

Agriculture - President at Stratagerm Consulting

Interview conducted on August 22, 2023

Topics

Crop Insurance, Government-backed policies, Whole Farm policy, Cover Crops, Adoption Barriers, Risk Management, Organic Farming, Regenerative Farming

Summary

The Tegus Client speaks with an agricultural economist about farm loans and insurance. They discuss different insurance options for farmers, including subsidized crop insurance for large commodities and the new Whole Farm policy. The conversation also covers the impact of cover crops on insurance coverage, the size of the private insurers market, and the challenges farmers face in adopting organic and regenerative practices. The expert expresses skepticism about carbon farming and carbon credits, and highlights the resources available to farmers for transitioning to organic practices. Despite challenges, the expert acknowledges positive developments in the industry.

Expert Details

Foundering Partner of Helianth Partners, the President at Stratagerm Consulting, an Investor at Portfolia, and an Adjunct Professor at Bentley University. Expert can speak to this industry in depth.

The expert is the Foundering Partner of Helianth Partners, the President at Stratagerm Consulting, an Investor at Portfolia, and an Adjunct Professor at Bentley University.

The expert is the founder of Stratagerm Consulting, an agricultural and business consulting firm. The expert has worked in the food and agriculture sector for over a decade. As an economist and a business consultant, the expert works with the global seed industry, agtech companies, conventional and non-conventional agriculture firms, and philanthropic foundations. The expert's work has taken her around the world, helping industry leaders manage and grow their global businesses. The expert has spoken at workshops, meetings, and conferences in the United States, Asia, and South America, wrote *The Demise of Free Trade*, has been published in over two dozen publications, hosts a podcast, and is a professor of economics at Bentley University. The expert holds a Masters in Agriculture Economics from Purdue University and an MBA from Indiana University's Kelley School of Business.

Q: Please elaborate on your thoughts regarding the range of crop insurance policies available on the market.

A: Government backed, (USDA, RMA) versus private insurance policies has a major impact on the cost and availability of the product. The type of policy that a producer wants and if they are located in a large growing area is also important, for many reasons (better data, more knowledgeable sales reps, diversity of insurance options etc).

Q: In 1-2 sentences, please describe the factors that influence premiums of crop insurance policies.

A: Academic research points to how often policies have to pay off for consumers to keep purchasing them. US Government policies pay out regularly and at high enough dollar amounts that many farmers purchase them. In commodity production, it is very common on the production end. Farmers need to see the benefit, and the value so they don't try to cut the expense during lean years.

Tegus Client

Thank you for taking the time to speak with me today about the finance side of the farming practices, such as farm loans and farm insurance. To start off, could you please give us a quick overview of your background

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and experience in this space?

President at Stratagerm Consulting

Sure. So, I am an agricultural economist. I started my career in D.C. working for an agriculture consulting firm where we specialized in federal policy, relevant to this conversation would be writing outlines and evaluating risk management policies for the USDA as well as looking at markets like the sugar market, trade flows, food security, ongoing report for Japan.

Then I moved to a trade association where I promoted U.S. agriculture all over the world and worked directly with farmers on both international policy and federal policy. And then five years ago, I started my own firm. And I started my own firm because I wanted to work across all different sectors. So, I work in food systems. I have done some work in AgTech, both in vertical farms as well as some hedging and other insurance-type options. I do a lot of market research and feasibility. And then a big piece of what I do is understanding farmer incentives.

And done some work on writing contracts and policies that, for lack of a better word, speak to farmers. So, there's generally somebody that wants to do something differently and how does the farmer assess risk and opportunities and how do we make a policy that makes the farmer want to grow, whatever it is that the company is looking for.

Tegus Client

Got it. And we could start with the insurance side of things. So, I understand there's government-backed insurance policies as well as private policies. Can you just draw for me a high-level map of the different insurance policies that are available in the market for farmers, focusing on producers or crop producers, not animal rearing. And you can also explain the distinction that you see between commodity crops and other types of crops. And where is the line between subsidized versus private insurance policies?

