Center for Strategic and International Studies

TRANSCRIPT

Event

"From the Ground Up: Demining Farmland and Improving Access to Fertilizer to Restore Ukraine's Agricultural Production Report Launch"

DATE

Wednesday, December 13, 2023 at 9:00 a.m. ET

FEATURING

Markiyan Dmytrasevych
Deputy Minister of Agrarian Policy and Food of Ukraine

Jasmine Dann
Head of Operations for Mykolaiv and Kherson, The HALO Trust

Richard McLellan
Former Senior Vice President of Marketing and Distribution, The Mosaic Company

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Caitlin Welsh: Ukraine's agriculture sector has been a major front in Russia's war since February 2022. Due to Russia's widespread and intentional attacks and the collateral damage from fighting, Ukraine's agricultural production has plummeted in the last two years.

Restoring Ukraine's ag production is critical for many reasons. Among them, first of all, for Ukraine's economic recovery, given the importance of agriculture to Ukraine's GDP. Second, for the millions of people worldwide who rely on Ukraine for their food security. And third, for countering Russia. Ukraine's exports can help counter the influence Russia is wielding through its own agricultural exports today.

I'm Caitlin Welsh, director of the CSIS Global Food and Water Security Program. In partnership with Cargill and the Mosaic Company, I'm pleased to welcome you to the public launch of our CSIS report "From the Ground Up: Demining Farmland and Improving Access to Fertilizer to Restore Ukraine's Agricultural Production."

To restore Ukraine's ag production, investments are needed across Ukraine's agriculture sector. Our report starts from the ground up, focusing on two important aspects of Ukraine's agricultural recovery on demining farmland and improving farmers' access to fertilizers.

This report is the culmination of research and interviews with numerous representatives of the Ukrainian and U.S. government, companies, researchers, NGOs, U.N. agencies, and other experts. We are so grateful for their input and proud to publish this report.

And we look forward to examining the issues of demining and fertilizer access with our expert panel shortly. We also look forward to welcoming Ukraine's deputy minister of agrarian policy and food, Markiyan Dmytrasevych, for keynote remarks in a few moments.

But first, I want to give special thanks to our report's co-authors. Thanks to Vitalii Dankevych, economist and a dean at Polissia National University in Ukraine, for your invaluable insights and continued partnership from Ukraine. Thanks to Joseph Glauber at IFPRI and Antonina Broyaka at Kansas State University for your world-class research and generous partnership in our work. And last but certainly not least, thanks to Emma Dodd, research associate with my program, for your exceptional contributions to CSIS research on these issues since February 2022, and for your partnership in publishing this report and producing today's event. My sincerest thanks to each of you.

And finally, one last announcement before we begin. After our panel discussion, we will welcome and we encourage questions from our

audience. You could submit your questions at the “ask questions here” button on our event page.

And without further ado, it’s my pleasure to turn the stage to Markiyan Dmytrasevych, deputy minister in Ukraine’s Ministry of Agrarian Policy and Food, who is joining us today from Kyiv. Deputy Minister Dmytrasevych is responsible for international cooperation at the ministry. Mr. Deputy Minister, thank you so much for joining us. It’s our honor to have you. The floor is yours.

Markiyan Dmytrasevych: Thank you. Thank you, dear Caitlin. Thank you for giving me the floor. And thank you and the team for the work that you have done during the last year.

Your report touches on two issues out of the list of the main important vulnerable spheres in agriculture, demining and access to fertilizers.

It’s not a secret for anyone that almost two years ago, in February 2022, Russia vigorously started its invasion of Ukraine. As Ukraine traditionally used to import a major amount of fertilizers from Russia and its partner in crime Belarus, we have faced a lack of propositions of fertilizers on the Ukrainian market. At that moment it didn’t seem to be the biggest problem, as the main problem for Ukrainians and Ukrainian farmers in particular was to survive and defend our territories. But in little time Ukrainian farmers started their sowing campaigns, even on the territories close to the battlefront.

Meanwhile, the Black Sea ports were blocked by Russian forces, which caused the necessity to create new export routes, as before the war about 95 percent of Ukrainian agri products were exported through the seaports. As a result, in cooperation with European Union, the solidarity links were launched. Solidarity links played a huge role in the export of agricultural products in 2022, but at the same time the logistic expenses increased dramatically, sometimes in two, three times, from about $60 per ton to Black Sea ports up to 160 or 180 U.S. dollars to Romanian and Polish seaports.

