

Global Adoption and Promotion of CA: Challenges and Perspectives

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Keynote Speech at the International Conference on Conservation Agriculture: Strategies for the Promotion and Uptake in the Central and West Asia and North Africa Region

5-7 July 2017, Konya, Turkey

Bismillah-ir-Rahaman-ir-Rahim

Distinguished Guests

Colleagues and Friends

Ladies and Gentlemen

It is a great honour for me to give this Introductory Keynote Speech this morning, and to be included in this distinguished company of the national and international research and development community.

I applaud FAO, Government of Turkey and the European Union for the foresight of hosting and organizing this International Conference on Conservation Agriculture to discuss Strategies for the Promotion and Uptake in the Central and West Asia and North Africa regions, the CWANA region. To me

this means leading and supporting the transformation of the CWANA agricultural systems towards greater sustainability and thus greater value to society.

I am particularly grateful to FAO and the Government of Turkey for inviting me to talk this morning at this Conference about the Global Adoption and Promotion of CA: Challenges and Perspectives.

It has been said that giving an effective Introductory Speech at any large gathering requires the courage to be candid about the past and the present, and to make some bold statements about the future.

I would like to offer a personal view about some of the global issues of sustainability in agricultural systems based on what I have observed, experienced and learnt over the past 50 years or so.

As I look back, over these 50 years, I am simply amazed and excited at the breadth and depth of developmental changes that have occurred everywhere in the world in the quality of our material life, in the development of public, private and civil institutions, and in our abilities to generate new knowledge and invent and apply all kinds of

technologies and skills to advance national economies, reduce poverty and improve livelihoods.

I am equally amazed that within my life-time, during which the colonial rule came to an end, we have developed our agriculture and land use systems to the point where at the global level we are producing nearly three times the food required to feed the total population.

However, alongside this phenomenon of excessive production, we are told that we are also wasting some 30% to 40% of the food produced, that we have one billion people still hungry, and that we have degraded some 90% of our ecosystems, two-thirds of them severely.

So, the unprecedented agricultural development and economic progress over the past 70 years has been accompanied by equally unprecedented wide-spread degradation of our agricultural land resources and the environment as well as many of the land-mediated societal services.

According to researchers such as H.E. Dregne, David Pimentel, David Montgomery and others, over the last 70 years, we have abandoned some 500 million

hectares of agricultural land globally, and have severely degraded even more land area due to the way our farming and agricultural systems have evolved, particularly since WWII. This process of degradation has been clearly described by David Montgomery in his book 'Dirt' which shows that tillage and the conventional 'modern' tillage-based agriculture are the root causes of soil and land degradation and erosion, and loss of soil health and productivity.

Indeed, as you know, in many parts of the world, including in the industrially advanced nations of Europe, cereal yields have plateaued at a sub-optimal level for the past two decades. The CWANA region also suffers from its own share of severe agroecosystem degradation and loss in crop and land productivity.

So I could, this morning, focus my Speech on the 'doom and gloom' stories about the state of our planet's and region's agroecosystems and the out-of-date knowledge and support services that are maintaining the sub-optimal status quo.

However, focussing on the 'doom and gloom' would only add more to the existing international atmosphere

of fear and fragmentation that is being perpetuated by the media, by various multi-national corporations, some establishment scientists and development experts, and several western governments and factions of civil society.

I would rather not do so because there is another much richer and inspiring set of stories to be told with confidence and pride, and to be reflected upon. These stories are about the innovative and sustainable agricultural achievements that have been occurring internationally but especially in the CWANA region, including in Turkey and its neighbouring countries such as Kazakhstan, Uzbekistan, Iran, Lebanon, Syria, Morocco, Tunisia and others. These achievements can also be seen in South and North America and in Australia, and more recently in Africa and Europe including Spain, Portugal, France and Greece.

These achievements in sustainable production intensification, which are not easily found in the mainstream discourse, should be replacing the fear and ignorance with hope, commitment and excitement for the future development of agricultural systems in the CWANA region and around the world.

In these stories, FAO sub-regional office in Ankara as well as FAO Rome, along with national governments of CWANA countries and their research and development institutions, and the CGIAR, have played and are playing a central leadership role that is intellectually and pragmatically exemplary, and which is providing the international community with examples and models to emulate.