President at Stratagerm Consulting

Sure. So, the large commodities, your corn, soy, wheat, cotton, I would even put peanuts and rice in that category, those types of crops have subsidized crop insurance that is backed by the risk management agency in the USDA. And so, what happens is that farmers, especially if you're in a region where there's a lot of county level data, you can use county level data to determine either the average yield for your location in these crops or the average price.

So, more recently, there was a price policy that was added in a more recent farm bill. And so, basically, if you have the insurance, I believe you pay a portion of the premium, like 65% of the premium and you get 80% coverage. And so, if your yield is below the county average or the price that you earned is below the county average because of the volatility of prices, you can apply for an indemnity, and it gets paid out. And so, then the indemnity gets paid out.

Where it gets a little bit more challenging outside of those big acres is, one, if you're not in one of those places, then you need to use your data, which generally requires five years of past data. So, you don't get the advantage of having other people's data. And there's a delay to entering these programs.

And that's true for a lot of the specialty crops as well. So, there could be county data, but because they are specialty crops, it's a very localized region. If you're producing outside of that, there needs to be enough data to be able to write that policy and figure out what the indemnity level would be.

And then that happens even more specifically because you can grow these crops. You can grow corn for conventional market, but you can also, grow corn that is a higher premium. And it would be sold to a food producer or used as corn seed. And so, those policies then become very targeted as well.

Tegus Client

Yes. And when you go outside in those more targeted insurance policies or policies where you don't necessarily have five years of data, that's automatically in the private market. Is that right?

President at Stratagerm Consulting

Yes. So, there are some private policies, I would say, in the large commodities. But I don't know that they're even used that much. The places that I've seen it would be a large producer. So, one of the things that comes to mind, I know you didn't want to talk about animals, but this is the example that I have top of mind, was when the risk management agency was looking at creating a salmon policy, there weren't enough public actors to support the policy itself.

And so, the companies would then seek out private insurance in those cases. Like you asked, if there's not enough, then some people will look at creating their own policy. I think that the challenge is that you have to be of a specific scale to get there.

There is one other type of policy, which is new in the last farm bills of the 2018. And it's just rolling out. And it's called the Whole Farm. And so, one of the challenges for the policies I just mentioned is they're tied specifically to the crops. But smaller producers have diversified farms. And so, they are going to produce a lot of different things.

And so, this is an attempt to capture them and aggregate all of their data and all of the value of their crops across a whole bunch of different commodities, and not necessarily for one big crop like we see in large production agriculture.

Tegus Client

Got you. And how does that policy work if you don't have as much data? I would assume the data is a bit more granular since you're growing multiple crops. How does the new policies approach that?

President at Stratagerm Consulting

Yes. So, you have to work with your farm service agency representative and submit previous records of crop production and value and yield. And then they work with you to create that policy. I would also, add that the FSA, the Farm Service Agency is at the county level, who people work with when you have an agent, but you also, work with your Farm Service Agency office, your FSA office.

And I think that that's one of those places where the commodities have an advantage is in areas where there's commodity production, there's a lot of knowledge. So, you have insurance agents and FSA agents that are well versed and understand the market. And they're able to explain what's going on. And the bankers are used to this, and the bankers understand how much that policy is going to pay out.

And so, all of that just makes it easier. And once you get outside of those tight growing regions or you get into more of the specialty crops, the challenge is that you don't have that same level of expertise and comfort, which I think just brings risk to the entire system.

Tegus Client

Got you. And in those cases, if we take it a different way across commodity crops across specialty producers, what's the percentage of firms that get USDA insurance policies versus private policies versus no policies at all?

President at Stratagerm Consulting

I mean on the broad anchors; I think that you end up between 80% and 90% have USDA coverage. So, one of the challenges of insurance is we pay premiums all the time, and they don't necessarily pay out enough. And so, governments like for your car insurance, they want you to have it, so, it's legally required.