That was crucially important regarding the availability of financial resources that could be allocated for fertilizers purchases. We have seen significant decrease in the use of fertilizers. In this regard, we can see the direct connection between the availability of Ukrainian southern seaports and the financial possibility of farmers to purchase fertilizers.

Fortunately, we can see that our seaports are functional right now, even if they're under the permanent risk of being shelled with missiles. And we hope that this fact, together with different initiatives of the Ukrainian government on the provision of additional financial tools for Ukrainian farmers, will create more possibilities and better access for farmers to fertilizers.

At the same time, it's understandable that military activities will provoke the contamination of agricultural land and farms with explosives of the remains of missiles, mines, weapons, et cetera. Not only farms and agricultural land are polluted with explosives, but civilian zones as well. But as soon as we represent the ministries that covers the issues of agriculture, our goal is to organize the fastest possible demining of our agricultural lands and farms.

I want to express our gratitude once again for underlining and drawing attention to the importance of demining of Ukrainian agri land in your work in your report, and I also would like to inform you about the ministry's initiative on this point. Ministry of Agrarian Policy and Food of Ukraine has launched a joint project with World Food Programme and FAO on demining the agricultural land in Kharkiv and Luhansk Oblasts as the most affected newly liberated territories. The project is being funded by donor costs, so we will highly appreciate for interest, and possible donations for this program are also very welcome.

I thank you again for your report, for your work, and for this opportunity to speak today, and to see our participants. Thank you.

Ms. Welsh: Thank you, Deputy Minister Dmytrasevych. Again, it was an honor to host you. Thank you for your remarks, which we will build on in our panel discussion.

And I'm very pleased to turn to our panel right now. And it's my pleasure to introduce our panelists.

We have Jasmine Dann, Head of Operations for Mykolaiv and Kherson with HALO Trust. Ms. Dann is joining us today from the U.K.

We have Rick McLellan, former Senior Vice President of Marketing and Distribution with the Mosaic Company. Mr. McLellan is joining us today from the U.S.

And we have Vasile Varvaroi, Regional Lead for the Blue Danube & Ukraine with Cargill. Mr. Varvaroi is joining us today from Romania.

Welcome to each of you.

And Jasmine, it's my pleasure to start our conversation with you. You've been with the HALO Trust for over five years. You've spent a significant part of that time in Ukraine. Can you tell us about what HALO Trust is doing in Ukraine and what your own operations are since you're head of operations for two oblasts there?

Jasmine Dann: Well, thank you very much for having me. It's a pleasure to get to join today.

So HALO Trust is a humanitarian demining organization. We work in 30 countries worldwide, including Ukraine. We've actually been operational in Ukraine since 2015, so we were already conducting demining in the Donbas region. And when the most recent phase of conflicts began, we had to move our teams. We then regrouped around Kyiv. And I'll share a map here just now to show you a better idea of where exactly we're currently conducting demining operations.

So from the Donbas, we regrouped around Kyiv. Essentially, we are conducting demining operations everywhere where the Russian forces were and have now retreated. We've managed to expand our workforce. We now have 1,000 Ukrainians who are working across the country demining their own lands. A large portion of those lands are agriculture, so there's a big agricultural focus to our work.

Our main centers are around Kyiv, as well as in the northeast around Kharkiv region, somewhat in Sumy, Chernihiv. And then for myself, my focus is in the Mykolaiv and Kherson Oblasts. Those are some of the most affected oblasts by the conflict in terms of mines and other explosive ordnance of war that are left behind.

We began operations to actually clear those mines in March. And I'm quite proud to say that since March we've now removed over 1,000 mines from Mykolaiv and Kherson Oblasts through clearance and an additional 5,000 through EOD callouts. So already we've been able to make a fairly large impact.

There's quite a lot still remaining to do, though. We have only currently cleared less than 10 percent of the minefields that we've found, so there's a quite a large challenge still remaining ahead of us.

Ms. Welsh: Wow. Thank you, Jasmine. The amount that you've cleared is very significant and yet you said that that's less than 10 percent of what needs to be cleared.

