

# First world congress on Conservation Agriculture A world-wide challenge

Madrid, October 1<sup>st</sup>-5<sup>th</sup> 2001

Report

## **Acknowledgements**

This report was prepared by Sandrine Vanep, FAO consultant, and José Benites, Technical Officer, FAO Land and Plant Nutrition Management Service. The authors would like to acknowledge in particular the following persons who provided useful notes and comments:

P. Koohafkan, B. Basso, Jim Findlay, Theodor Friedrich, Vic Jordan, John Landers, Christian Pieri, Patrick Wall, Luis Garcia Torres, Armando Martinez Vilela, John Ashburner and the Vice-chairman of each session.

The authors would also like to thank all the participants for their presence, their enthusiasm and their role in the promotion of Conservation Agriculture around the world.

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## Introduction

- ▶ The *1<sup>st</sup> World Congress on Conservation Agriculture* was jointly organised by the Food and Agriculture Organisation of the United Nations (FAO) and the European Conservation Agriculture Federation (ECAAF) and held in Madrid, Spain, from 1-5 October 2001. The objective of the Congress was to bring together farmers, advisers, scientists, private sector stakeholders and decision-makers to share information and experiences, and to encourage further interactions and development. The expected results and outputs of the congress were to:
  - ▶ Raise awareness at different local, country and international levels and within different public, private, civil society sectors and amongst non-governmental organisations;
  - ▶ Initiate and strengthen contacts between experienced people or bodies and future adopters of the principles of Conservation Agriculture in order to facilitate further co-operation;
  - ▶ Share experiences and assess the advances on various issues of Conservation Agriculture including policies, research, technology development, tools and means, and also at different levels and in different geographical regions;
  - ▶ Adopt a common Declaration on Conservation Agriculture supported by an Action Plan that would take into consideration both general goals and also include short-term action proposals.

Participants from some 70 countries in five different continents participated in the congress and its special sessions, representing a wide range of stakeholders involved in agriculture in general and Conservation Agriculture in particular:

- about 2,000 farmers participated in the 3 days of field activities;
- about 600 experts participated in the two days of congress meetings in Madrid; 100 participants attended the closing session in Cordoba and 800 were at the closing session in Burgos.

Seventy countries were represented, including delegates representing farmers and from various institutions, research centres, governments, NGOs, international organisations and private companies. According to the programme (see Annex 1), about 50 presentations were delivered focused on eight main issues: 1) Global improvements in CA; 2) Farmer experiences with CA (South America, Africa, Asia, Oceania, European Union and Spain in particular); 3) International networks for CA (FAO, GTZ, CIMMYT, CAAPAS, CIRAD, RELACO, ACT, ECAF, WANTFA, Central Asia, Asia and APDC); 4) Recent innovations in CA; 5) Adaptation of the agricultural industry to CA; 6) Promotion of CA: the role of the private sector; 7) CA impacts on the environment and 8) Perspectives and policies for development. The Congress participants received almost 200 contributions published in two volumes.

A poster session was organised in parallel and received many contributions. A Special Session was also dedicated to a discussion led by FAO, CIRAD and CIMMYT concerning "Networks for CA in developing countries". A round table was held with farmers' representatives to stress the key problems and limitations for the adoption of CA from the farmers' view point and a draft of the CA declaration was presented and commented on by many participants.

Three field days designed as interactive workshops ended the congress, these being organised both for congress participants and for farmers. They were held firstly in Cordoba, Andalusia, where the participants observed the principles of CA applied to olive trees and annual crops and received three presentations. Another was held in Aranjuez, Madrid, where CA principles were being applied to olive trees, vineyards and annual crops. Demonstrations were made of direct seeding and techniques for the local application of herbicides for olive trees. The final field day was organised in Segovia and Burgos, Castilla-Leon, the participants observing CA principles applied to cereals and sunflower. Four presentations were given and there was a machinery demonstration involving 17 different direct drilling seeders. This document constitutes a synthesis of the main outputs of the congress and the highlights from each session. There is also a list of key issues discussed during a round table, the conclusions, the Congress Declaration and the Action Plan.

#### Highlights from the presentation sessions

The planning of the presentation sessions is detailed in the programme in Annex 1. Some highlights are presented below, but the full contributions are available in Volume 1 of the proceedings.

#### Conservation Agriculture, global improvements

- ❑ There are about 800 million malnourished people in 98 developing countries and the trends in food insecurity are increasing particularly in Least Developing Countries (LDC).
- ❑ There is an urgent need to increase agricultural production where the demand is located in order to meet the increased demand for food and other agricultural products.
- ❑ The agricultural systems that match this objective must be productive and profitable as well as sustainable. They have to increase production and improve rural livelihood while protecting the natural resources and the environment.
- ❑ Conservation Agriculture (CA) is a win-win system based on a permanent soil cover, crop rotations and the reduction or elimination of tillage.
- ❑ CA consistently provides higher yields with less expenditure on input and labour.

- CA is sustainable from economic, social and environmental perspectives. It increases C sequestration and water infiltration, while reducing runoff, erosion and degradation of soil and water resources. Unfortunately, only 4 % of the world 's cultivated land is presently using CA practices.
- There is an urgent need to globalise the knowledge of CA, through an interdisciplinary approach involving scientific, social, political and economical inputs and to explore the opportunities to manage and transfer this knowledge. Food labelling may also help in providing this global knowledge of CA.