Your bank wants you to have it because they own the house. The interesting thing about USDA subsidized crop insurance is that it pays out enough that people want it. And so, you end up with on those big commodities. You end up with 80% to 90% sign up. And the people that aren't signing up have very specific reasons for not signing up. And some of those have actually evolved over time.

So, for a while, you couldn't plant cover crops because it was considered a second crop and how did they evaluate that into the system. So, people that wanted to plant cover crops didn't apply for insurance. That

rule has been changed. There's a fixed day, you have to have something in the field by x day, depending on where you're located.

And so, if for some reason you had bad weather and you couldn't meet that or you didn't want to meet that for production reasons, people might not get it. But there's normally a very specific reason why you haven't applied, why you're not getting the coverage because either it does play out every couple of years for you and/or your neighbors.

And so, there's just such a high payout or so often that it pays out, especially with the yield and price. And so, for the last few years, the price of commodities has been low after peak in 2012, '13, '14, '15, that people were getting paid because the price of corn had fallen and so, you're getting that adjusted price.

So, on those commodities, I think that there's a really high uptake. And people that don't have it have a specific reason. And it's not generally that they're getting insurance somewhere else. For the smaller commodities or specialty, I think that the reasons are that it's a much higher lift to do.

They're not used to the programs. I was in Massachusetts, and I was visiting some farms in the last couple of weeks after the terrible rains that we've had and the floods in Vermont. And it was a lot to tell people to say, you really need to declare this as a disaster. They don't have their insurance policies. So, that's not going to kick in. But there are state and federal programs that are available post disaster.

And so, for people that haven't fit into that big production and aren't used to the system, getting them to engage, I think, is the biggest challenge. And especially on the diversified farms, they are either using contracts or multiple streams of revenue on multiple sales points to try to protect themselves against risk, weather risk more specifically.

Tegus Client

Okay. I want to go back to what you were saying about cover crops. So, one of the angle we're looking at this is how can we enable more transition of farms to organic or even regenerative practices, one of them being using cover crops. And I've heard that the insurance piece was a big issue for farmers that they would lose their insurance coverage that they're used to. Can you just speak a bit more about this issue and how that's changed with the new rule?

President at Stratagerm Consulting

Yes. I don't know. So, crop insurance replaced a little bit of history. Crop insurance replaced direct payments. So, I want to say since farm bills were created during the Great Depression, Dust Bowl until the '80s or so. Farmers were paid an amount by the U.S. government to plant a crop. It didn't matter if it succeeded or not, they got a direct payment. In an attempt to reduce budgets and subsidizing farm and the optics of that in the '80s and '90s, I guess after the farm credit crisis of the '80s or probably in the 90s, there was political move towards crop insurance.

So, the government's is not going to pay you just to grow corn, but we're going to pay you if you have a crop failure so, you don't lose the farm. And the intent very much was not to lose the farm. And so, those original policies were during a time of high tillage and GMOs coming in, so, you could spray. And what happened was they said, look, we want to understand the yield and the value of that product, and so, we don't want other things to be planted.

So, even though you're going to plan with the cover crop in the fall and terminate it before in the spring, what if you sold it, how does that affect your farm budget, and why are we subsidizing the crop insurance if you're selling something else. And there is yield drag and there have been questions about yield drag. So, as this government, am I going to pay you for growing corn when you're doing this other thing, that is lowering your yield and causing the payment.

And so, without that science worked out and without the understanding of the benefits of cover crops, and I would argue that it's not without the understanding. I think the Dust Bowl was caused by over-tillage. So, we've known for a long time that we need to have these conservation practices. But as these policies were written, they didn't have the conservation in.

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And as cover crops has become a big part of the conversation, especially with erosion and soil quality management as well as protecting runoff in waterways, one of the challenges was would you be at risk for losing your crop insurance because you've planted this extra plant. And that has been revised. So, there, you can apply for crop insurance if you are planting a cover crop and it does not penalize you.

And a lot of that came from environmental group work as well as. I mean, environmental and conservation group as well as the grass, seed companies that are the ones that are producing the seed. So, the rules in that way have been changed to the point that American Farmland Trust actually offers you a \$5 rebate on your crop insurance for planting cover crops. That's one of the incentives to try to get that onto the field.