I want to draw on the deputy minister's remarks to bring up a tension that we perceived in our research and our conversations when it comes to demining farmland and that tension is between demining farmland as quickly as possible to bring farmland back into productive use on the one hand and on the other hand demining farmland safely and according to U.N. recommended procedures, according to Ukrainian government procedures, et cetera.

So sometimes there is a tension between doing it quickly and doing it safely. How do you experience that through your work?

Ms. Dann: That's absolutely correct. Yeah, there's always this, not necessarily a tradeoff, but it's ensuring that we're getting the job done as fast as we possibly can. As I mentioned, there's a big amount that there is to do, but making sure we're safe in doing it. So there is – safety is our number-one principle.

There are some things you can look at in order to both increase your efficiency and increase your safety as well, and one of those is mechanization. So I'm proud that we have just recently received accreditation to use mechanical assets within Ukraine. And so as of January we'll begin massively upscaling the amount of machinery that we're using in the process, which allows us to get that work done quicker.

In the background behind me you can see one of those types of machine(s). This is an Armtrac. We use those to be able to remove vegetation that's on the surface, but also tripwires. So the contamination that we're finding in the south can be quite complex at times, so we don't just find anti-vehicle mines or anti-personnel mines but we also find quite a large proportion of items that are on tripwire. And so that presents a hazard not just to the farmers and not just to the community, but also to the people coming to do that demining work. And so one of the ways that we can increase the safety is by mechanizing that as much as possible.

Ms. Welsh: Sure. OK. Thank you. Thank you for that.

Let's talk a bit about your experience demining agricultural land in particular because our research was finding that we – that there should be special considerations for demining agricultural land and minimizing

impacts on soil and water quality and thereby minimizing impact on future production of agricultural products.

So can you just speak a little bit about your experience there?

Ms. Dann: Yeah. Absolutely. So this is an ongoing field of research right now. There's a few different organizations that are quite involved in it. The FAO is one of those. There are also different universities within Ukraine as well as companies who are currently doing testing in order to see what the impact is of that explosive contamination on the ground both now and in the future.

From our own side we are doing soil testing and so we're beginning to look into that process to see is there heavy metal contamination or what is the follow-on impact. In our own demining methods we try to make sure that we're having as little impact as possible but, of course, for us the number-one is removing that threat. That is the most important part of what we're trying to get done, and then ensuring that that land that we hand back is able to be used productively for its intended use.

In general, though, we're looking at clearance within the top 15 to 20 centimeters of the soil so it's within that topsoil layer, which also comes into play later on for agricultural purposes.

Ms. Welsh: Yeah. Certainly. Thank you.

You mentioned some new equipment that you recently procured. Can you tell us a little bit about innovative practices or new technologies that are being used to demine farmland in Ukraine?

Ms. Dann: Yes, definitely. So we've begun to greatly upscale our use of drone technology is one aspect of that so we're now using drones across the country to find contamination that's on the surface and be able to zero in on that quite precisely, which allows us to clear the smallest area of land possible by having the greatest impact so also to be able to rule out some areas for contamination.

In addition to that we also use a number of different mechanical assets such as these remote control ones that I've mentioned and we're continuously developing new techniques to be able to do that more efficiently. We use quite a few detectors. So the standard method of demining is a metal detector that's used across the board in almost every country around the world where demining takes place and we also use ground-penetrating radar so we've got tests ongoing for methods of that which might be more efficient for areas where there is

large metal contamination in the ground making it more difficult to use a traditional metal detector.

Ms. Welsh: Yeah. Thank you. We hope to return to all of these issues and more later in our discussion. But, Jasmine, again, thank you for joining us from the U.K., and thank you for all the work that you're doing with HALO Trust.

It's my pleasure right now to turn to Rick McLellan, who's former senior vice president of marketing and distribution with the Mosaic Company. And Rick has over 25 years in global fertilizer and agriculture markets experience with both Mosaic and with Cargill. Rick, thanks so much for making time to join us.

Richard Mclellan: No, thank you, Caitlin. It's a pleasure.

Ms. Welsh: Thank you. So your expertise is fertilizers, and I think that our audience has a general understanding of the importance, but can you give us very quickly the importance of fertilizers. And those in the industry talk frequently about N, P, and K fertilizers – or nitrogen, phosphate, and potassium. Can you explain very briefly the importance of those to agricultural production?

