



Conservation Agriculture activities at COP21

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Introduction

The United Nations Framework Convention on Climate Change (UNFCCC) has annual meetings of the Conference of the Parties (COP) to the convention with the ongoing objective of stabilising greenhouse gas levels in the atmosphere to reduce the anthropogenic impact on climate. The 21st Conference of the Parties (COP21) was held near Paris from 30 November to 11 December, 2015. The COP21 negotiations led to broad discussions on mitigation, transparent accounting and stock taking of country actions (every five years), strengthening countries' abilities to adapt to climate change, strengthen abilities to recover from impacts and funding needs to build and become resilient. The Agreement considered mechanisms to contribute to emission reductions and encourage sustainable development. It encouraged countries to conserve and enhance sinks and reservoirs of greenhouse gases and to practice sustainable forest and soil management. Despite the limited explicit action with respect to agriculture, the fact that 195 countries could come to any sort of an agreement was truly a feat of diplomacy.

Why should Agriculture be part of COP21?

Agriculture is a contributor to greenhouse gas emissions but it is also an important industry impacted by climate change. We need to reduce emissions of greenhouse gases and to become a solution for climate change. Agriculture is the largest private land manager in the world involved in the complex business of food and fibre production. Extreme weather events are creating environmental problems, accelerating the rate of soil erosion, and threatening agricultural production

potentials. Climate change poses an urgent threat to our environment, our health, our economic infrastructure, food security and our national security.

The COP21 meeting provided an opportunity to create awareness that Conservation Agriculture (CA) can move conventional agriculture toward more sustainable systems that are environmentally responsible. Global decision makers need to understand CA and adopt sensible action plans for sustainable food production in a changing climate. CA systems provide an appropriate response to build climate resilience with proven technology and farmer support. The CA system is the best global alternative available with today's technology to provide system and resource resilience for both goals of emissions mitigation and building resilience to climate change.

If policy makers and scientists consider options for agriculture in the absence of those who know how to apply complex, integrated systems to working landscapes, the result may be less than appealing or optimal. Farm organisations and CA practitioners need to engage in intelligent, effective discussions contributing their expertise, pragmatism and tacit knowledge.

Conservation Agriculture

Conservation Agriculture is an operational and integrated approach of agro-ecology to manage agro-ecosystems for improved and sustained productivity, increased profits and food security while preserving and enhancing the resource base and the environment. CA is characterised by three linked principles: (i) minimum mechanical soil disturbance; (ii) permanent mulch soil cover; and (iii) diversification of crop species grown in sequences and/or associations as cover crops. These principles are universally applicable to all agricultural landscapes and land uses with locally adapted complementary

practices that enhance biodiversity and natural biological processes above and below the soil surface. CA is compatible with a wide range of agriculture production systems and farm types. The entire food chain, both plants and animals, rely upon the diversity in CA systems and the quality of the soil, which in turn rests on efficient carbon cycling. The natural synergy of minimum soil disturbance (that minimises C and soil loss) and the use of diverse rotations and cover crop mixes (that maximises soil coverage and C input) all contribute to soil diversity, health and regeneration in CA. CA is practiced on about 160 million hectares around the world. It can spread much further with the help of policy makers and networked farmer organisations willing to integrate their expertise and pragmatic experiences across nations.

Local sustainable agriculture groups

The CA promotional effort at COP21 was initiated and led by APAD (Association pour la Promotion d'une Agriculture Durable, or the Association for Promotion of Sustainable Agriculture) in France, and included several collaborators from the global CA community providing promotional support and a global perspective. Planning and scheduling was conducted via email and Skype calls with emphasis on (i) promoting CA at a display booth, (ii) supporting the '4 pour mille' soil carbon initiative, (iii) planning a field trip to a local CA farm, (iv) holding a small conference on CA with EU CA leaders presenting, (v) developing a CA manifesto, and (vi) developing a global conservation agriculture communication network (G-CAN).

The display booth emphasised 'visual communications' with 25 posters describing CA and some related activities. Information flyers were handed out to more than 1,000 interested visitors, and questions were addressed by APAD members and staff. Noteworthy were the promotional posters provided by the Buffett Foundation with emphasis on CA in developing countries. Much of the interest in the activities at the display booth came from representatives of developing countries, mainly Africa, interested in learning more about CA principles and techniques (Figure 1).



Figure 1. Visitors and posters at the CA display at COP21. The visitor is recording the explanation of the CA expert to share with his colleagues back home

On the second day of COP21 members of APAD supported the French Minister of Agriculture, Stéphane Le Foll, at an event

to unveil the 'quatre pour mille' initiative, which emphasises the value of soil carbon to agriculture (Figure 2). Minister Le Foll challenged the world to see that agriculture can and must be part of the solution to climate change, and that soil carbon sequestration is a key part of the solution. He set forward an ambitious agenda - 'quatre pour mille' or 'four per thousand' - to increase soil carbon by four parts per thousand per annum. The French National Institute for Agronomical Research (INRA) advocated that an annual increase of 'four per thousand' (0.4 percent) of organic matter in soil would be enough to compensate for the global emissions of greenhouse gases.