Tegus Client

Got you. And so, you think that's well understood by farmers and the adoption is good now of cover crops as a result? Or do you have a different read?

President at Stratagerm Consulting

I don't think that that is a barrier. I think it highly depends on the region, how well the cover crops are adopted. There are a lot of reasons why cover crops are not adopted. That place actually with the highest adoption is around the Chesapeake Bay, so, that Maryland, Delaware region, you have the highest. And part of that is Maryland has a tax that is paid by everyone in the area that subsidizes the cover crop. And so, in that case, they actually have the highest rate.

I think that adoption is coming up, but the cost of planting the seeds and terminating the seeds as well as purchasing the seed is not insignificant. It is a different style of farming. And so, it does require a mindset shift. With an aging farm population, farm owner and operator population, you have resistance on this, I have always done tillage.

There's a lot of social pressure on it. And people say, call the field with cover crops, weeds are dirty. There's a social aspect of I want to do what my friends do, and I don't want my friends not to like me because they plan to cover crops. And so, it's not just crop insurance not being available.

I think that making crop insurance available reduces a barrier for sure. But there are the extra costs, the extra management. They're changing the practices. If the owner of the land and the operator of the land are two different people and have two different feelings about cover crops, it might not happen. You still have crop budgets that come out of extension that say, this is going to cost you money in the end and make you less viable because it reduces your cash flow. You're spending more than you would if you didn't buy the cover crops.

And there aren't necessarily enough programs to cover all of those costs, but it is a breakeven. And you might not see a yield increase or a quality increase or fertilizer reduction. And so, I think that there's a lot of reasons that cover crop adoption is not high.

Tegus Client

Yes. But just to recap, in your mind, the top reasons are social pressure, uncertain ROI. Is that fair?

President at Stratagerm Consulting

Yes. And then just as a little side note, it doesn't make sense in all places. I mean to put it somewhere really far north, those cover crops aren't going to grow long enough before winter that it makes a difference. So, I also, think that there's some practical. There's places far enough south where instead of growing a cover crop, you could put in a second cash crop because you have enough time. But I would argue, by and large, that it is the social and economic factors that continue to limit cover crop adoption.

Tegus Client

Just a curiosity on my side. So, I've heard the narrative that using cover crops ultimately make your farmland more resilient. As a result, shouldn't that reduce your insurance premium because your risk is theoretically reduced on your yield?

President at Stratagerm Consulting

I think the short answer is yes. The long answer, I think, is more complicated. And reducing risk over time, you're stabilizing your yield and your quality over a long run. If you're a 58-year-old farmer and you begin to see those improvements slowly in years three through seven.

So, if you're a 58-year-old farmer, are you going to be farming in 10 years from now that you necessarily care what happened. That, I think, is a piece of it. I would be one that says, hey, risk management agency within the USDA understands all of the payments that are paid out. And Farm Service Agency understands all of the practices, like why can't we connect those two databases, improve exactly what you're saying.

And there are lots of reasons. But by and large, I mean, the databases don't talk to each other. They're different formats, they're different years. But it also, creates a lot of really sensitive farm data. And farmers are very nervous about the collection of data and what that means and how it's going to be used. So, I think the challenge in saying it makes cover crops or conservation practices make your farm more stable over the long run assumes that somebody is going to be there over the long run. And is that true for every crop.

The most common thing that people talk about is soil organic matter for corn. But soil organic matter doesn't have any impact on how well your soybeans do. So, if you're looking at a rotation, does the impact benefit all the way through. And as you're changing markets each year, how do the different markets respond to conservation practices or premiums or so forth.

Tegus Client

Yes. And let's say, you have a large capital provider to come in and take that leap of faith on regenerative practices or just cover crops would reduce risk and be able to underwrite those policies, or would not work because at the end of the day, you can't compete with the government that subsidize 50% of premiums?