#### Farmer experiences with Conservation Agriculture

- The primary need as regards agricultural production is soil fertility management. Permanent soil cover – through crop residue or mulch application as well as cover crops – allows protection of the soil from erosion as well as soil fertility management (SOM, nutrients, structure, biology, etc.).
- For wider adoption, farmers need a clear and practical knowledge as well as safe, adapted, performing and affordable technology. For these purposes, farmers must be involved in participatory research and need the full collaboration of private companies. Indigenous knowledge must be taken into account in this process as it may bring useful solutions to specific problems such as water shortage.
- Strong environmental pressure may be a key factor for the adoption of CA. However, farmers cannot afford to support all the risks related to the process of transition. They need information, training and support, which can be provided through exchanges between farmers. They will also need financial support to purchase the new equipment and necessary inputs.
- Full adoption may face reluctance due to a long history through the centuries of tillage practices. In Europe for example, farmers may still apply zonal tillage or subsoiling techniques. This does not constitute CA although it can be necessary in very specific conditions or to overcome initial limitations during the transition phase of introducing CA. However, many of the benefits of Zero Tillage and biological tillage are lost with these practices, or at least not fully developed.
- The competition with livestock or other uses – which is a major issue in semi-arid areas and in Africa in particular – may be addressed through the emphasis on high biomass production as well as high grain production.
- Rural women must be included in training programmes in a similar way as they are in Asia. They are often working in the fields and CA practices can help them in saving money for the family, saving time for them to develop other activities or for family care. CA also brings better health, especially to women, thanks to less hard fieldwork and less exposure to heat.

### International networks for Conservation Agriculture

- ❑ The negative impacts of conventional agriculture practices are acknowledged. However, it is important to focus on solutions and not to merely focus on problems.
- ❑ Conservation Agriculture is based on already known technologies such as Zero-tillage (direct seeding). But the adoption of these farming systems became a question of survival in areas like Brazil. They are cost-effective and produce high and stable yields, which is most important for rural communities. They are now adapted and developed to many socio-economic conditions and various agro-ecological zones (AEZ) of the five continents, with greater success in developing countries and in very degraded areas of both developed and developing countries.
- ❑ CA aims to copy natural ecosystems: it is based on a permanent soil cover, crop rotations and minimal soil disturbance, which is usually provided by direct seeding/drilling through the residues of the previous crop. CA is compatible agriculture at all mechanisation levels, from manual up to precision agriculture using GPS for example. However, CA is not the goal itself but a concept; Soil Fertility Management is the final objective.
- ❑ Many cover crops are already well known and can be adapted to various purposes and AEZ. Implements have also been developed for various farming systems, although they are not always available locally. Suitable approaches and products for weed and pest management exist and need to be promoted. Livestock is often seen as a factor of conflict with CA practises, although it can also provide synergies if it is properly integrated with CA system. This information and knowledge must be made available to the various stakeholders, according to their needs. It was suggested that a central Data Bank should be set up through an international Organisation. Its objectives would be to collect and to make available the knowledge about CA.
- ❑ Farmers need support after the termination of a field project; otherwise adoption may decline or be reversed. The most effective support is usually based on farmer-to-farmer exchanges, through farmer associations or networks. This organisation of farmers is the key for adoption, training, information and innovation. It is also the only way for farmers to be heard and to be associated with development of the technologies they really need. It is also important to stress that education starts at school and particular efforts should be done to change the views on agriculture practices at school, at all levels.
- ❑ Networks at different levels are also necessary to facilitate exchanges between different countries or regions, which may face the same problems but have different solutions. This should also be a way to stress the differences in environmental and socio-economic conditions, which may affect the technology transfer and adoption processes. There is also a need for high quality media products to be made available for world-wide distribution.

### Recent innovations and adaptation of the agricultural industry to Conservation Agriculture

- ❑ As CA adoption is closely linked with the availability of appropriate equipment, there is a need for full co-operation by the machinery companies to adapt and process, with the farmers, the implements according to their needs, and to make them reliable, available and affordable.
- ❑ Some machinery such as seeding machines may need further adaptation to be able, for example, to plant through dense quantities of green or dry biomass. Other tools have been developed and provide significant improvement, such as the knife roller, which is used for cover crop management and weed control.
- ❑ Adoption must also be supported by governments, for example through incentives.
- ❑ Experience shows that, for small farmers, mechanical weed control provides similar yields as when chemical weed control is practised. Appropriate knowledge about crops, cover crops and crop rotations can also provide good skills in biological weed control.
- ❑ Pest management also benefits from innovations and adaptations. Pests may be different, but not necessarily more serious in low/no-till systems than those occurring in conventional tillage systems. CA improves biological activity and diversity, including natural predators and competitors. By adopting IPM practices within a CA system, it is possible to obtain substantial reductions in pesticide use.