As you well know, several countries in all continents have successfully shown that it is possible, using a new sustainable agriculture paradigm, to reverse the trends of agricultural land degradation in order for rural communities to become economically thriving, thus offering decent and dignified livelihoods to hundreds of thousands of farming families.

During the past two decades or so, farmers in Brazil, Argentina, Paraguay, and Uruguay and in USA, Canada, Australia, Russia, Ukraine, China and India, and also in countries of the CWANA region such as Kazakhstan, Uzbekistan, Morocco, Tunisia, Turkey, Syria, Lebanon and elsewhere, have demonstrated that a different agricultural intensification and development paradigm is possible. This paradigm is available to all nations and peoples upon which more efficient, resilient,

affordable and equitable food and agriculture systems can be built.

The story of the journey of global agricultural transformation began in the forties and fifties in North America, and in the seventies in South America and Australia, with pioneer and champion farmers working with technical experts. These pioneers showed that a very different and much better way of farming was possible.

This new way, which I refer to here as **‘the new paradigm’**, offers higher and sustainable productivity and greater economic, environmental and social benefits than conventional tillage farming.

I am of course referring to the innovation of No-Till Direct Planting into Crop Residues in Diversified Cropping System, which has become internationally known as Conservation Agriculture. This innovation has been applied to production systems in rainfed and irrigated agriculture, involving annual cropland systems, perennial systems including orchards and plantations, agroforestry system, mixed crop-livestock-tree systems, and rice-based systems.

Because of this new paradigm of Conservation Agriculture, we have come to know that a productive and sustainable agriculture system can also simultaneously deliver large-scale ecosystem services to farming communities and to societies from landscapes comprising large watersheds and whole provinces. This is simply not possible to achieve with conventional intensive tillage-based agriculture.

Here, I am referring to the two well-known examples of large-scale harnessing of ecosystem services in Brazil. The first example is the Cultivating Good Water Programme (cultivando aguas boa programma) in the Parana Basin III whose water drains into the reservoir of the Itaipu Dam that generates hydroelectric power for Brazil, Paraguay and Argentina. The second example is the government facilitated Plano ABC (the Brazilian Low Carbon Agriculture Plan or the Plano Basso Carbon).

The third example is the carbon offset trading scheme operated by the Alberta Government in Canada where farmers are paid 24 Dollars per tonne when the sequestered carbon offsets are purchased by industry that are emitting greater than their maximum allowable amount of carbon.

These three ecosystem service programmes in Brazil and Canada are worth billions of dollars to the nation and its people, and made possible only because of the successful integration of the new paradigm of Conservation Agriculture into the national and provincial agricultural systems. These programmes have succeed under the stewardship of hundreds of thousands of small and large farmers alike and their local no-till associations, supported by many public and private institutions.

The wider global bio-economic impact of the new paradigm has been that countries that have adopted Conservation Agriculture at the national level have become competitive global 'bread baskets', contributing to national and international food security and economic growth.

I have been humbled by what I have observed at close hand in countries that have seriously committed themselves to supporting the adoption and spread of Conservation Agriculture, and by having worked with many colleagues over the years, some of whom are sitting in the audience.

Indeed, the roll call of champions and pioneer farmers is long, impressive and honourable. And I am most grateful for having had the privilege to work with some of them, but there are many many more.

(Take a pause to acknowledge that the roll call is long and honourable.)

The colossal success of Conservation Agriculture land use programmes have not made the nations and their agricultural stakeholders complacent, nor have the scientific research and development communities and the no-till farmers lost any of their original enthusiasm and commitment to sustainability. In fact nations with significant area under Conservation Agriculture systems have continued to improve the quality, richness and profitability of no-till farming systems, including the development of mixed and integrated crop-livestock-forestry systems, and rice-based systems.

This progress in agricultural transformation to Conservation Agriculture is a direct challenge to those scientists and experts who have continued since WWII to push for agricultural intensification based on the conventional tillage-based “Green Revolution”

agriculture, which according to me was not always led by science but more by the urgent need to find alternate markets for the surplus products and goods originally manufactured to fight wars, not to feed people. This grand strategy in the 50s and 60s worked for a while because the world was short of food and several colonized nations were suffering from severe food shortages.

