

GFAR WEBINAR

Regional responses to challenges to soil fertility and sustainability

Organized at the request of the European Commission and Germany

Held on Monday, 27 February 2023 (13.00-15.00 CET)

SUMMARY RECORD

1. Overview

This webinar, organized by GFAR at the request of the European Commission and Germany, sought to foster an evidence-based exchange of views and sharing of experiences among experts from leading global and regional institutions, GFAR members and networks on the nature and impacts of fertilizer shortages and price hikes in their regions and possible alternatives for soil fertility management and sustainability.

It identified actions that GFAR partners and members can implement in the short, medium and longer term, including fostering better use of fertilizers and the identification and development of alternatives to maintain soil fertility at the regional, national and local levels. The presentations by the OECD, FAO, IFDC, the Agroecology Coalition, Australian National University, CACAARI, IICA, FARA, APAARI, YPARD, Germany and the EC and the exchange between participants was extremely rich. They highlighted diverse perspectives and options for addressing soil fertility which need to be tailored to context.

The webinar attracted more than 360 people from a wide range of countries, organizations and diverse stakeholders across six continents. Participants were drawn from all GFAR constituencies and beyond, including: GFAR Regional Fora; regional research institutes and National Agricultural Research Systems (NARS); farmers' and producer organizations; youth representatives; country level experts; selected international specialists and resource persons; and GFAR Steering Committee members and Secretariat.

Participants highly appreciated the event and expressed interest in GFAR continuing to support efforts to address the challenges related to ensuring sustainable agrifood systems by mobilizing its convening power and capacities for coordination across continents. As follow up to the webinar, GFAR's Steering Committee will consider the establishment of a new GFAR Collective Action on Agroecology to be implemented in collaboration with other key partners. This will seek to define a collective approach involving diverse stakeholders to identify actions over the short, medium and longer term.

The presentations made during the webinar are available on the [GFAR website](#) and the full recording is available along with this summary record. If you have not yet become a GFAR member and you want to enjoy all the opportunities that our network has to offer, you can easily send us your application through our [website](#).

2. Background

Fertile soils enable the transformation of agrifood systems to be more efficient, more inclusive, more resilient and more sustainable.¹ Fertilizers play a significant role in assuring soil fertility and contribute to

ensure food security for all. However, the 5F crisis (food, feed, fuel, fertilizer and finance) has disrupted supply chains, worsening an already challenging situation for global fertilizer markets, affecting food prices and global food security. This comes on the heels of the COVID-19 pandemic and in the context of accelerating impacts of climate change and biodiversity loss in agrifood systems. This has underlined the need to foster more sustainable development pathways, better fertilizer use and the development of alternatives to chemical fertilizers in developing countries and regions.¹

Chemical fertilizers are one element of solutions employed by farmers to address the challenges of plant productivity and increasing yields. However these agricultural inputs can also be difficult to access, especially by poor small-scale producers in developing countries due to the cost of these fertilizers and limited access to credit, and are having an impact on climate change and biodiversity. Such resource-poor farmers in marginal areas of Africa, Asia and small island states are also particularly vulnerable to trade shocks which undermine access to imported fertilizers.

However, obstacles to accessing fertilizers not only present challenges, but also represent an opportunity to call for change. This might include boosting the production of alternatives to chemical fertilizers at regional and local levels. For example, fostering the production and increased use of organic and bio-fertilizers produced nationally and locally to reduce dependence on imports, increasing the production of legumes to increase the capture of nitrogen, promoting agroforestry that recycles nutrients from the deeper layers of soils and promoting the production of crops that are less dependent on soil nutrients. These are just some of the alternatives that can be considered according to their relevance for different contexts.

However, the costs of chemical fertilizer subsidies have grown dramatically throughout Asia and the Pacific, in many cases now consuming some 50% of national government spending in agriculture². This poses a serious challenge to the achievement of the 2030 Agenda for Sustainable Development, and specifically SDGs 1 and 2. The picture is very diverse across countries and regions: Jordan, for example, can benefit from this global surge in fertilizer prices as it produces and exports fertilizers.

Addressing the challenges posed by the disruption of fertilizer supply chains and ensuring the availability and affordability of fertilizers taking a holistic approach of soil fertility is an opportunity to strengthen the resilience and sustainability of food systems in the medium and the long-term. In summary, three key issues are at stake: (i) addressing the challenges posed by the disruption of fertilizer supply chains, especially for small-scale producers; (ii) supporting the development of regional and local alternatives (organic fertilizers and bio-fertilizers), and (iii) supporting agroecological practices to decrease the dependence to external inputs

This webinar provided an opportunity to engage international and regional stakeholders in a fundamental rethink of diverse approaches to addressing soil fertility challenges and a space to consider ways to reduce dependence on imported chemical fertilizers, encouraging more sustainable and efficient use of fertilizers and considering the development of more sustainable alternatives over the medium and long term. This process of reflection will inform responses and actions that can be taken by countries / GFAR members and stakeholders to address soil fertility challenges, including ensuring

¹ See: *Food security: the Commission addresses the availability and affordability of fertilisers in the EU and globally* https://ec.europa.eu/commission/presscorner/detail/en/IP_22_6564 (9 November, 2022)

² Source: PowerPoint presentation on *Impacts of High Fertilizer Prices on Smallholder Farmers in the Indo-Pacific* by David Shearer, Business Engagement Support Unit, Australia. Palladium.

availability of and access to fertilizers at regional and country levels and support for the development of alternatives (including agroecological farming systems, regenerative agriculture among others).

