GLOBAL RESEARCH ALLIANCE
Croplands Research Group

NEWSLETTER Nº9, March 2021

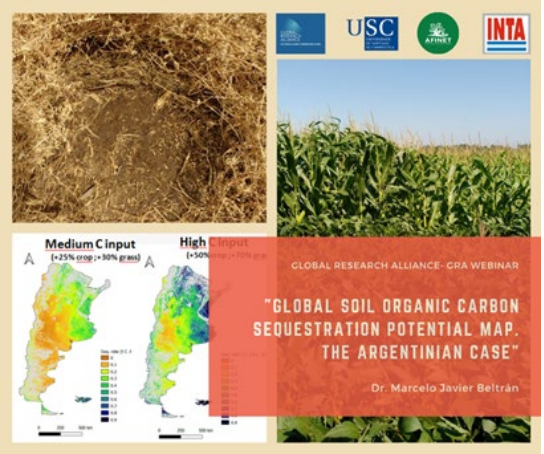
1. Cropland Research Group GRA Co-Chairs message

The March Newsletter fo the Global Research Alliance is plenty of excellent and exciting news! Soil carbon monitoring and mapping at national level is presented by Marcelo Beltrán, who

excellently presented the mapping methodology carried out in Argentina in collaboration with the FAO in our webminar. This volume also describes the European Union project AGROMIX lead by the scientist Sara Burbi detailing how agroforestry and mixed farming systems tackles climate change mitigation and adaptation of the European grazing and arable conventional farming systems. From a policy point of view the new EU adaptation strategy is presented. Moroever, some special issues related with climate change are announced and a survey to enhance Croplands Literature Database is included. We do hope you enjoy this exciting newsletter!

Source: Croplands Research Group Co-Chairs Team, María Rosa Mosquera-Losada, Ladislau Martin-Neto, Mark Liebig.

2. Argentinian soil organic carbon sequestration potential map



On the 8th of March 2021 the Croplands Research Group organized a webinar titled "Global Soil Organic Carbon Sequestration Potential Map. The Argentinian Case". In this webinar the speaker was Dr. Marcelo Javier Beltrán from the National Institute of Agricultural Technology-INTA (Argentina).

Dr. Marcelo Javier Beltrán explained us that soil is one of the most important carbon (C) reservoirs in the ecosystem. It represents approximately 65% of the total C in the system. At the 0-30 cm depth, soil contains about 680 Pg of C. It can also be a potential sink for C if sustainable management practices, which increase the C input to the soil, are carried out. Therefore, soil C sequestration is a climate change mitigation practice that also allows to increase the quality of soils due to physical improvements such as increase of structural stability, infiltration and water retention and nutrient cycling. Carbon sequestration basically depends on the balance between the income and the outcome of C. At a global level, techniques that allow C input increments can generate an increase between 200 and 600 kg of C per year and hectare, and even more in certain cases.

Argentina is the eighth country with the largest stock of organic C in the soil (GSOC map FAO). It has an approximate area of 2.8 million km2 and it is a food-producing country (crops, meat, dairy, fruit trees, vegetables, etc...). Therefore, Argentina has great potential for C sequestration, so the generation of a C sequestration map is essential to determine techniques that allow its sequestration and the development of mitigation and adaptation to climate change policies. The objective was to develop a C sequestration map with different C input scenarios, comparing the current situation with techniques that allow C input increments and estimating for each scenario the C increase in soil after a period of 20 years (2020-2040). For this purpose, the Roth-C model was used to estimate the evolution of C based on different layers of information (climate, land cover, land use, soil clay content and soil C stock by the year 2020).

As main results, total values of C sequestration projected to 2040 for each scenario and relative ones between different managements were obtained. Areas with different potential for sequestration of C were detected. Therefore, it can be targeted in different environments with different techniques according to the possibilities of C sequestration. These results are preliminary and the objective is a continuous improvement by increasing the layers of information and the development of local information that lets us increase the precision of the maps.