President at Stratagerm Consulting

Right. I mean, I think that the right statisticians and actuarial, it would definitely be worth. If I was looking at it, it would definitely be worth the time to run those models. I mean, in the models that I have run on covering the cost and trying to sell the value proposition or on the company side, having a narrower yield and having a more stable quality does have a risk advantage for the farm.

And so, trying to explain that is something that I have spent time doing, and I think is really valuable. Whether it would pencil out and be enough? I don't know. But this is getting into my very personal opinions on it. I mean I do think that on the food company side, that I mean the food companies aren't necessarily driving the market when they offer to pay premiums or require conservation practices because so little of the crop acreage goes into food.

But what I do think that they care about is stabilizing prices. And so, if the soil is better exactly like you're saying, the price of corn doesn't swing from \$3 to \$8 in less than six months like it did a few years ago. And \$3 to \$8 bushel difference to someone like General Mills is huge. So, if you are in periods of volatility and you can stabilize the supply, I definitely think that that is valuable. But it's more of a risk to play as opposed to profitability, I guess.

Tegus Client

Got it. And you said they're not driving the market. But do you think they're able to drive at least change on their acres that they are controlling? Do you think they're sourcing from? Do you think you have enough influence for that?

President at Stratagerm Consulting

I think that they do. I think one of the challenges of the supply chain is, there are food companies that want to source specific products, and there are farms that will grow those products. But you need an intermediary in the middle. And the intermediary means that we'll have to add that identity-preserved channel and keep all of the data to prove it, to prove the stores and the environmental claims and so forth. And right now, that middle step is expensive and there's resistance there.

So, I think that, yes, the food companies can require that certain practices are done. But again, unless we have 90 million acres of corn and 5% go into food, so, 4.5 million acres, you're not really changing the system. And we have more than 4.5 million acres of corn with cover crops. So, it starts to drive that. But personally, I think there needs to be other places that are going to take these or pay the premium unless it is somehow regulated that certain practices are required.

Tegus Client

Got you. So, how big is the private insurers market? Which farmers actually go for private insurance?

President at Stratagerm Consulting

It is small. And I would say that the farmers that go for it are ones that have a large investment in a specialty crop that is not well covered. So, it's definitely an option of last resort, not generally a first option. It's not very common at all. And there's just not a lot of available information because it's something that a company is going to work with a specific insurer on as opposed to having a model policy that we can all look at, like the crop insurance ones. Or like the risk management one.

Tegus Client

Okay. And I had one other question for the subsidized insurance policy. What are the reforms in season for the farmers? What they needed to do to keep their coverage value?

President at Stratagerm Consulting

I mean the big one is the planting date and I mean, applying by a specific date with the Farm Service Agency office, having the correct papers for the last few years to show that they have the yield or price that they are getting coverage for, and then planting by a certain date. And some of the smaller crops, so, I know that buckwheat, to get a policy, you have to show a contract for the price.

So, the market is really small, and we export a lot of it. And so, one of the requirements for crop insurance is to show that you have a contract in place to sell it, to give that new price. But by and large, you need your production practices proof that you plant a device, certain day, applied for it and then potentially prove that it is in the field.

Tegus Client

Got you. Do you need to show any practice in terms of amount of fertilizer sprayed or beside spray?

President at Stratagerm Consulting

No. But I will say that one of the other challenges on conservation practices is that for farmers, the spraying is an insurance policy. I think it's a very hard mindset for most people to understand. But in April, you plant your field and you've spent a huge amount of your money, and your livelihood depends on that crop coming out in October.

And so, if you are seeing that it isn't growing well or there is damage or something, I mean, you want to spray, putting a couple of pennies of fertilizer down on your acreage to guarantee that you're going to get or hope that you're going to get a better yield is something that most people are willing to pay for.

And I think that a lot of farmers are willing to pay for that because they've got to get that yield at the end. They've invested everything and they really need the heart of that. And it is a tool that they have. And so, I think in farming, we don't realize that it's just sitting there for six months and praying that it works out.