3. Key points raised in discussion

Key points raised in the session with regard to research and innovation and GFAR's role included the following points. The full recording of the event and presentations are available [here](#).

- **Healthy soils perform and provide key functions and ecosystems services.** But there is a perfect 'global storm': countries need fertilizers but soils are becoming degraded with serious consequences for the environment and climate change. There is no single solution what we know is that soils need to be healthy. Paradigm shifts oriented towards providing the best physical, chemical and biological conditions to enhance soil nutrient availability and plant nutrients are required over the medium and long term. Countries need fertilizers, however soils are becoming more degraded with consequences for the environment and climate change. The best physical, chemical and biological conditions to enhance soil nutrient availability and plant update are needed. In the medium to long term, sustainable soil management is key – not necessarily continuing use of chemical fertilizers.
- **Agriculture and food systems across the world are facing a very challenging situation with the continuing effects of the war in Ukraine, high energy and fertilizer prices, lower economic growth, sanctions and trade restrictions.** In fact, the availability of nitrogen is critical for the production of fertilizers and availability of natural gas is critical here, particularly for European countries dependent on the gas pipeline.
- **Fertilizer prices had already been rising prior to the war in Ukraine. They have increased further due to limitations on the availability of and higher prices of natural gas may lead to a reduction in the use of fertilizers by farmers globally and lower productivity in certain regions. However, higher fertilizer prices can constitute an incentive to reduce overuse of fertilizers and to explore alternatives to maintain soil fertility.** The impact of higher prices is particularly important in regions where the use of chemical fertilizers is high (e.g. Europe; Asia; North America). A key issue is to put measures in place that reduce the overuse of fertilizers in certain regions while increasing their use in regions where their use is insufficient (e.g. Africa). Finding ways to increase production and use of fertilizers in developing countries depends on the availability of natural gas.
- **However, excessive or inappropriate fertilizer use pollutes soils and increases greenhouse gas emissions.** We therefore need to understand what works in the context of the crises faced now and longer term challenges so as not to create crises in the future. All options and products to maintain soil fertility need to be considered and selected according to context and fit with local practices/culture.
- **Fertilizer subsidies are widely used, but they are costly for governments, often inefficient and do not address other pressing farmer / producer needs.** Governments should generally be encouraged to move away from subsidizing fertilizer use to rather promote sustainable agricultural practices. At the same time, more effort is needed to consider how to implement subsidies in better ways in developing countries so that they contribute to increased incomes and food security for poor households and small-scale producers. Careful consideration needs to be given to the type of subsidies given based on the problems they are intended to resolve, i.e.: price subsidies; floor prices for commodities; or insurance type subsidies. It is important to deepen understanding of context,

farmer willingness to invest, and through mapping and analytics on local agroecological systems decide where and when to apply the different solutions to improve soil fertility. Subsidies involving private sector operators might best focus on the provision of bundled services, a menu from which farmers can choose what inputs to use and when to apply them. ICT solutions can also be critical to make accurate information more widely available to farmers using the internet.