For more information the webinar is available in this link

Source: Dr. Marcelo Beltrán, Msc Franco Frolla, Dr. Marcos Angelini, Msc Luciano Di Paolo, Dr. Guillermo Peralta (National Institute of Agricultural Technology, Buenos Aires, Argentina).

3. AGROMIX - participatory research to drive the transition to a resilient and efficient land use in Europe

November 2020 saw the launch of AGROMIX - an EU-funded research project exploring mixed farming and agroforestry as alternative approaches for land management and agriculture. The project is coordinated by Coventry University (UK) and is led by 28 partners from 14 European countries, including universities, research centres, government agencies, and on-the ground farms and farming associations. With a budget of 6.9 million euros the project's goal is to drive the transition towards more resilient farming, efficient land use, and sustainable agricultural value chains in Europe.

Within the context of climate change and biodiversity loss, AGROMIX uses a transdisciplinary and participatory co-design approach to unlock synergies in mixed farming and agroforestry and

achieve environmental and socio-economic resilience. The methodology used integrates evidence-based research from different disciplines (ranging from biology to social sciences), working with a variety of stakeholders. This methodology will be developed and tested through 12 pilot projects across Europe and will be used to increase the understanding and acceptance of these land use practices among relevant actors across agricultural supply chains.

In addition, the project will also make use of innovative communication tools and technologies – such as serious games and augmented reality – to create immersive, interactive experiences for stakeholders. These new tools are expected to increase engagement with farmers, while the co-development of policy briefs and technical and scientific documents will help reaching additional influential stakeholders such as researchers and policymakers.

Dr Sara Burbi – Project Coordinator and Assistant Professor at the Centre for Agroecology, Water and Resilience of Coventry University – elaborates on the project's approach: "AGROMIX is not a classic research project: here farmers are fully involved. We want to create tools with those who'll use them and develop policies with the people who'll be affected by them."

AGROMIX will run until September 2024 and aims to reach over 10,000 stakeholders in Europe - including at least 2,000 farmers - increasing their understanding of resilient farming systems through effective communication, accessible transition models, and the establishment of online knowledge hubs for sharing and storing practical information.

Discover more about AGROMIX in its Website, Twitter, LinkedIn, Instagram, Flickr and in this Publication in REVOLVE Magazine.

Figure 1: On the left, shepherd tends to sheep in a silvopastoral landscape – farmland that combines trees and livestock (photo: Biegun Wschodni) and on the right, Cinta Senese pigs grazing and foraging freely in a semi-extensive system in central Italy (photo: Tenuta di Paganico).

Source: Sara Burbi (Coventry University, UK), Patricia Carbonell and Josep Crous-Duran (REVOLVE).

4. New EU strategy on adaptation to climate change

The European Commission adopted its new EU strategy on adaptation to climate change on 24th February 2021. The new strategy sets out how the European Union can adapt to the unavoidable impacts of climate change and become climate resilient by 2050.

The Strategy has four principle objectives: i) smarter adaptation, ii) faster adaptation, iii) more systemic adaptation and iv) to step up international action on adaptation to climate change. The strategy's four objectives are underpinned by 14 actions and the steps to be taken to deliver them. Moreover, the strategy focuses mostly on the interaction with other strategies (Circular Economy Action Plan, Biodiversity Strategy, Renovation Wave, Farm-to-Fork Strategy) as to increase the EU's preparedness to the impacts of climate change.

Key elements of the strategy are the development of nature-based solutions, action to close knowledge gaps and financing of climate adaptation. The Commission also highlights the importance of the insurance sector both in the gathering of knowledge and through the expansion of insurance coverage to alleviate the costs of climate impacts.

As with the previous strategy, Member States will remain the central implementation partners.Therefore, the Commission will discuss the strategy with the Member States in the Environmental Council. The Council is expected to agree to conclusions on the new strategy when it meets in June 2021.

More information here.

Figure 2: Executive Vice-President for the European Green Deal, Frans Timmermans during the presentation of the new EU strategy on adaptation to climate change as part of the Green Deal on 24th February 2021.

Source: Maria Rosa Mosquera-Losada and Nuria Ferreiro-Domínguez (University of Santiago de Compostela, USC, Spain).