Figure 2. French Minister of Agriculture, Stéphane Le Foll, presents his initiative, '4 pour mille', for carbon sequestration

The CA conference entitled 'Soil fertility and climate change: the challenge of conservation agriculture development worldwide' was held on 5 December 2015 to a full room of interested participants. After a brief introduction to the objectives of the conference, two farmers, one from France and one from Argentina, presented their perspective on CA. Sarah Singla (France) indicated we must think of soil life differently, and we must understand ecosystem challenges and benefits (Figure 3). She placed emphasis on the soil as a living system with diverse soil biology that needs nurturing. María Beatriz Giraudo (Argentina) described how we need to mobilise farmers to transition to conservation agriculture around the world. She also highlighted the soil as a living biological system and reinforced the importance of minimum soil disturbance and continuous crop residue cover. Conservation agriculture experts Ricardo Ralisch (Brazil) and Amir Kassam (UK) discussed how farmers must find local solutions that can grow globally and the importance of a Manifesto and Global Network. Conservation agriculture experts Gottlieb Basch (Portugal) and Emilio González (Spain) discussed the importance of CA to mitigate and adapt to climate change, and the role of ECAF (European Conservation Agriculture Federation). They showed several successful examples of CA throughout Europe. At the end of the conference, there was a panel of farmers and CA experts that responded to questions from the audience and discussed the role of civil society and public policy supporting the development of conservation agriculture development worldwide.



Figure 3. French farmer Sarah Singla presents her ideas and concepts on soil biology at the CA conference at COP21, along with a panel of CA experts from other countries

A manifesto for action entitled '*Farming Forward for Climate Change*' was developed, bringing together the relevance of CA and climate extremes in more detail. The resilience of CA was noted for food security and suggested components of an action plan were identified. Global issues addressed in the manifesto include: (i) climate is changing everywhere in the world so agriculture is dependent upon climate and exposed to climate change; (ii) agriculture needs to adapt and be resilient to a changing climate; (iii) agriculture can also contribute to greenhouse gas emission reductions even though it is only 14 percent of global emissions; (iv) agriculture produces food for a growing global population with expectations of a safe and secure food supply. The manifesto further presented the educational and social needs of CA. Farmers need credible information and need to be engaged with other farmers to learn how to successfully adopt new farm practices. Farmers perceive other farmers' experiences and learnings with credibility, often beyond that of researchers and academics. Farmers are willing to share, but need to be enabled to help other farmers.

APAD and CA collaborators are also presently working towards the formation of a Global Conservation Agriculture Network called G-CAN. The formation of G-CAN was stimulated by global educational needs and for integrated action to deliver CA at the landscape scale. To give a global CA perspective, the alliance is focused on increasing food security by using enhanced communications supporting both large and smallholder agriculture and rural enterprise within healthy, sustainable and climate-smart landscapes. The G-CAN organisers are in the initial stages of development and looking for additional collaboration with specific suggestions on this initiative and potential members interested in exchanging information.

CA community and farmer-led organisations are willing to help

The CA collaborators and farmers are willing to spearhead synergistic collaborations with all players to design an adaptive path forward to provide impetus to develop more climate smart and environmentally friendly agriculture systems that make sense to farmers. We hope policy makers and global

world leaders who attended COP21 will create the conditions to develop global adoption of CA. International agreements on climate change mitigation and sustainable development of agricultural production are needed, using adequate and enabling policies consistent across geographies, and including economic incentive mechanisms for farmers and organisations. Agreements should utilise policy tools such as payments for ecosystem services, carbon offset trade mechanisms, and transitional assistance for landscape managers moving to better production systems.

The Future

A foundation of enthusiasm, cooperation and knowledge emerged at COP21, on which to build. Farmers who manage working landscapes around the world need to be engaged with COP policy makers at all future COP meetings, as well as national policy makers and researchers. The seventh World Congress of Conservation Agriculture, to be held in Argentina in 2017, will be another opportunity to not only celebrate the successes of CA, but to explore further needs and gaps to effectively and efficiently mainstream CA. The world's climate needs help from all sectors - and quickly.

Acknowledgment of other contributing CA experts.

Theo Freidrich, Rattan Lal, Emilio González, Gottlieb Basch, Sarah Singla, Magalie Corre, Cesar Beloso.

Signatory organisations on the Manifesto

- European Conservation Agriculture Federation, ECAF
- Association pour la Promotion d'une Agriculture Durable, APAD (France)
- African Conservation Tillage Network, ACT
- South Asian Conservation Agriculture Network, SACAN
- Conservation Tillage Research Centre, CTRC (China)
- Conservation Agriculture Australia
- Western Australian No-Tillage Farmers Association, WANTFA
- Confederation of American Associations for the Production of Sustainable Agriculture, CAAPAS
- Fundação Agrisus (Brazil)
- Federação Brasileira de Plantio Direto e Irrigação (Brazil)
- Federación Paraguaya de Siembra Directa para una Agricultura Sustentable, Fepasidias (Paraguay)
- Asociación Uruguaya de Siembra Directa, AUSID (Uruguay)
- Asociación Argentina de Productores en Siembra Directa, AAPRESID (Argentina)
- Sequoia Farm Foundation (USA)
- Ohio No-till Council
- Carbon Management and Sequestration Center, C-MASC, (Ohio State Univ)
- Agronomy Department of Universidade Estadual de Londrina (UEL, Brazil)
- David Brandt, No Till farmer, Ohio (USA)
- Rattan Lal, Distinguished University Professor of Soil Science, Director, Carbon Management and Sequestration Center, President Elect, International Union of Soil Sciences (USA).