Mr. Mclellan: Yeah. You've done a good job of kicking it off for me. But, yeah, nitrogen, phosphate, and potash are what we mostly talk about for fertilizers that are used in agriculture. And in its simplest form, and when you look at it, grain and oilseed production, fruits and vegetable production, up to 50 percent of the yield is attributable to the rate of crop nutrients. Now, those nutrients can be available in the soil already or be added with fertilizer to match up to what the crop needs. In fact, in tropical soils up to 60 percent of the yield is attributable to fertilizers.

Ms. Welsh: Yeah. That's incredible. Thank you.

Let's turn to Ukraine specifically, and I know that you had experience with Ukraine well before the war. Can you talk a little bit about the state of Ukraine's access to fertilizer pre-war and then the state of Ukraine's access to fertilizer today?

Mr. Mclellan: Yeah. Pre-war, the development over the last 20 years in agriculture has made fertilizer more important to local – to have local production. And effectively, on nitrogen the Ukrainian market was served almost a hundred percent by its own production of nitrogen. Nitrogen is produced using natural gas, and so having a reliable supply of natural gas – which they had pre-war – is very, very important to that business.

And so they were completely self-sufficient on nitrogen in the most part; especially, nitrogen's very important.

Phosphate and potash were a different story. There's no phosphate reserves – known phosphate reserves or potash reserves in Ukraine today that we know of, and so the phosphate and potash had to be imported. Mainly, the potash came from Belorussia and the phosphates came primarily from Russia. And so that situation most definitely changed with the – with the start of the war and access to those was clearly cut off.

Ms. Welsh: Yeah. Yeah, thank you for that overview.

We've talked about what needs to happen to restore Ukrainian producers' access to fertilizer, to restore access among Ukraine's smallholder farmers and among those who – much larger – much larger farms. And the solutions are going to be different depending on what fertilizer you're talking about – if you're talking about nitrogen fertilizer or the P and the K, the phosphate and potash. Can you talk a little bit about what needs to happen to restore access to each of those types of fertilizer?

Mr. Mclellan: Yeah. Let's start with nitrogen. For nitrogen, the facilities are going to have to get access to reliable supplies of natural gas to produce – to produce nitrogen fertilizers. I think the other thing is that only two of the – I think five were in the country, there may have been six were operational before the war; now only two are operational, and not at full capacity. And so there probably has been damage to some of those other facilities during the activities of the war. And so, one, getting access to natural gas is going to be very, very important. The second is going to be bringing those facilities back up to – back up to standard so they can operate at full capacity.

For phosphate and potash, it will be a different story. In a – in a logical world, logistics drive where fertilizer is sourced from, and that's the closest spot or the spot with the best logistics. That's not going to be the case for phosphates or potash. Potash reserves around the world are in Russia, in Canada, some in the Middle East, and some in South America and China. And so the most logical supply would be to – for potash would be to come out of either Israel or Jordan would be the logical supply. The issue is building the logistics and the support to get that product moved into the country.

I think the minister talked about, you know, rerouting of logistics and rerouting of vehicles, increasing costs. For sure, that's going to have to

happen. And you're going to have to look for strong logistics. Phosphates primarily will have to come either out of Morocco or Saudi Arabia or Israel would be the reliable suppliers or would be the suppliers that would be the next level down of availability. And again, you're going to have to build out the supply lines for those.

Ms. Welsh: Yeah.

Mr. Mclellan: I think the – I think the other thing maybe I missed talking about is at the start of the war, and one of the things during the last two years that farmers have dealt with, is the disruption that took place in global trade flows. And so fertilizer price, because of that, flew up. And so we've had two years of, let's say, above-norm pricing for fertilizer.

Ms. Welsh: Yeah.

Mr. Mclellan: Those are correcting now. And that, Caitlin, should help assist in rerouting product to Ukraine.

Ms. Welsh: OK, thank you. And that's a great segue to my last question for you, which is what is the impact year on year of inadequate or inconsistent application of fertilizer? It's not just impacts on this year's production but on future years' production. Can you explain that briefly?