5. Special issues

5.1. Agroforestry and sustainable agricultural production

A special issue of the Sustainability journal is currently accepting papers on Agroforestry and Sustainable Agricultural Production. The Guest Editor of this Special Issue is Dr. Victor Rolo (University of Extremadura, Spain).

This Special Issue aims to collect original contributions on innovative agroecological practices that seek to maximize productions as well as deliver multiple services to society, including biodiversity conservation. The issue places a special focus on agroforestry because of its known potential to deliver ecological benefits with a wide range of products and services. The themes of the special issue include monitoring of innovative systems, adoption of low-input technologies, restoration of soil productivity through enhanced water and nutrient efficiencies, farmers solutions to adopt agroecological changes, approaches to adapting and building resilience to climate change and application of ecological principles to agriculture.

Manuscripts should be submitted online at www.mdpi.com. The paper submission deadline is **15th June 2021**. More information here.

5.2. Land use as a tool for fire prevention: productive fuel breaks in mosaic landscapes

A special issue of the Land journal is currently accepting papers on Land Use as a Tool for Fire Prevention: Productive Fuel Breaks in Mosaic Landscapes. The Guest Editor of this Special Issue is Prof. Dr. Fernando Pulido (University of Extremadura, Spain).

Based on the paradigm shift claimed by many authors, from fire suppression to mitigation and adaptation, and for the participative design of smart fire landscapes, invited papers will show both conceptual and practical advances in the field. Manuscripts showing successful case studies that estimate changes in fire risk after landscape intervention through cost-effective methods are especially welcome. Finally, works addressing environmental, social or economic limitations/advantages of this approach will be considered.

Manuscripts should be submitted online at www.mdpi.com. The paper submission deadline is **15th July 2021**. More information here.

5.3. Climate change impacts, mitigation and adaptation in croplands

A special issue of the Atmosphere journal is currently accepting papers on Climate Change Impacts, Mitigation and Adaptation in Croplands. The Guest Editors of this Special Issue are three members of our Croplands Research Group (Dr. Jagadeesh Yeluripati from The James Hutton Institute, Scotland, UK, Dr. Ayaka W. Kishimoto-Mo from Institute for Agro-Environmental Sciences, Japan, and Dr. Mark A. Liebig from USDA Agricultural Research Service, USA).

This special issue welcomes articles addressing relevant topics at the nexus of climate change and crop production. Articles highlighting climate mitigation and adaptation with the delivery of provisioning and non-provisioning ecosystem services are encouraged. Furthermore, articles documenting novel approaches to monitor, model, and upscale environmental change under changing climate for cropping systems across the world are also welcomed as well as contributions describing the development of new and effective technologies that help crop producers mitigate and adapt to climate change.

Manuscripts should be submitted online at www.mdpi.com. The paper submission deadline has been extended to **15th December 2021**. More information here.

5.4. Agroforestry as a way of sustainable land use

A special issue of the Sustainability journal is currently accepting papers on Agroforestry as a Way of Sustainable Land Use. The Guest Editors of this Special Issue are Dr. José Javier Santiago Freijanes (University of Santiago de Compostela, Galicia, Spain), Dr. Allison M. Chatrchyan (Cornell University, Ithaca, NY, USA), Dr. Jose Antonio Aldrey Vazquez (University of Santiago de Compostela, Galicia, Spain) and Prof. Dr. María Rosa Mosquera-Losada (University of Santiago de Compostela, Galicia, Spain).

Agroforestry is the integrated combination of woody perennials with a low layer agricultural production. It is a traditional form of land use, but also includes new forms of agricultural and forestry use. The agroforestry impact contribution to sustainability can be evaluated from technical perspectives (agronomy and forestry) but also from environmental sciences, and from a social and human perspectives. In this special issue topics relating agroforestry and sustainability will be addressed from a technical, environmental and social point of view.

Manuscripts should be submitted online at www.mdpi.com. The paper submission deadline is **31st December 2021**. More information here.