I am telling this story because the promise held out by the Green Revolution agriculture still mesmerizes some people, including mainstream establishment scientists, development experts and donor agencies and Foundations, and it helps to hold the conventional tillage farming paradigm in place. This 'business as usual' approach to production intensification is no longer fit for purpose for reasons we all know too well.

Pause

In fact, we now know the dire consequences of thinking that ploughs, fertilizers and pesticides hold the solution to sustainable food security and sustainable land management. The well-known consequences of tillage agriculture include severe land degradation and erosion, pollution of the environment, unaffordable

production costs, and sub-optimal performance of production systems, and in some extreme situations hundreds of thousands of suicides by small farmers.

It is in recognition of such dire consequences that Conferences on Conservation Agriculture such as this are so important because they are providing an opportunity to mainstream the new paradigm. They also serve to counterbalance and challenge the attachment to the idealized version of conventional industrial Green Revolution agriculture. Conferences such as this provide a clear way forward, as reflected in the following quote from the statement justifying the need for this Conference:

“.....the uptake of CA in the region is uneven and calls for a systematic approach to accelerating the adoption and spread of CA across the CWANA region which is characterized by Mediterranean-type environments. To achieve this, regional CA experts must formulate a strategy for transforming the conventional tillage agriculture to CA based on shared experiences, dialogue and action at the national and sub-regional level.”

The direction this Conference is pointing us towards is grounded in the experiences of no-till Conservation Agriculture which many farmers in many countries began in 1971/72 and have continued since in ever increasing numbers in all continents and in most land-based agro-ecologies.

At the global level, there are now some 180 M ha of Conservation Agriculture cropland systems in 2015/16, corresponding to 12.5% of the global annual cropping area. Since 2008/09, the rate of change to Conservation Agriculture systems has been occurring at an annual rate of about 10 M ha across all continents. Some 50% of the area is located in the developing countries and 50% in the industrialized countries.

Other production systems such as horticultural systems, orchards and plantation systems, mixed production systems including crop-livestock-forestry systems and agroforestry systems, of significant importance in the CWANA region, are also being converted to no-till Conservation Agriculture systems.

As you well know, all these no-till Conservation Agriculture systems are applying an ecosystems

approach to sustainable production intensification, which is also becoming increasingly recognized as a core production component of climate-smart agriculture.

Pause

So what have we learnt from those countries that have moved towards **the new agro-ecological paradigm of sustainable intensification?**

What are the issues of sustainability that these countries are dealing with and finding solutions for?

Perhaps one way to tackle these questions is to highlight the underlying criteria for success drawn from these diverse experiences.

There are obviously many issues and factors involved in making any fundamental change of the kind we are talking about, but I will mention **five key criteria** which appear to me to be the most crucial for changing completely the way we approach the business of taking care of our agricultural lands and natural resources.

For me, these criteria can serve to reconnect people, land and nature, a theme expanded upon by Jules Pretty in his book published in 2002, '*Agri-Culture*'.

They also serve to help achieve a paradigm change from a degrading and vulnerable tillage-based agricultural land management system to a sustainable system of Conservation Agriculture that is more productive and profitable, efficient and resilient, delivers societal ecosystem services, and is regenerative and self-repairing – a system that is not only climate smart but also smart in many many other ways!

The five critical ‘criteria for success’ of sustainability with Conservation Agriculture, are the following:

Where the agricultural paradigm is shifting successfully, you will find the presence of:

Number one: *Presence of champions and pioneer farmers.*

In the CWANA region there **ARE** champions and pioneer farmers but nowhere near the extent that you find in the countries where Conservation Agriculture is dominant.

Number two: *Presence of farmers coming together to form powerful farmer organizations for proactive actions and greater self-reliance?*

Across the CWANA region, there **ARE** some no-till farmer organizations but nowhere near the extent that you find in the countries where Conservation Agriculture is dominant.

Number three: *Presence of educational, research and new communication technology that have aligned themselves to promoting the new paradigm?*

Throughout the CWANA region, there are universities offering courses on sustainability, environment, soil, climate change adaptability and mitigation, climate smart agriculture, global food security and how to feed the world, how to reduce wastage; but none of these courses are strongly aligned with the new paradigm although they certainly use all the buzz words that make them seem like they are on the right track but in fact most universities are keeping the old paradigm in place. Only a hand-full of universities in the CWANA region teach no-till farming or CA. The same lack of emphasis on no-till methods applies to research and new communication technology.