Tegus Client

Yes. So, if you speak to that, what could reassure farmers? Let's say, if your ultimate do good goal is to reduce fertilizer usage, how do you do that? Do you have better analysis of plant in soil that can give confidence to farmers that they're going to grow? Or do you think there's no solution?

President at Stratagerm Consulting

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I mean I do think that the soil health, that could alleviate some of that. I think it's a little bit like smoking, that if you really want farmers to reduce and be all bought in, I'm in favor of purchasing equipment that you don't want them to use so, that the temptation isn't there. I also, think that it's not just soil quality.

I mean derecho hit Iowa a couple of years ago and took out 15 million acres of corn overnight. It doesn't have to be necessarily soil. Obviously, soil would help with some of the drought or water filtration. But if you have a tornado, go through your field, there's not really much you can do. And on the California side, there's nothing that the grapes absorb smoke and are not usable. And so, if there's California wildfires, it doesn't really matter what your practices are. If it's a smoky year and all of your crop is tested and contaminated, it didn't matter what you did.

Tegus Client

Yes. But again, it's not to do anything if you apply fertilizer either?

President at Stratagerm Consulting

Right. There are times where applying fertilizer may be an action that could help you, but there's also, a lot of reasons for crop failures that have nothing to do with fertilizer.

Tegus Client

Okay. So, if you can change something about the system that would help with farmers adopting more organic practices or even regenerative practices, what would it be?

President at Stratagerm Consulting

Well, I don't know. I mean, on the organic specifically, I think the biggest challenge on organic is if you make it all the way through and have a crop that is sellable. And that bodes for the value of organic, it is extremely valuable. And the challenge there is there are lots of times, there's just such a high percentage that doesn't make it through. And so, that loss is really high. I don't know. I mean I think organic has its own challenges.

As far as regenerative, I do think that the policies to subsidize cover crops is helpful. I think that financing to have more equipment, cover crops and no till or strip till require different equipment and conventional practices. And so, it's not just the \$40 for the seed. It is \$200,000 for a new piece of equipment to add to your tractor. So, I think that that is a challenge.

So, I think that there are a lot of things that can be done on the financing. I mean, I agree with your premise exactly. If this makes the soil better by and large and stabilizes yield, why don't we get a premium. I think that, that is a huge barrier.

Why don't we get a reduction on our crop insurance premium? I think that lowering the cost of insurance, even though it's subsidized because you have planted cover crops and done no till is a huge incentive. I think that a big source of information for farmers is ag-retailers who are selling the chemical or the ag-extension who have been doing the same thing for years.

And so, you just have the system of farm service and farm credit and ag-retailers and extension outreach, who are all saying, this is the way we farmed for 50 years. And that's a lot of voices that a farmer is listening to. They're all pushing the same thing. And so, that conversation and educating those people and having a different conversation, I think, is what would really drive the most change.

Tegus Client

Yes. Well, it's one of my early observation was that to your point, there's a lot of voices and established system that promotes conventional farming. But when you go to region, yes, you have a lot of voices out there, but there's spread and they're not necessarily present in all states or geography?

President at Stratagerm Consulting

And I would just be careful that some of the biggest voices and like the celebrity in the regenerative space, I would love to see their crop budgets. I would love to see their farm budgets. How much money are they

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making speaking about regenerative and how much money are they making on their farms.

And so, just thinking about all of the different ways that farms make money, and that's not just regenerative. I mean one of the farms by me is getting millions of dollars from the state to drill a 500-foot hole as they're mapping out a new water pipeline, so, solar panels and cell phone towers. I mean, farms get money from a lot of different places. And being realistic about what's coming from crops and what's coming from other places and how that all fits together, I think, is really important.

Tegus Client

Got it. What about loans? What about loan products? Do you think the banking industry understands organic and/or regenerative practices?

President at Stratagerm Consulting

I think that in traditional places, no. I would say in a lot of ways, they are not. And again, we understand how to look at your crop budget. We understand the likelihood of your success. We understand that what money is available from crop insurance at the end of the year. And that's how we make the decision.