Source: Victor Rolo (University of Extremadura, Spain), Fernando Pulido (University of Extremadura, Spain), Mark Liebig (USDA-Agricultural Research Service, USA), Jose Javier Santiago-Freijanes (University of Santiago de Compostela).

6. Member input needed to enhance croplands literature database

The Croplands Literature Database (CLDB) provides an open-access, searchable database to aid researchers in their study of greenhouse gases and soil carbon stocks in croplands systems. The database includes literature from all GRA Member countries, and is a partnership between the GRA and Kansas State University.

While the CLDB has served well in this role for nearly 10 years, the time has come for an update. To achieve this, CLDB developers are collaborating with the creator of JournalMap, a database that provides map-based searching and browsing.

To ensure updates to the database are aligned with GRA member needs, CLDB developers are seeking input through a short survey addressing the content and functionality of the database. The survey has two sections and will take no more than 20 minutes to finish. The first section is about features and functionality, and the second section is about subject matter.

Input is kindly requested from GRA members by **1st June 2021**.

The survey may be accessed in this link.

Source: Mark Liebig (USDA-Agricultural Research Service, USA).

7. Upcoming events

Due to the global development of the Covid-19 outbreak, some events were postponed. Please see below the new available dates

3rd Euro-Mediterranean Conference for Environmental Integration

The 3rd Euro-Mediterranean Conference for Environmental Integration (EMCEI-2021) will be held in Sousse, Tunisia during **10th-13th June 2021**. The main objectives of the conference are to support research and innovation, to promote the exchange of scientific knowledge, and to foster collaboration among Euro-Mediterranean communities. The conference participants will have an opportunity to attend several keynote presentations on new indicators and directions in research, development and innovations in the multidisciplinary fields of the environmental sciences. More information here.

17th International Conference on Environmental Science and Technology

The 17th International Conference on Environmental Science and Technology (CEST2021) will be held in Athens, Greece, during **1st - 4th September 2021**. This conference is a leading environmental conference where top experts, scientists, entrepreneurs, representatives of public administration and social initiatives present state-of-the-art research on current and emerging environmental issues. More info here.

ASA-CSSA-SSSA Annual Meeting

The 2021 ASA-CSSA-SSSA International annual meeting will be held in the Salt Lake City, UT USA, during **7th - 10th November 2021**. The 2021 meeting theme is "A Creative Economy for Sustainable Development". Details about this year's meeting may be found here.

14th European Farming Systems Conference (NEW DATE)

The 14th European Farming Systems Conference (IFSA – European Group) will be held at the University of Évora, Portugal, and hosted by the Institute of Mediterranean Agricultural and Environmental Sciences during **10th – 14th April 2022**. The main focus of this years' conference will be Farming Systems Facing Climate Change and Resource Challenges. More information here.

2nd International Symposium on Climate-Resilient Agri-Environmental Systems

The 2nd International Symposium on Climate-Resilient Agri-Environmental Systems (ISCRAES 2022) will be held in Dublin, Ireland, during **7th – 10th June 2022**. The main theme of this symposium is "Implementing the New Green Deal: The Path Towards Sustainable Agriculture", which refers mainly to European Green Deal having the opportunity and resources to achieve the primary objective of a sustainable Europe and planet by tackling the current major environmental, climate, and societal challenges facing by the world. More information here.

18th International RAMIRAN Conference (NEW DATE)

The 18th International RAMIRAN Conference will be held in Cambridge, UK, during **19th – 21st September 2022**. The conference will focus on developing strategies to maximize the efficiency of organic materials against a background of changing regulation, policy, and market forces, as

well as increasing pressure on the environment, soil quality, and food production. More information here.

4th Agriculture and Climate Change Conference (NEW DATE)

The 4th Agriculture and Climate Change Conference will be held in Dresden, Germany, during **8th – 10th May 2022**. The Conference will focus on the likely impact of climate change on crop production and explore approaches to maintain and increase crop productivity into the future. More information here.

This is your newsletter! If there's anything you think should be included, please send suggestions to mrosa.mosquera.losada@usc.es for the next issue

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