As far as using new communication technology is concerned, off hand I cannot think of an example for the CWANA region of the kind of web-based

communication platform I moderate for the global Conservation Agriculture Community of Practice called CA-CoP.

One constraint which is often mentioned as a real barrier to the adoption and practice of CA in the CWANA region is the difficulty in establishing and maintaining crop residue cover on the soil surface because of the traditional free grazing rights that exist for pastoralist. However, it has been shown that the benefits of no-till with stubble mulch is not lost if most of the crop residues are consumed by livestock.

Secondly, it takes some 0.5 t ha^{-1} of crop residue from wheat or barley to provide a 30% soil cover. And if, there were some control on grazing to ensure that minimum amount of residue would be retained, the improvement in productivity over time would lead to more biomass becoming available for grazing while at the same time improving soil health, leading to greater and stable yields with greater profits.

It is thus important to establish long-term demonstration site at field scale (e.g. some 50 ha) to generate evidence that a regenerative and more productive community-based crop-livestock management is possible which would benefit both crop

farmers and livestock owners as well as reduce land degradation.

Number four: *Presence of governance that creates policies and institutional support for paradigm change?*

The CWANA region struggles with policies and institutional strategies to support a more sustainable way of farming. Only a handful of countries such as Kazakhstan, Morocco, Syria and Lebanon have attempted to develop a governance structure that is providing support to promote the adoption and spread of Conservation Agriculture.

Number five: *Presence of effective capacity to partner with the private sector in ways that benefits the farmer, community and society at large including nature?*

If we look at the CWANA region in terms of partnering with the private sector for sustainable agriculture, all we have to do is ask about the disappearing birds and bees, land degradation and desertification, and about why farmers must be forced to use more than 200-300 horsepower tractors when 80-150 horsepower would be sufficient in most cases? There is hardly any meaningful dialogue in place with the corporate

dominated agricultural private sector.

These five criteria are useful to examine the prospects for success in changing from the conventional agriculture to the new agriculture. Using these five criteria as a lens through which to look, one might be able to see where the gaps or weak points are, thus directing our attention to where we need to focus our energies for change.

With this critique of the CWANA region, based on the five criteria, coming from the model of countries such as Brazil, Argentina, Paraguay, Uruguay, USA, Canada, Australia, and more recently as Kazakhstan, China, India and South Africa, **one can see that the policy and institutional environment in the public and private sector for transformation of conventional farming to Conservation Agriculture in the countries of the CWANA region needs a fundamental reform.**

These five core criteria, which seem to me to be the key drivers for change, we might use to monitor and evaluate where we need to focus our attention and where we need to make a faster, bigger difference in shifting to the new paradigm.

In light of the above, I would like to conclude this privileged opportunity of sharing my thoughts with you on a **positive note of hope**.

The new paradigm of no-till Conservation Agriculture is now spreading across all continents, at an annual rate of 10 M ha, an area the size of Portugal. In the CWANA region, already some 3 Mha of Conservation Agriculture is being practiced in rainfed and irrigated lands. **This is a source of hope.**

The need for change is urgent everywhere and change is possible because we have, as other countries have shown, solutions to the constraints of implementing the spread of the new paradigm. **This is a tangible source of hope.**

We all, including many farmers, development experts, researchers and academics, private and public sector leaders, government and political officials, donors and philanthropists, have shown ourselves to be courageous and persistent, innovative and bull-headed in promoting and implementing the shift of paradigm to no-till agriculture in all production systems. We have kept the goal of making a better world in front of us at all times. **This is a source of hope to keep us going and**

allocate even greater investments into this change process internationally.

To FAO, to the Government of Turkey, to the European Union, and indeed to all the participants who have come from the different countries in the CWANA region and from outside the region, I would like to congratulate you all for creating this event that brings us all together to celebrate the milestones and accomplishments, and to share new knowledge about the new paradigm, thus making our way towards greater agricultural sustainability based on more systematic and effective regional and national strategies.

Finally, I feel that by promoting Conservation Agriculture Systems in the CWANA region, we are laying the foundation for creating the much needed harmony between nature and humankind, but we are also responding strategically to ecologically underpinning the development of sustainable food and agricultural systems in the nations of the CWANA region to meet future human needs.

With gratitude, I thank you again.

30-6-2017