And there is more inherent risk as soon as you're moving to specialty markets. There's more risk in regenerative and in organic systems. I think, a huge difference maybe for your information between an organic system and a conventional system is conventional systems have generally one-year leases on your big ag crops. And organic have 10-plus year leases. I believe the average lease is 11 years.

And I think that that's probably a big barrier as well because organic having longer the lease means that the producer is willing to invest three years in transitioning and not getting the organic premium and losing money because they have eight years after that to make the premium, and it's worth it.

And so, if I'm renting land, am I really going to buy cover crop seed and plant it and do the extra work and make less money if I don't know I'm going to have that land next year. Why as a producer, a renter am I going to invest in soil quality when I'm not guaranteed the lands next year. And as an owner, some owners might want to require it, but they have to find an operator that's willing to do it, and how do you share that cost and benefit long term.

Tegus Client

And what's the split between one-year leases versus long-term leases currently in the U.S?

President at Stratagerm Consulting

I mean, so, on your corn, soy, wheat, cotton, those type of crops, they're one year. I mean they're generally one-year leases. They are not longer than that. I would say that something more interesting is in places that are dryer. There is more revenue sharing.

So, somewhere like Kansas that's dry and dryland acres, the farmer pays a lower rent to use the land, and the owner takes a percentage of the crop value if it's profitable. Somewhere like Iowa where water is less of a problem and crop failure is less likely. It's a higher cash land and there is no profit sharing. So, more profit sharing might be part of the solution or conversation on driving that practice change.

Tegus Client

Do you have an opinion on carbon farming and carbon credits?

President at Stratagerm Consulting

I have an opinion on most things. On carbon farming and carbon credits, I think that it's a challenging market. I think that there's a lot of skepticism in farms. I think that it's something that a lot of the work I do, people say, we're going to prove that this project is feasible without carbon credits. And then they always want to add it in to make the numbers look better.

But I think on just the basic carbon credit, I think the challenge besides the value and figuring out how to sell it, and farmers thinking that they're getting a fair deal and the lack of consistency and so forth. I think one of

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the challenges, again, back to that 10 years, it takes a while, to get to the point where the credit is valuable, and want to say that, that person is going to be farming that land in 10 years from now. What's to say that the owner is going to be alive if they're in their 60s already.

And what happens when you have a terrible weather year, your crop is destroyed, and you have to till it to get out of the field. It's premised on you don't till for 10 years, but there are reasons that to save the farm, you have to till. And so, like what do you do in those years? You lose all that you've added in. And then just I don't think that ag sensing is at a place yet where we work on averages in computer models. But six places in one field are going to have different carbon capture after 10 years from now, and how do we deal with those differences.

Tegus Client

Okay. Switching back to the farmers. Do you think farmers have the tools and/or the right resources to see the right insurance policies, the right incentives? Or do you think they're leaving a lot on the table?

President at Stratagerm Consulting

I think that there are a lot of farm resources. I think that the biggest challenge or concern maybe I have for farmers is that most people that help farmers and advise farmers are trying to sell them something. I mean, so, you've got banks that are selling them loans and you've got ag retailers that are selling them seeds and chemistries. You've got equipment companies and precision ag companies that are trying to sell them technology.

And I just feel like that's a very different place than most of us operate, everybody that talks to a farm and advises them on how to run their business has a vested stake in what they decide to do. So, there are a lot of places that farmers get a quick information. I think they trust a lot of those people in places. But I think that makes it hard to change the system.

Tegus Client

Okay. Do you think if you assume a farmer is really committed to transitioning to organic or regenerative practices, planting cover crops and so on, do you think it's easy for them to find the seeds, biological inputs, equipment? Or do you think it's hard for them to find those, assuming there's a motivation on their side?

President at Stratagerm Consulting

I mean I think it can be done. I don't think that any of that information or tools is particularly hard to come by. I mean on the tool maybe; I think it can be an expensive transition. But really, the piece that I think that's hardest to come by is that regenerative and organic require a lot more labor.