### The role of the private sector

- ❑ The main role of private companies is to provide appropriate tools for CA practices. However, they may have a partial and limited view of CA concept. For example, they may consider that the use of any kind of reduced tillage equipment is an appropriate practice, which is not acceptable within the CA concept.
- ❑ As manufacturers are often in contact with farmers, farmers groups, technicians and institutions, they may have a significant impact on the diffusion of information, which is recognised as the main issue for CA development. Therefore, information should be actively shared between private and public sector, with close collaboration to ensure that the appropriate information is given to farmers.

### Conservation Agriculture impacts on the environment, perspectives and policies for development

- ❑ The negative impacts of conventional agriculture practices can be seen all over the world. Continuous tillage, burning and incorporation of crop residues, aggressive seedbed preparation with heavy machinery and overgrazing leads to losses of soil, soil fertility, grain, biodiversity and water, and eventually to desertification. Such dramatic phenomena often motivated the adoption of CA in the USA, in Brazil and in Australia for example.

- The impacts of conventional agriculture include the emission of CO<sub>2</sub> in the atmosphere through the abusive use of fuel, but mainly through the oxidation of the Soil Organic Matter due to tillage as well as the incorporation or burning of crop residues. Monitoring shows that even minimum tillage releases CO<sub>2</sub> whereas Zero Tillage is the only way to ensure carbon sequestration in the soil. Measures of the economic and environmental impacts of CA must be pursued in the long term to compare with those of conventional agriculture.
- CA is not a panacea, but represents a serious hope for many poor farmers and for agriculture in general. There is an urgent need for investment in CA. However, technology transfer must be carefully designed to avoid irreversible failures such as the transfer of the Australian system to some countries of the middle west, which didn't take into account the socio-economic specificity of the area
- CA must be seen as a «Blue Revolution» regarding its effects on water, in particular water infiltration, conservation of soil moisture, quality and availability of ground and surface water throughout the year. These savings in water mitigate the effects of drought and increase food and water security.
- There is an urgent need for a change of paradigm to support CA systems, which are sustainable, competitive and profitable. In the ex-Soviet Union countries, where the equipment is obsolete and must be changed on a wide scale, there is enormous opportunity to change towards CA. Changes must also take place in mentalities and in policies, like in Europe, where the conventional practices are hardly mitigated but not discussed nor discouraged.
- All the stakeholders are responsible for the success or failure resulting from adoption of CA practices. They all have to make efforts to adapt and change their mind. Farmers must benefit from all these synergies and must receive technical and financial support to lower the risks they will take as they change their production system.

#### Special session: Networks for CA in developing countries (FAO–CIRAD–CIMMYT)

Even if the words used are sometimes different, it is recognised that Conservation Agriculture include three main principles – a permanent soil cover, crop rotations and minimum soil disturbance – and provides significant benefits for the farmers and for the communities.

Many networks already exist at local, national and international levels, already providing good support but many need better interactions. The objectives of any network in CA are to provide support to farmers and to promote CA world-wide. To achieve this, further action is needed:

- The existing networks should be reinforced and receive greater support in terms of personnel, financial resources, etc;
- These networks need to improve their interaction with each other and the exchange of information.

## ROUND TABLES ON KEY ISSUES

1. **DEFINITION AND BENEFITS OF CA:** There is a need for a clear definition of CA and its principles, which should be a holistic concept and should include any agro-ecological zone of the world. The emphasis should be put on the benefits for farmers, and firstly, the increases in yields and the savings in money, which are the primary interests of farmers. The benefits for society and the environment can be a second level of motivation for them, but this is mainly of interest to governments and the international community.
2. **ACCESS TO APPROPRIATE KNOWLEDGE, IMPLEMENTS AND INPUTS:** Access to appropriate knowledge, implements and inputs such as cover crop seeds, quality seeds and chemicals, is another key issue for successful adoption of CA. Safe use of chemicals is also critical, especially for small farmers. The public sector and NGOs should favour access to knowledge through specific and practical training of farmers and extensionists. High level capacity building is also needed to support CA in the long-term. The private sector has a role to play in developing appropriate implements and inputs, together with farmers, NGOs and institutions, and in making them affordable to farmers. Farmers' organisations and NGOs might need to lobby to overcome the possible reluctance of some manufacturers of tillage implements and tractors.
3. **SUPPORT TO FARMERS:** Farmers may lack financial resources at the beginning of the adoption process to change their farming system and to purchase new equipment. They may also face a temporary decrease in income. Policies and government programmes should support farmers' efforts during this transitional period through incentives, access to credit and through active support to farmers' organisations and networks. This is urgently needed in Africa for example, where farmers are poorly organised and therefore have no voice. Another support urgently needed for farmers is technical training, which should take into account illiteracy and gender issues.
4. **IMPACT OF POLICIES:** Possible constraints affecting adoption of CA include pro-urban policy, inadequate rural infrastructure, a lack of access to markets and subsidies on external inputs or practices that are not compatible with CA practices. Appropriate design of supporting policies is another key factor for adoption. Particular efforts should be made in Europe, where policies are not clearly enough supportive of CA practices and where the negative impacts of conventional agriculture – and the benefits of CA – are largely ignored and little recognised.
5. **SOCIAL FACTORS:** CA adoption may also be constrained by many social factors such as customary rights, insecure land use right, communal rights for grazing, widespread burning that moves from one field to another, centuries of practice of tillage, etc. Therefore, the introduction of CA practices should take these factors into account and first focus in areas where these constraints are not the first limiting factors, or where solutions can be easily found over the long term. Catchment area or livelihood approaches are probably the more suitable for the design and

implementation of CA. There is also a need to bring a critical mass of farmers together to favour the adoption process.