Mr. Mclellan: Yeah. I think we see it in times where fertilizer prices fly up, like we've seen in the past. We've seen people take holidays or not put product on where they normally would apply product. And I think you can – look, this is a very serious grow rate, but it's a little bit of the same. So the first year you see little impact or very little impact; the second year more; and by the third year, you can have that 50 percent of the – if there was no fertilizer put on, you clearly could have a 50 percent yield loss. And on top of that, because the nutrients aren't moving to the plant, you see an impact in quality of the group that's produced.

Ms. Welsh: Yeah.

Mr. Mclellan: So lower-price production and lower production.

Ms. Welsh: Certainly. So one of the many factors behind lower amounts of production in exports out of Ukraine since Russia invaded in February 2022. Thank you again, Rick, for joining us. We'll return to those issues again momentarily.

But at this point it's my sincere pleasure to welcome to our virtual stage Vasile Varvaroi, who is regional lead for Blue Danube & Ukraine with Cargill. He's been with Cargill for over 20 years. And Vasile is joining us

today from Romania. Vasile, thank you so much for making time to be with us for this conversation.

Vasile Varvaroi: Thank you very much for having me.

Ms. Welsh: So the question I'd like to start with for you is that our report and this conversation so far have focused on two of the many challenges facing Ukraine's agriculture sector on demining farmland and improving access to fertilizers. This, of course, is in the context of all of the challenges facing Ukraine's agriculture sector.

Can you just take a step back and put this in the biggest picture and explain the universe of challenges facing the sector right now?

Mr. Varvaroi: Yeah. And that's obviously a very good question, because your reporting did focus on two very important areas where Ukrainians farmers need support. But unfortunately the list is way longer.

If you ask me for summary, I would say the simple answer would be that there is no aspect of Ukrainian normal operations that has not been disrupted by the war.

To give just a few examples, labor is going to be a huge issue, not only for farming but for – generally speaking for the Ukrainian economy. In a country where 30 percent of the population has been either externally or internally displaced the beginning of the war, that is going to create a problem for all the rebuilding efforts of the future.

Apart from that, I don't think I need to get into the details related to the damage already done to the infrastructure, and this is an ongoing thing that continues to happen every day in Ukraine. Farm equipment being destroyed or damage, it's also a daily occurrence for most of the farmers, especially the ones located in the eastern part of the country.

Last but not least, I think we should not underestimate the cash-flow issues that Ukrainian farmers are facing today. I think you quoted in your report two numbers: $8.7 billion as direct damage sustained by the farmers and $40 billion losses has diminished income. I'm not even going into the numbers that have been quoted in terms of being required for the demining of the affected areas in Ukraine; we are talking tens of billions of dollars there. But if we talk only about the direct and losses sustained by the farmers themselves, maybe I'm oversimplifying, but we are talking in average of $1,500 per hectare of arable land. This is a huge number. I mean, to put things into perspective, we are talking about three to five years of relatively good

farming income, and this is not a small thing. It's obviously a concern for all of us looking forward.

Ms. Welsh: Yeah. Thank you, Vasile, for giving us an overview of all of the challenges, which are numerous and vast, facing Ukraine's farmers and producers.

Considering all of these challenges, how do you think Ukraine's partners should prioritize their support for Ukraine's agriculture sector at this point?

Mr. Varvaroi: Yeah, it's, again, a very good question. And to be honest, there is no simple answer to that because the problem is extremely vast. Again, we are talking about, if we quote again the number, $50 billion, not adding all the other impacts the economy has sustained. For a country that had a total state budget pre-war of $40 billion, this is a daunting task to manage alone. So we, obviously, need all the support that Ukraine can get from all of its external partners, be that private or institutional.

What Ukraine needs, obviously, we need a strategy. And I'm very happy having the representative of the government talking about some of these issues with us today. Work has been done and work needs to be done from this moment onwards.

In terms of drafting this strategy, we would be looking, obviously, at short-, medium-, and long-term actions that need to be – to be implemented.

If we are to focus on the short term, I think what is the most important areas where we need to keep focusing on is, first of all, we need to maintain the sea corridors open. I don't think at this moment there is anything else that is more relevant for the Ukrainian economy and especially for the Ukrainian agriculture. Demining and helping the farmers that have been the most affected – eastern Ukraine – recover from the immediate impact of the war is also something that is extremely important. And, well, the third one, I would say, is making sure that farmers receive the support to continue their normal operations.