And we have a serious labor challenge in this country and more specifically in agriculture. And so, when people talk about transforming hundreds of millions of acres to these other production systems that are less recognized and require more labor, I question where that labor is going to come from.

Tegus Client

And do you think it's solvable through better immigration policies or anything else?

President at Stratagerm Consulting

I think that better immigration policies would definitely help. I think that automation is a piece of it. But I don't think that either one of those are the solutions, yes. And it's not just wages. And so, I actually try very hard not to talk about farm labor so much because it's super nuanced. But there are a lot of places where to pick fruits and vegetables in fields, they pay well more than \$15 an hour. And it is very hard to find labor even at well-paid rates.

And there's a study from Davis that they had 100 people that were nontraditional farm work, so, not immigrants basically. And 92 of them quit on the first day, and none made it through the whole week. So, I think that farm labor is a huge problem. And automation and immigration would definitely help, but I'm not convinced that they're necessarily going to solve the problem.

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Tegus Client

Got it. I mean, it seems there are so many companies out there that sell new robots for farms. And it didn't seem like there was a lack of trying at least to innovate in that with that respect?

President at Stratagerm Consulting

Well, I mean, I think, one, it depends on the crop and the scale. So, there's definitely interest in it. But you have to be at a big enough scale to make sense. And yes, I think scale is a big thing. And I do think that there is interest in mechanizing some places. And there are places like greenhouses or glass houses that are probably easier to do. But I mean, to get a piece of equipment that is delicate enough to pick strawberries without crushing them, I think, is a challenge. And speed is a challenge, and going through the field multiple times is a challenge.

So, I just think that there are a lot of different places. And again, if you're talking about a farm that is even five or 10 acres and they're planting vegetable crops, and they're planting a bunch of different crops, there's different pieces of equipment for each crop. And so, at what point when I have one acre, does it make sense for me to invest in this piece of equipment, which is very hard to share because everybody needs it at the exact same time, versus just go out and do it and hire labor to handle it. And so, I think that's a difficult trade-off.

Tegus Client

Yes. But if you do crop rotation, I would assume it's easier to share, because more people in the same area won't necessarily grow this in crops?

President at Stratagerm Consulting

The harvest dates are still the same. I mean the harvest rates aren't going to change that much. I mean corn and soybeans are all harvested in October. And so, I mean, that's the challenge where I looked at putting together programs that you could rent the equipment for the first few years, which would be of interest in the first few years that you would need to plant those cover crops.

And the challenge is that basically, everybody needs the equipment for two weeks twice a year. And what do you do with it outside of that and what you do with it if you don't get your slot in that time.

Tegus Client

Got it. So, is there something that you're particularly a fan of something that someone does or a new development that gets you excited about the potential of that space?

President at Stratagerm Consulting

Yes. I think that there are a lot of really interesting companies. I hope I didn't come off as too negative. I mean to your point about the automation, there is a company that has the robots that mow and pick weeds between the fields, I think that that is a great option. I think that I like a lot of the precision ag stuff.

I think that making it possible, some of the traceability work that's being done and being able to track soybeans from a farm all the way to an end product is super exciting. I don't know who else do I talk to. I mean, I think that agriculture is moving in a good direction. And I think that there is a lot of really good conversation happening and good research being done. It's hard to shift an entire industry. I mean it's an industry from crop at all of these different places.

And I guess one more thought on the farm side and how farmers perceive risk is, I don't know how many deals you're going to look at this year, but a farmer gets 40 tries roughly in their lifetime to do their job, and each year.

And making a change is really hard because that's one of 40 seasons, and they can't get it back. And so, there's just a lot of pressure all the time in adopting new things. And so, I think it's hard to convince farmers to adopt new practices or change or take on new technology. But I think that once they are willing to, they're extremely loyal and you see the transition scale up quickly.

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Tegus Client

Okay. Well, thank you again for taking the time to speak with us today. This was very helpful. Enjoy the rest of your day.

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