6. **COMPETITION WITH LIVESTOCK:** CA systems may be difficult to introduce when there is heavy livestock grazing pressure on crop residues. This is of particular importance in semi-arid areas where subsistence relies on livestock and grain production. In these areas specially, improvement and management of grazing lands must be considered and integrated into the CA practices.
7. **IRRIGATED LANDS:** Irrigated land has specific constraints and resources. The adoption of CA practices in this specific context needs further adaptation and research. This could be focused for example, on water resources particularly quality, quantity and availability and also on salinity problems.
8. **SEMI-ARID AREAS:** No experience has shown reliable results yet and there is a need for further experimentation in these areas. In Africa, experiences with minimum tillage or traditional water harvesting technologies (Zai or Tassa) show good results. These experiences might be integrated into the concept of CA. Water shortage is a problem but should also be an incentive to adopt CA.
9. **LOCAL EXPERIENCES, RESEARCH AND TRIALS:** Unexpected solutions to practical problems such as adapted cover crops, water harvesting, livestock management, etc., may exist in other regions of the world but be ignored because of poor management of information. For example, it appears that many farmers in Africa have developed practices that could be used within the CA framework. Particular efforts are needed to collect experiences and make them available at the appropriate level. There is also a need for research and trials, especially regarding the competition with livestock, irrigated areas, semi-arid areas, cover crops and weed management. To achieve this, a change of mentality and better awareness within institutions and research centres is needed to support the dissemination of CA practices.

## CONCLUSIONS

When 800 million people still suffer from hunger, the only way to increase agricultural production is to support agricultural systems that are productive, profitable and sustainable.

The farmers' objective is to continue living on agricultural resources. The unacceptable alternative is to change activity or migrate to find incomes and to survive. Experience shows that conventional practices usually lead to land degradation and decreases in yields and incomes. The major concern of governments, NGOs and international organisations is to improve livelihoods while protecting the natural resources. The main role of scientists and the private sector is to develop appropriate and accessible technologies that fit in with all these objectives.

Conservation Agriculture is based on a permanent soil cover, crop rotations and the reduction or elimination of tillage. Implementation of these principles for specific situations occurred firstly in the Americas where it has been adapted by farmers, scientists, NGOs and the private sector. Many different ways of implementing them are now developing all over the world: in Africa, in Asia and Central Asia, in Oceania and in Europe.

Conservation Agriculture is recognised as a win-win system by the participants as well as by many people around the world including farmers, institutions, scientists, politicians, private sector and international organisations. It provides higher yields with less expense on inputs and labour. It is sustainable from economic, social and environmental perspectives.

However, adoption of CA may be constrained by an unfavourable context. This might be a lack of farmers' groups, competition with livestock for the use of crop residues, poor access to appropriate and quality inputs and implements, little knowledge and poor access of appropriate cover crops, It might also be poor support from institutions because of little knowledge about CA, customary rights and practices, insecure land use rights, inappropriate policies that favour conventional practices or urban areas rather than CA practices and rural areas, inadequate rural infrastructure and lack of access to markets.

Therefore, there is an urgent need to globalise the knowledge of CA through an interdisciplinary approach involving scientific, social, political and economical inputs and to explore the opportunities to manage and transfer this knowledge. In this process, farmers' access to information and practical training is a major issue, together with their organisation into farmers' groups. Support to them through funding, policies and governmental support is of critical importance, especially during the transition period. Food labelling may also help in providing this global knowledge of CA and some kind of recognition and support to farmers who practise it.

A Declaration was drafted and submitted to the participants at the end of the congress. The Brazilian delegation proposed hosting the 2<sup>nd</sup> World congress in 2003 at Iguazu Falls. The date and programme is to be decided in the near future This second Congress should be the occasion to present advances in the adoption of CA and new solutions to the key problems highlighted during this, the first congress.

## **The 1st world congress on Conservation Agriculture DECLARATION**

*(DRAFT)*

The 1<sup>st</sup> World Congress on Conservation Agriculture was held in Madrid from October 1-5, 2001 and brought together international organisations, farmers' associations, scientific institutions, private sector, non-governmental and other organisations from more than 70 countries, located in both the developed and developing world. The main objective of the Congress was to consider and promote the world-wide adoption of the principles and locally adapted practices of Conservation Agriculture.

Accumulated positive experiences with Conservation Agriculture are leading to its rapid adoption world-wide, in diverse agro-ecological zones ranging from the humid tropics to the steppes of Central Asia. Its acceptance and adoption enhance agricultural production and reduce the costs of production, while at the same time conserving and enhancing the natural resources of land, water and climate. These benefits are the basis for ensuring stable incomes for commercial and small-scale farmers and the continuing production of sufficient food, fibre and domestic energy for a growing world population, demonstrating significant potential as a tool for poverty alleviation.

