REGENERATIVE AGRICULTURE

The role of mills and food producers in sustainable supply chain

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There is growing acknowledgement across both the farming industry and the scientific community of the potential for regenerative agriculture and soil conservation principles in creating a more sustainable global grain industry. With increasing adoption of key practices such as reduced tillage and cover crop establishment, there is now clear evidence that farmers can maintain yields in the long run whilst improving soil health and resilience. And now that pioneering regenerative farmers have shown what's possible, the rest of the industry is taking note – particularly of their bottom lines.

But if regenerative agriculture is to go truly mainstream, global grain supply chains need to demonstrate that farmers will benefit from the positive ecosystem outcomes they generate – improved biodiversity, soil preservation, carbon sequestration and water quality – and help to mitigate the implementation risks that come with system change and the "regenerative transition". Thus, regenerative agriculture implementation can become not so much a leap of faith as a hard-nosed commercial imperative for farmers looking to enhance their livelihoods.

The fact that the benefits from soil conservation practices are so multifaceted is both an obvious benefit and a less obvious challenge with regenerative agriculture adoption; the costs of implementation are borne entirely by farmers whereas the benefits – widespread as they are – accrue to a wide range of stakeholders. It would radically increase take-up of key practices among growers if they could (i) socialise some of the costs / risks, for example through capital support or insurance for regenerative agriculture implementation; and (ii) privatise some of the benefits to farmers, such as through financial incentives for clean water, healthy soil and thriving ecosystems.

Practises to drive change

An emerging landscape of farmer incentive programmes is bringing this idea into reality, and there are four main mechanisms driving management practice change. First, there are supply chain reward initiatives, whereby commodity buyers or food companies nudge farmers to adopt regenerative principles, generally by offering a premium price for such products. Secondly, there are markets for ecosystem outcomes or nature-based solutions. Farmers can enrol in a programme, commit to certain practices under the terms of the programme and after demonstrating the outcomes they are generating they can sell carbon credits to corporate buyers who wish to offset their emissions.

The most well-known and mature are the carbon markets, but markets for water quality and biodiversity credits exist as well, albeit with less liquidity and standardisation. Thirdly, there are emerging programmes by financial institutions – banks, insurers and investors – who have exposure to agricultural assets in their portfolios. Whether it is a loan, an insurance policy or an investment, there are ways for these stakeholders to encourage or enable regenerative agriculture in the form of so-called "green finance", or simply as part of their sustainability ambitions. Finally, there are of course government subsidies directed towards agriculture, globally worth around US$ 540 billion per year. In many regions – including the US, the EU and the UK – there are regulatory reforms at various stages of implementation which will tie subsidy payments to environmental outcomes (climate change, soil health, water quality etc). Given how many farms are dependent on subsidies to maintain profitability, these

regulatory changes are likely to be the single biggest driver of farm management changes over the coming decades in affected jurisdictions.

In practice there is some overlap between the four different mechanisms outlined above, for example where food conglomerates or agricultural banks partner with carbon programmes to deliver their own bespoke solutions. But all of these mechanisms have in common their underlying objective: to enable farmers to monetise the positive impacts they can deliver for the planet, for their customers and for their communities. Of course, corporate stakeholders such as the banks, insurers and food companies are not doing this out of altruism for their farmer suppliers but there is meaningful buy-in across these industries because they in turn face pressure from governments and regulators (in the form of greenhouse gas emissions reporting requirements), from their investors and the wider capital markets, and finally from consumers and the wider public. The pressure on these companies – from consumers, shareholders and voters – to demonstrate meaningful progress is the force that is ultimately driving the creation of these new systems and the opportunities they represent for farmers.

The need for MRV Sytems

Another key feature these programmes and initiatives have in common is that they require scalable and scientifically rigorous tools to deliver Measurement, Reporting & Verification (MRV). For farmers to get paid for the practices they implement (e.g. reduced tillage, cover crops etc.) or the outcomes they deliver (carbon sequestration, improved biodiversity, and enhanced water quality), these deliverables need to be measured and verified independently before a payment will be unlocked. And doing this at a national or global level requires a high degree of scalability. Manual systems, spot checks and on-farm audits are too expensive, time-consuming and labour-intensive to offer a real scalable solution.

This is where automated satellite based MRV systems come into play. By combining satellite imagery with machine learning techniques, it is possible to detect farm management practices accurately and thereby give farmer reward programmes the rigour and validation they need.

Of course, not everything can be detected from satellites – you can't see pesticide applications from 500 miles in the sky – but features such as field boundaries, crop types, cover crops and even tillage practices can be monitored and verified. Packaging and bundling these into an automated, synchronous and ultra-scalable MRV engine gives the industry and all its stakeholders an answer to the question of how to reward farmers for the positive externalities they generate.

A positive future ahead!

For farmers, it remains challenging to navigate the new and evolving landscape. Many are frustrated by a lack of clarity from regulators and customers about what is expected from them and how. Farming is a highly capital intensive business with a multitude of exogenous risk factors and thin profit margins, so clarity and the ability to plan for the future are absolutely critical.

But from the current disruption, some wonderful opportunities are likely to emerge for pioneering farmers who wish to embrace regenerative systems and get rewarded appropriately for doing so. The excitement among so many entrepreneurial farmers is a reflection of the fact that they will be able to tie their livelihoods and profitability to a positive impact for their land and the wider planet.

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