- ***In Asia, fertilizers will remain a key component to agriculture.*** Farmers mostly use nitrogen-based and phosphorous fertilizers. However, further reflection is needed on how to foster a transformation of agriculture based on the use of innovations and technologies that maximize productivity while minimizing environmental damage. Dry fertilizers may represent an opportunity. More research is needed on alternatives, and guidance to farmers and extension agents on the safe use of fertilizers. This implies updating recommendations on fertilizer use.
- ***In Africa,*** the African Union is developing a fertilizer and soil health action plan for endorsement at the Africa Fertilizer and Soil Health Summit in June 2023. This recognizes the fragility of African soils and the challenge of meeting Africa's food and fibre needs. There is a need to increase efficient use of both organic and inorganic soil nutrients. A model or roadmap of for a better organized fertilizer trade and use systems tailored to Africa's needs is of critical importance. It should be noted that more than half of humanity is fed by fertilizer-based foods, therefore a complete rejection of chemical fertilizers could well increase poverty and hunger while recognizing that when excessively used they can cause biodiversity loss and have other negative effects.
- ***In Central Asia and the Caucasus,*** taking the example of Uzbekistan, the priority needs and challenges of Uzbek farmers is in the appropriate use and access to fertilizers. Prices have certainly increased, but not only due to current crises. They have also been increasing for other reasons, such as food controls.
- ***In Latin America and the Caribbean,*** there is data that show that Latin American countries have experienced increases in food prices of up to 80%. The war in Ukraine has generated significant fertilizer price increases in LAC. There is a need to move away from the use of subsidies and to support measures that strengthen environmental sustainability, increase the profitability of farming, and reduce excessive standards and regulations that are difficult for farmers to implement.
- ***Alternatives to the business-as-usual model based on the use of chemical fertilizers and inputs to maintain soil fertility need to be developed to encourage sustainability in a context of climate change.*** Food systems are increasingly impacted by climate change, but agriculture also contributes to environmental degradation and greenhouse gases. Alternatives to business-as-usual approaches include Agroecology and regenerative agriculture. Agroecology takes account of local knowledge and aligns with a food systems approach and argues for investments in food systems that move away from high chemical input agriculture. Agroecology addresses multiple objectives beyond increasing productivity (e.g. the impacts of climate change, environmental degradation). Agroecology takes account of social dimensions, such as fairness and participation and the co-creation of knowledge, and encourages improved resource use, measures to increase resilience, increase biodiversity, and improve soil health thus laying the foundations for sustainable farming (see core principles of Agroecology here: <https://www.fao.org/3/i9037en/i9037en.pdf>; https://agroecology-coalition.org/wp-content/uploads/pdf/Agroecology%20coalition_EN.pdf; and <https://www.fao.org/3/ca5602en/ca5602en.pdf>). Conservation Agriculture is a promising practice related to Agroecology that can help reduce the loss of soil fertility. However, the principles of

Agroecology need to be presented clearly and supported by scientific evidence on sustainability and economic feasibility.

- ***Diverse interventions need to be considered to increase soil fertility and to optimize agricultural production systems include locally appropriate crop management systems and measures to diversify crop and legume production systems.*** The choice of the most appropriate interventions should be informed by effective support systems that provide relevant data and information, practical agronomic options for agricultural inputs such as availability of appropriate seeds.
- ***Fertilizer access is not the only solution to improve plant nutrition. The key issue is to invest in healthy soils. Fertilizers will still be needed in many contexts, but need to be used more efficiently. Policy measures are needed to convince countries and donors to invest more in Agroecology and sustainable practices.*** Tools are needed to help farmers to better manage the nutrient cycle at farm level, including use of different sources of nutrients, such as: organic fertilizer; chemical fertilizers; legumes; trees; cover crops etc. This approach can help farmers make better choices with regard to actions needed to improve soil fertility. The current context of the impacts of the war in Ukraine on global fertilizer prices and availability can provide the incentive to reflect on alternative forms of agriculture - increasing investments in Agroecology, organic agriculture and greener, more sustainable and locally appropriate production models. This involves reconsidering policies and programs regarding trade, incentives, market concentration, dependencies and the political economy that shapes how different stakeholders in agriculture interact.
- ***There is a need to increase this type of exchange (GFAR webinars) and develop joint actions to address the challenges the world faces at this time.*** The crisis and effects on fertilizer access, exacerbated by the war in Ukraine, have become long term issues. In mobilizing diverse stakeholders across the world to address them, there is new momentum that can drive positive food systems transformation. [The Global Alliance for Food Security](#) is a key opportunity to support this effort and one of its action areas is on soil fertility. Innovation is a key driver for transformation, therefore more research is needed to generate solutions for food systems transformation, and GFAR can play a key role here.
- ***When fertilizer prices were driven up by the war in Ukraine, building on previous price hikes, this led a wide range of stakeholders to reflect on what needs to change in agriculture to improve sustainability in food systems and contribute to efforts to address climate change.*** This has led to a serious search to reduce dependencies and identify alternatives. Solutions may include: biofertilizers; more widespread adoption of agroecological practices, building on efforts of the [Agroecology Coalition](#) and expert centres working on this; more context relevant interventions to support diverse farming systems; adaptation and reform of research and extension systems. Agroecology is particularly promising as it seeks to promote the appropriate use of fertilizers and sustainable agricultural practices adapted to different cropping patterns and agricultural systems.
- ***Participants expressed a desire to stay in contact on these issues, benefitting from the expertise and experience across the GFAR network.*** GFAR will seek to promote further discussion on how to increase the sustainability of food systems, for example by addressing super-leverage points such as the appropriate use of fertilizers and maintenance of biodiversity. GFAR's [Partnership Principles](#) will be central to its approach and it will implement work on Agroecology principles through its [Collective Actions](#).

4. Way forward

During the webinar breakout discussions, participants expressed their preference for the following solutions to the challenges of soil fertility and sustainability: to invest in Agroecology and in the use of cover crops for legumes. As follow up to the webinar, GFAR's Steering Committee will consider the establishment of a new Collective Action on Agroecology to be implemented in collaboration with other interested partners. This will seek to define a collective approach involving diverse stakeholders to identify actions over the short, medium and longer term.