Conventional agriculture includes practices such as crop residue burning or deep soil inversion to control weeds and prepare the seedbed. These practices are often not sustainable since they considerably increase land degradation by soil compaction, erosion and contamination of water bodies by sediments, threatening land productivity, the environment and human health. Also, they produce greater carbon dioxide (CO<sub>2</sub>) emissions to the atmosphere and decrease soil organic matter content, thus contributing to global warming. The adverse impacts of such agricultural practices are manifested world-wide through an accelerated degradation of many natural ecosystems, decreased biodiversity and increased risks of desertification in the most vulnerable areas.

The adoption of Conservation Agriculture principles can avoid these conflicts. Conservation Agriculture aims to replicate natural processes through the maintenance of a permanent soil cover consisting of cover crops and/or crop residues through which crops are seeded or planted. Agroforestry may also contribute towards this objective under specific circumstances. To ensure minimal soil disturbance, the establishment of crops and cover crops is done by direct seeding/planting, this technique being covered by the terms direct drilling, no-tillage, no-till, zero tillage or even surface seeding, or broadcasting. However, when appropriate, minimum/non-inversion tillage can be an alternative best management practice. Crop rotations, if judiciously selected, enhance the soil's rooting environment, its structure, nutrients and moisture retention, while avoiding the build-up of pests and diseases. Conservationist techniques alter the soil's natural composition, structure and biodiversity as little as possible, and enhance water infiltration and moisture conservation, thus combating erosion and soil and water degradation.

Being more than just a farming practice, Conservation Agriculture embraces a holistic concept of agriculture, combining the basic characteristics of production with those of conservation and is best implemented at watershed level in order to capture all potential benefits. It makes agriculture sustainable and rural development practicable, through the

integration of crop bio-diversity, mixed crop/livestock farming and other activities, being characterised by efficient use of resources. This results in a more productive agriculture for food security and improved rural livelihoods, especially women's welfare since there is potential to increase their output per labour day in soil preparation and weeding, with positive impacts on family and household responsibilities. Its many economic, social and environmental benefits justify a fundamental re-appraisal of common farming methods. Conservation Agriculture should therefore be considered as a theme which cuts across various disciplines, organisations and ministries.

This Congress calls upon politicians, international institutions, environmentalists, farmers, private industry and society as a whole to recognise that the conservation of natural resources is the co-responsibility, past, present and future, of all sectors of society, in the proportion that they consume products resulting from the exploitation of these resources. Furthermore, it calls upon society, through these stakeholders, to conceive and enact appropriate long-term strategies and to support, further develop and embrace the concepts of Conservation Agriculture as the most appropriate means of ensuring the continuity of the land's ongoing capacities to yield food, other agricultural products, water and environmental services in perpetuity. It follows that the environmental services provided by farmers practising Conservation Agriculture should be recognised and recompensed by society.

#### ACTION PLAN

With respect to the conclusions of this Congress, and in order to exploit fully the potential benefits to be gained from the adoption of Conservation Agriculture, the Congress participants declare that the following measures should be taken:

- I. National governments and international organisations should encourage, at all levels, the mindset changes required as well as co-operation and exchanges to create synergies and to avoid duplication of efforts. Farmers' associations such as CAAPAS and networks such as RELACO for Latin America, ACT for Africa, SACAN for Asia and ECAN for Eurasia should be encouraged and reinforced at national and international levels, as the most effective bottom-up means of disseminating and developing Conservation Agriculture technology. The progress of activities and the outputs of these networks and workgroups could be presented at the Second World Congress, in 2003.
- II. Promotion of Conservation Agriculture should emphasise the increased land productivity, diversification prospects and increased profits for small-scale and commercial farmers. These benefits should be drawn to the attention of national and international communities as well as the global benefits to land resources, health and the environment.
- III. International Organisations should collaborate in developing common definitions and guidelines for achieving the benefits to be obtained from the adoption of Conservation Agriculture and develop compensatory support mechanisms for the environmental services which CA provides.

- IV. International organisations should encourage South-South and South-North co-operation, since important information resources, experience, capacities and equipment designs relating to Conservation Agriculture are now available in Latin America and are quickly developing in Africa and Asia.
- V. The private and the public sectors, together with NGOs, should actively collaborate in the development with farmers of the technologies needed to achieve effectiveness in Conservation Agriculture. This includes collaboration in the areas of access to information and the local adaptation of farming practices, tools and equipment, seeds and agricultural chemicals. Particular attention should be given to the safe use of the latter by small farmers.
- VI. The role of the public sector should be to promote Conservation Agriculture as an institutional policy framework, with inter-agency working agreements to provide appropriate support from public sources to promote its adoption by farmers. Support is needed :
- to recognise the public benefits of CA that result from private farmers' initiatives, including, amongst others, conservation of natural resources (water, soil, biodiversity), protection of the environment, reduction of flooding and damage to civil infrastructure;
  - to compensate farmers for these services and help assist them to face the costs necessary for the transition to CA, especially the purchase of implements which farmers initially may not be able to afford;
  - to fund appropriate key research and advisory services with the private sector demand-led by farmers;
  - to support access to appropriate knowledge through the development of training and capacity-building for farmers, advisors, institutions, etc.;
  - to implement information campaigns, policies and activities to encourage CA and appropriate private investment in this area, as well as to discourage inappropriate practices,
  - to provide appropriate infrastructure to facilitate the transport, processing, distribution and, if necessary, the export of any surplus production;
  - to support adoption and continuity of CA managed at local level, through legislation, incentives and the credit
- These measures should be linked with existing legislation and other appropriate instruments such as the United Nations Convention to Combat Desertification and the Kyoto Protocol.
- VII. It is important that the promotion of Conservation Agriculture within a particular area, before wider dissemination, begin at a small-scale level within the community or watershed and within an environment that is favourable for addressing local constraints. The activities should take into account local traditions, knowledge and experiences and should provide information, education, practical training and capacity building in order to develop local practices adapted to the concepts of CA. These activities should be directed towards farmers, farm workers, field leaders, technicians and agronomists, both men and women.