If we are to look on the medium to long term, I think we will get into areas like the infrastructure rebuild. And I would also quote the alignment with the EU, because strategically this is the direction the country is going to.

Ms. Welsh: Great. Thank you, Vasile. I haven't heard the needs of Ukraine's agriculture sector explained in that way before, so thank you. Thank you for that. And again, we'll return to a lot of those issues in our Q&A.

But finally, I'd like to ask you the million-dollar or perhaps the multibillion-dollar question, which is: How do Ukrainian farmers become profitable again? And we have talked about the fact that perhaps different things will be needed for farmers in different regions of Ukraine depending on the impacts of the war and of battles on their operations, but generally speaking, again, what do you think that farmers need to become profitable again?

Mr. Varvaroi: I don't think I should be here only talking about the issues we are going to face. I'm actually quite optimistic when we talk about the prospects of Ukrainian agriculture to recover, and I also don't think we have to look far for an example of that. Ukraine can and should look at its own example of what needs to be done to become successful, because putting things a little bit into a historical perspective, less than 15 years ago Ukrainian production was less than 50 million tons. Ukrainian infrastructure, if we are to refer only to the infrastructure related to the export of grains, was totaling less than 35 million tons per year. Before the war, in probably the best year for Ukraine in terms of the grain production, we would be talking about more than 100 million tons and then port infrastructure that was three times as large.

And again, if we look at that history, Ukraine was not a rich state before. On the other side, what was happening? We were having the same things that we have today. We have a – we have a very well-educated and good-performing farmer community, and a lot of interest. And a lot of companies, if I may, did, modesty aside for a second, like us, ready to invest.

And to speak about ourselves for the future, I don't think we need to be invited to contribute again. We operate in Ukraine since 1991, and we are here to stay.

Ms. Welsh: Thank you, Vasile. Very much appreciate your optimism.

At this point, I will welcome again questions from our audience. If you'd like to ask questions, please submit them at the "ask questions here" button on our event page.

But before we turn to some questions from the audience, I do have some follow-up questions for each of you. And one of them is about the needs that can vary quite drastically among Ukraine's small-scale producers and medium- and large-scale producers. So when it comes to

both demining and improving access to fertilizers, and all the needs that you explained, Vasile, how do needs differ and then how do the solutions differ for these different types of producers? And, Jasmine, I hope you don't mind if I start with you.

Ms. Dann: So from my side, we're a humanitarian organization. So, for us, all of our services are based on need. So what we will do is we'll do a survey, essentially, and look to see which communities, which farmers, which fields have the large amount of ordnance, what is most likely to cause injury, and then essentially prioritize based on that. So, for ourselves, that could be either small-scale farmers or large-scale. That in and of itself doesn't come into account.

There's quite a number of actors in this field, though. There are some commercial organizations as well as black deminers, they might be called, within Ukraine who are also hired to conduct some demining operations. But for us, it's all based on humanitarian needs and that prioritization.

Ms. Welsh: Yeah. OK. Good. Thank you, Jasmine.

Rick, what about fertilizer access?

Mr. Mclellan: I think fertilizer access, I think he – I think Vasile said it earlier, the key will be getting the ports open and keeping them open, because fertilizer will flow at the opposite to where grain. So if grain's going out those same ports, the vessels that are coming there to pick up grain are used to get imported product in there. So in the short term, really need to focus on the development and making sure you have the operation part to get fertilizer into the country.

I think if you look at what farmer needs are going to be, I think critical are going to be access to capital, whether it's the big farmer or the small farmer. And I think organizations, whether they be the government, whether they be banks, companies, or NGOs really need to look at how do we fund or how do – how does the funding occur so that the farmer can get the crop in the ground. Once they get that cycle going and they get the – they get the yields back and they get access to export their product, then the needs for capital infusions won't be there. But the first step's going to have to be to make sure that those farmers, no matter what the size, have – if they have access to fertilizer, they have to have access to pay for it.

Ms. Welsh: Yeah. Rick, thank you for pointing out that there are solutions that are common across all producers no matter what the level of production, from small scale to large scale, and for emphasizing the importance of

keeping Ukraine's Black Sea ports open, and also importance of access to liquidity.

Vasile, how would you answer this question?

