's emissions. So, agriculture has been left out. It also serves other purposes such as food production and eco-system services. So, there are clearly multiple reasons why it has not been included so far.

Moving forward, if we want to pay farmers for eco-system services, carbon sequestration seems to be the most interesting option on the table – as voluntary carbon markets have already incorporated projects in the forestry sector. And in the last couple of years voluntary carbon markets have even developed methodologies to try to estimate soil carbon sequestration. So, in addition to reducing GHG emissions through fuel or fertilizer efficiency it's also about improving carbon sequestration in the roots and soil.

We know this is a dynamic and long-term process to build up soil's organic carbon. Sequestration is a very complicated science relating to the microbial, farming and tillage practices, your crop mix, your soil and climate type. The big question is how far and how fast this new carbon market can develop? Currently there are only a few projects based on soil carbon sequestration in the voluntary carbon markets but we expect more projects going forward.

We have to be cautious that we continue to reduce emissions at the same time and not overrely on soil carbon removal. This is a very important ongoing discussion.

The recent IPCC report, Sixth Assessment Report, Climate Change 2021: The Physical Science Basis , continues to build our understanding of climate change complexity. The global food system accounts for a quarter of total emissions especially non-CO2 gases. Today, the volatility and extremes of climate change begs new questions about the extent to which AFOLU can be a natural carbon sink. This means that the land carbon sink (including agricultural soils) has to be better managed to counterbalance that volatility and variability (fluxes) that we're seeing with climate change. Furthermore, we can all see that global warming is increasing in the frequency and intensity of climate and weather extremes - be it flooding in Belgium or forest fires in Oregon. Our job is to make agriculture more resilient to climate change by restoring and protecting natural ecosystems and improving soil health and soil carbon.

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