- VIII. The promotion of CA must be associated with significant efforts to address the problem of competition with livestock, especially in semi-arid areas. This includes the promotion of alternatives to overgrazing and the inclusion of rotations with high quality pastures in CA project plans.
- IX. The representatives of the various stakeholders attending the Congress should develop partnerships and undertake commitments to design, plan and implement actions as well as monitoring procedures, in order to be able to present them and some early results during the Second World Congress. The Brazilian delegation proposed hosting this congress, planned to take place within two years.
- X. In the short term, the following actions should be initiated:
- A Discussion Forum should be quickly set up within the framework of FAO's Conservation Agriculture Workgroup to facilitate and strengthen international exchanges, whilst avoiding invasive information.
  - Subsequent contributions should be prepared for international conventions and events, such as the Agenda 21 and its conventions (CSD, UNCCD, UNCBD, UNFCCC), the World Summit on Sustainable Development (Rio+10) to be held 2-11 September 2002 in Johannesburg, South Africa and global environment conventions. This should be activated urgently and before the end of October 2001.
  - A special synergy with the Kyoto Protocol should also be examined so that carbon sequestration via Conservation Agriculture could become a substantial incentive for its adoption.

*18 October 2001*

ANNEXES

**ANNEX 1:****Programme of the 1<sup>st</sup> Congress on Conservation Agriculture, a World Wide Challenge**

<b>CONGRESS PALACE – IFEMA, Madrid (Spain)</b>					
<b>Monday, October 1<sup>st</sup> 2001</b>					
Entrance Hall					
16:30-20:30	Registration and Poster Display				
<b>Tuesday, October 2<sup>nd</sup> 2001</b>					
	<b>Auditorium</b>	<b>Rooms A + D + E</b>	<b>Room B</b>	<b>Rooms F+G+H</b>	<b>Room I</b>
8:00	Registration at Entrance Hall and Poster Display				
9:30	Opening Session				
	<b>CA Global Improvements</b> Chairman: <i>Dr V. Jordan (SMI, ECAF)</i>				
10:00	Agriculture and Natural Resource Management. The Role of CA, ( <i>Dr L. Fresco, FAO</i> )				
10:30	Food Production and New Challenges in the World Agriculture, ( <i>Professor Dr J. Lamo, Ex-Minister for Agriculture, Spain</i> )				
11:00	Coffee Break				
11:30	Rural Development and CA, ( <i>Professor Dr R. Tamames, UC Madrid</i> )				
12:00	Global Environmental Impact of CA, ( <i>Dr D. Reicosky, USDA</i> )				
	<b>Farmer Experiences with CA</b> Chairman: <i>Mr M. Hamell (DG Environment-EU)</i> Vice-chairman & Session organiser: <i>Professor Dr F. Tebrugge (GKB, ECAF)</i>				
12:30	South America I ( <i>Dr C. Crovetto</i> )	Oceania ( <i>Dr J. Baker</i> )			Poster session for papers of proceeding Vol. II, chapters 1 to 5
12:50	Africa ( <i>Mr T. Ahima</i> )	European Union ( <i>Prof. Ms G. Cruz</i> )	South America II ( <i>Dr V. Trucco</i> )		
13:10	Asia ( <i>Ms N. Farooq</i> )		Spain ( <i>Mr A. Tapia</i> )		
13:30	Lunch				
15:00	<b>Opening of the Poster Session (Room I)</b>				
	<b>International Networks for CA</b> Chairman: <i>Mr T. García Azcárate (DG Agriculture-EU)</i> Vice-chairman & Session organiser: <i>Dr W. Sturny (SNT, ECAF)</i>			<b>FAO-CIRAD-CIMMYT Network for CA in Developing Countries</b> Chairman: <i>Dr F. Dauphin (FAO)</i>	
15:45	FAO ( <i>Dr J. Benites</i> )	CIRAD ( <i>Dr L. Séguy</i> )	WANTFA ( <i>Dr N. Young</i> )		Poster session for papers of proceeding Vol. II, chapters 1 to 5
16:15	GTZ ( <i>Dr K. Steiner</i> )	RELACO ( <i>Dr M. da Veiga</i> )	CENTRAL ASIA ( <i>Dr A. Kureshbayev</i> )	<i>Dr F. Forest Dr L. Harrington Dr L. Séguy</i>	
16:45	CIMMYT ( <i>Dr L. Harrington</i> )	ACT ( <i>Dr M. Bwalya</i> )	ASIA ( <i>Dr M. Ahamd</i> )		
17:15	CAAPAS ( <i>Dr M. Pereira</i> )	ECAF ( <i>Dr L. García-Torres</i> )	APDC ( <i>Dr J. Landers</i> )	<i>(This session might last until 20:00)</i>	