Mr. Varvaroi: Yeah. Just to contribute to what Rick was already saying, I think it's also important that we differentiate in terms of what we are trying to achieve, because when we are talking about the difference between very small to very large farmers, there is a big – we are talking about a big interval here. I mean, the largest farmer in Ukraine is more than – more than half-a-million hectares, so you can imagine the size of that operation.

But again, we're talking about different needs. To a certain extent, for the very small farmers, it's mostly a social issue that has to be addressed because we are talking about people's livelihood, having resources to sustain their own and their families' living.

When we turn to the very large farmers in Ukraine, the sector that we call agri holdings, their needs are and their capabilities to manage their own demands are quite different. They would be, I would say, in a better position to manage their operations for many reasons. But to quote just one here, they normally have a more diversified operation. So we are not talking about only farm activities; we also are – most of them are – part of them, at least, will have other areas that – where they can generate profits from, like – (inaudible) – or other activities of this kind.

So I think, just to get a conclusion, it's important to identify these needs and address them differently, depending on the sector we are talking about.

Ms. Welsh: Yeah. Great. Certainly. Thank you, Vasile.

We have one question online from an audience member based in Washington. The question is for you, Jasmine, about demining. And it is: There are reports of farmers demining their land themselves due to the long wait time for certified demining operators. What are the benefits and the drawbacks of this approach of do-it-yourself demining, unfortunately?

Ms. Dann: Unfortunately, that is definitely something that I see. It's happening across Ukraine, including in the south, in Mykolaiv and Kherson Oblasts.

The drawback of that really is how dangerous it is. So it does take a while if you're going to do demining in a very thorough way. So when we're demining a field, we will find every item that's there and make all

reasonable effort to make sure that that field is safe. And there's quite a lot of training and materials that are used in order to do that. A lot of the kind of newer people coming into this who haven't gone through certification, haven't gone through training, that might have been able to get access to a metal detector somewhere, are not only putting themselves at great risk. So I hear of people who are injured and have died kind of from their own kind of version of demining in Ukraine. (Inaudible.)

So, unfortunately, just three weeks ago there was a farmer who had had someone come out and do a quick search of their land, having removed a few items and, unfortunately, had not found all of those. He then had an accident with his combine harvester in the fields, and unfortunately passed away. So it is quite a – quite a dangerous thing to take into your hands.

And I wish we'd be able to get the process done faster. That's why, as an organization, we're growing, trying to have more people working with us, more equipment to be able to get the job done faster. But unfortunately, to do it in a thorough way, it takes time.

Ms. Welsh: Yeah. Yeah, absolutely. And you did mention, in a conversation we had previously, that it's not uncommon that perhaps it's every couple of weeks that you hear reports like the one that you noted about a farmer passing away when their field wasn't –

Ms. Dann: Absolutely. So it's not just people hiring others to come in and do kind of informal demining, but it's also farmers choosing to take that risk. So there's a lot of people who haven't been able to cultivate their fields for a few years now who might be in a much more difficult financial position, and so they decide to take that risk and to go and cultivate their lands. And unfortunately, quite a few of them end up having accidents.

Ms. Welsh: Yeah. Thank you, Jasmine.

I have one final question for everyone. And after we answer that question, I will invite each panelist to make any closing remarks. If there's anything that you'd like to note that we haven't had a chance to talk about yet, I'd welcome you to do that.

But my final question from an audience member based in Iowa is about soil testing. Now, common to the solutions that we put forward in our report to demining agricultural land and making sure that it's as fit for production as possible and also to improving access to fertilizers is soil testing, testing for the potential contamination of agricultural soil and

also testing for the nutrient quality of soil to make sure that farmers then apply the right amount of the right types of fertilizers.

So can we speak a little bit about the importance of soil testing and scaling up soil testing as a solution to both demining agricultural land and improving access to fertilizers?

I'll turn to Vasile and Rick and then, Jasmine, if you'd like to add anything to that question before we'll turn to final remarks.

Vasile or –

Mr. Mclellan: Do you want me to step in –

Ms. Welsh: Yeah. Go ahead, Rick. Go ahead.

Mr. Mclellan: Yeah. No, I think access to soil testing is important. I think one of the strengths that Ukrainian agriculture has is they have very high-quality soils and very nutrient-rich soils and so getting access to know what products you need to put on, whether it be nitrogen, phosphate or potash, is going to be critical.