CONGRESS PALACE - IFEMA, Madrid (Spain)					
Wednesday, October 3 <sup>rd</sup> 2001					
	Auditorium	Rooms A + D + E	Room B	Rooms F+G+H	Room I
	<b>CA Recent innovations /</b> Chairman: <i>Dr T. Bachman (FAO)</i> Vice-chairman & Session organiser: <i>Prof. Dr M. Carvalho</i> (APOSOLO, ECAF)	<b>Adaptation of the agricultural industry to CA</b> Chairman: <i>Dr J. Baker (CINTRE, Australia)</i> Vice-chairman & Session organiser: <i>Dr K. D. Johansen (FRDK, ECAF)</i>	<b>CA Recent innovations //</b>	<b>Special Session for Spanish farmers</b> Chairman: <i>Dr V. Trucco</i> (President AAPRESID)	
9:00	Conservation Tillage and Related Technologies ( <i>Dr R. Derpsch</i> )	Agricultural Equipments and Mechanisation ( <i>Dr K. Saxton</i> )			Poster session for papers of proceeding Vol. II, chapters 6 to 10
9:20	Cover Crop Management ( <i>Dr A. Calegari</i> )	Equipment in Small Farms, ( <i>Dr M<sup>a</sup> F. Ribeiro</i> )	Cropping Systems ( <i>Dr A. El Titi</i> )	<i>Dr F. García Olmedo</i> (UP Madrid)	
9:40	Mineral and Organic Fertiliser Management ( <i>Dr M. Vieira</i> )	Integrated Pest Management for CA ( <i>Dr A. Leake</i> )	Agriculture / Livestock in CA ( <i>Dr P. Mueller</i> )	<i>Ms G. Álvarez</i> (Spanish Ministry for Environment)	
10:00	Weed Management ( <i>Dr J. Nalewaja</i> )	Precision Agriculture in CA ( <i>Dr B. Basso</i> )		<i>Mr F. Gómez Jover</i> (Spanish Ministry Agric.)	
10:20	Coffee Break				
10:50	<b>Promotion of CA: The Role of Private Sector</b> Chairman: <i>Dr G. Basch (APOSOLO, ECAF)</i>				Poster session for papers of proceeding Vol. II, chapters 6 to 10
	<i>History and Development of CA. The view of Monsanto (Dr H. Grant)</i> <i>Perspectives for CA (Dr Jeremy Dyson, Syngenta)</i> <i>The Direct Seeding Machinery</i> <i>Fertilizer Industry view of CA</i> <i>Governmental Support for Promoting CA Industry (Mr V. Aginin, Vice Minister of Agriculture of the Russian Federation)</i>				
13:00	Lunch				
	<b>CA Influence on Environment /</b> Chairman: <i>Dir Gen. I. González Doncel (Spanish Ministry for Environment)</i> Vice-chairman & Session organiser: <i>Dr M. Pisante</i> (AIGACoS, ECAF)	<b>Perspectives and Policies for Development /</b> Chairman: <i>Professor J. Pretty</i> (University of Essex, UK) Vice-chairman & Session organiser: <i>Dr T. Friedrich (FAO)</i>	<b>Perspectives and Policies for Development //</b> <b>and</b> <b>CA influence on Environment //</b>		
14:30	CO <sub>2</sub> Emissions & Carbon Sequestration ( <i>Dr D. Reicosky</i> )	Globalisation and CA: The Case of Mercosur ( <i>Dr R. Peiretti</i> )	Strategies for Promoting CA ( <i>Dr F. Dauphin</i> )	<b>Offered Paper Session</b> See central page of this Program	Poster session for papers of Proceeding Vol. II, chapters 6 to 10
15:00	Agro-Chemical Leaching & Water Contamination ( <i>Dr A. Carter</i> )	Agri-Environmental Policy in EU ( <i>Mr M. Hamell</i> )	Conventional Agriculture & Deser- tification ( <i>Dr J. Rubio</i> )		
15:30	Soil Erosion & Soil Structure/Quality ( <i>Dr F. Tebrugge</i> )	Strategies for International Cooperation ( <i>Dr C. Pieri</i> )	Tillage and Soil Compaction ( <i>Dr D. McGarry</i> )		
16:00	Biodiversity and Agriculture ( <i>Dr D. de Souza</i> )	Win-win Options for Food Security ( <i>Dr P. Koohafkan</i> )	Soil Moisture Conservation ( <i>Dr F. Shaxon</i> )		
16:30	Coffee Break				
17:00	<b>Round Table Implementation of CA: Key problems</b> <i>Chairman: Dr J. Benites (FAO)</i>				
17:45	<b>CA World Declaration</b> Dr J. Benites (FAO), Dr J. Landers (APDC)				
18:15	Conclusions and Closing Session				
21:00	Social Dinner				