I'm not sure it's step A. I think step one is really getting them access to fertilizers so they can get back to even using their traditional programs. But it definitely is a step, and then making sure laboratories are set up strategically across the country so farmers have easy access as well as being able to from there start taking the data and down the road in the midterm looking at using different precision agriculture type solutions.

But the first step needs to get the product in their hands, get the labs set up, and then longer term look to use technology to really fine tune production in agriculture.

Ms. Welsh: Yeah. Thank you, Rick. That's an excellent point about – perhaps it's not step A. It's important down the road but the most important thing right now is improving access to fertilizers.

Vasile and Jasmine, anything to add on that question?

Mr. Varvaroi: Not from my side. It's definitely – talking about the future of Ukrainian agriculture is one area where the yields and in the end the farmers' ability can be improved significantly.

Ms. Welsh: Yeah. OK. Thank you.

And, Jasmine, what about from the perspective of demining, looking at the potential impacts of demining operations of mine clearance on agricultural land?

Ms. Dann: Yes. I think I might echo what Rick said, that the number-one priority isn't necessarily that soil testing. The number-one priority is getting safe land back to deminers – to farmers to actually be able to start using again. If we can do that in a way where that land at the end is both better for further production then that's what we should be doing.

I think we're at too early of a stage in terms of soil testing to really be able to say anything too conclusive on that. I think it's also important that we don't raise undue fears about what the condition of that soil might be afterwards until we have that kind of evidence coming through. So I think that's kind of a space to watch as we go forward.

Ms. Welsh: Thank you. Excellent points.

I'd like to now welcome our panelists to make any final remarks and we'll go in reverse order of the order that I spoke to you each in earlier. So let's start with Vasile and then I'll turn to Rick and then to Jasmine.

So, Vasile, anything that you'd like to note that we didn't have a chance to discuss already?

Mr. Varvaroi: Yeah. These days I feel like a Ukrainian ambassador whenever I speak to a public audience. So my encouragement is to keep provide support to Ukraine and use any opportunity to invest that are available. Thank you very much.

Ms. Welsh: Great. Thank you so much, Vasile.

Rick, how about you?

Mr. Mclellan: I'm thinking it's – there's a – there's a major problem here, and it needs the support that it's getting today. But Ukraine needs the support to get the grains moved out and the fertilizer moved in so that farmers can get back to doing. What they do is farm. And right now there's too many other – too many other things getting in the way. I think the track record for production agriculture in Ukraine is tremendous and the return will be rapid once things settle down.

Ms. Welsh: Yeah. Wonderful. Thank you so much, Rick.

And, Jasmine, final comments from you.

Ms. Dann: Well, I think also I'd like to express my thanks to both yourselves for hosting this panel, as well as to the Ukrainian government for all of the support that they give to demining efforts within Ukraine, as well as all of the different organizations and governments who provide us funding to be able to do the job that we do.

The last point I'd like to make is that, unfortunately, this isn't something that's going to take a short period of time, but it's something that we're going to be in for the long haul. And as the global media attention might move to a different location, we need to make sure that the funding and the effort remains to make sure that the Ukrainian agricultural sector is able to get back and running as fast as possible.

Ms. Welsh: Yeah. Absolutely. Thank you, Jasmine.

And with this, I'd like to thank our panelists once again for joining us: Jasmine Dann for joining us from the U.K., Rick McLellan from joining us – for joining us from the U.S., and Vasile Varvaroi for joining us from Romania. Thank you so much for being with us this morning or this evening where you are.

Thank you again to Cargill and the Mosaic Company for your support for this work and for your expert contributions to our research.

Thank you again to my report co-authors Emma Dodd, Vitalii Dankevych, Joseph Glauber, and Antonina Broyaka.

And sincere thanks to the CSIS External Relations team, two important parts of the External Relations team, including our publications and iLab teams, Katherine Stark and Lauren Bailey; our Events team, which I think are the best in the business, including Dhanesh Mahtani, Qi Yu, Dwayne Gladden, and Eric Ruditskiy; to my own team – again, thanks to Emma Dodd for your tireless work on this report and on today's event; and to our audience. Thank you for tuning in. Please sign up for our newsletter and read our report at CSIS.org.

(END.)