INTERACTIVE WORKSHOPS, October 4 <sup>th</sup> – 5 <sup>th</sup> 2001				
Thursday, October 4 <sup>th</sup>				
	CORDOBA (ANDALUSIA)	ARANJUEZ (MADRID)	SEGOVIA AND BURGOS (CASTILLA-LEON)	
7:00	Departure from Madrid			7:00
8:00			Departure from Madrid	8:00
8:30		Departure from Madrid		8:30
9:00				9:00
9:30	Coffee	Arrival in Farm "La Chimenea", Aranjuez (Madrid) Coffee		9:30
10:00			Arrival in Segovia. Coffee	10:00
10:30		Opening Session. <i>(Dir. Gen. Agric. J. Garcia Cañete, Madrid)</i>		10:30
11:00		Demonstration Project about CA in the Farm "La Chimenea". <i>(Dr P. González Fernández AEAC/SV)</i>	Farms under CA, Segovia	11:00
11:30		Farm "La Chimenea", Aranjuez (Madrid) CA in Annual Crops (Wheat, Barley, Corn and Vetch), Olive Trees and Vineyards		11:30
12:30	Farm "El Cabello", Montoro (Cordoba) Lunch Olive Trees and Annual Crops		Lunch	12:30
13:00		Lunch		13:00
14:00				14:00
14:30		14:30		
15:00			Departure to Burgos Province	15:00
17:00	Departure to Cordoba City	Tourist Visit to Aranjuez City		17:00
17:30			Farm "Bascones del Agua SA", Corn, Sunflower and Cereals under Direct Seeding	17:30
18:00				18:00
18:30				18:30
19:00		Departure to Madrid		19:00
19:30		Arrival in Madrid. End of the Workshop	Departure to Burgos City	19:30
20:30	Spanish Guitar Concert Social Dinner in the Alcazar Palace. Cordoba		Social Dinner	20:00
21:30			Tourist Visit to Burgos City	21:30
Friday, October 5 <sup>th</sup>				
	CORDOBA (ANDALUSIA)		SEGOVIA AND BURGOS (CASTILLA-LEON)	
	Conference Room M.C. Asunción		Caja de Burgos Cultural Centre <i>(Avda. Cantabria nº1)</i>	
10:00	CA in Andalusia. The view of the Farmer <i>(Mr E. Navarro)</i>		CA & Environment <i>(Mr M. Pereira, CAAPAS President)</i>	9:15
10:45	Evolution And Perspectives Of Olive Tree In Europe <i>(Gen. Secretary Agric. &amp; Fish. L. Rallo, Andalusia)</i>		Importance of Agricultural Regional Association in the Development of New Agrarian Technologies <i>(Mr J. A. Garcia Gomez, ASELAC President)</i>	10:00
11:30	CA, Sustainability and Economic Progress <i>(Professor Dr R. Tamames, UCM-ICAM)</i>		Practical Aspects of CA. <i>(Mr A. Tapia Peñalba, ABULAC President)</i>	10:30
12:15	Round Table		Break	11:00
13:15	Conclusions and Closing Session <i>(Councilor Agric. &amp; Livest P. Plata Cánovas, Andalusia)</i>		Agriculture & Environment: A Vision from Europe <i>(Dr Alicia Villauriz, Spanish Ministry of Agriculture)</i>	11:20
13:30	Lunch		Round Table	12:00
15:30	Departure to Madrid		Conclusions and Closing Session <i>(Councilor Agric. &amp; Fish. J. Valín Alonso, Castilla-Leon)</i>	12:30
20:30	Arrival in Madrid. End of the Workshop		Lunch	13:30
			Machinery demonstration	15:30
			Departure to Madrid	18:30
			Arrival in Madrid. End of the Workshop	21:00

Selected Communications (Posters) for Oral Presentation

***IFEMA, October 3<sup>rd</sup>. Rooms F + G + H, from 14:30 to 16:30 h***

- 14:30 – The development and transfer of a new no-tillage technology. *Ritchie, W. R. et al*
- 14:45 – ICARDA's Network on Conservation Agriculture in Central Asia. *Suleimenov M. et al.*
- 15:00 – Carbon dioxide fluxes from arable soils as affected by temperature and moisture. *Lopes de Gerenyu V.O., Kurganova, I. & Saprnov D.V.*
- 15:15 – The role of draft animal power in soil and water conservation. *Sims B.G. & O'Neill D.H.*
- 15:30 – Development of the biological activity in different tillage systems. *Epperlein J.*
- 15:45 – Development of an animal drawn zero tillage seeder for small grains. *Wall P.C., Zambrana L., Gamez P., Sims B. & Calissaya A.*
- 16:00 – Conservation tillage options for the poor, small landholders in South Asia. *Meisner C.A., Bodruzzaman M., Amin M.R., Baksh E., Hossain A.B.S., Ahmed M. & Sadat M.A.*
- 16:15 – Economic Valuation of the Environmental Effects of Agriculture. *Schou J.S., Andreasen C., Bodil Hald A., Hasler B., Kaltoft P. & Vetter H.*