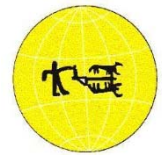




3rd International Scientific Conference

Sustainability challenges in agroecosystems



19th-21st June, 2017, Osijek, Croatia

CONFERENCE SUMMARY / CONCLUSION

SUMMARY:

3rd International Scientific Conference "*Sustainability challenges in agroecosystems*" was held under joint organization of CROSTRO (Croatian Soil Tillage Research Organization), Czech branch of ISTRO and HUISTRO (Hungarian branch of ISTRO) under the auspice of ISTRO (International Soil Tillage Research Organization), and many others supportive institutions, from 19th-21st June, 2017, Osijek, Croatia.

Since the establishment of our national branches, Croatia, Czech Republic and Hungary are going to organize for the first time a joint Scientific Conference as a Central Europe Division of ISTRO initiative (CEDSTRO). Place of the first joint Conference will be Osijek, Croatia, whereas following joint Conferences will be held in other two countries (Czech Republic and Hungary) in the rotation after every three years.

At conference has attended over 100 scientists-participants from 25 countries (Austria, Belgium, Bosnia and Herzegovina, Bulgaria, China, Croatia, Czech Republic, Denmark, Finland, France, Germany, Hungary, Israel, Luxemburg, Macedonia, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, United Kingdom, Uruguay, USA), with 58 papers divide on 5 main topics / session, as follows:

1. Sustainable land management
2. Coping with climate changes in plant production
3. Good agriculture practice and food safety
4. Precision agriculture, mechanization and renewable bioenergy
5. Facilitation of integrated crop protection

PLENARY PRESENTATIONS:

Advances in soil research tasks and requirements for a better understanding of a sustainable environment

Horn R.

Soil deformation: effects on plant root growth and functions

Lipiec J.

Soil tillage responses to the climate threats – Revaluation of the classic theories

Birkás M., Jug Danijel, Kende Zoltan, Kisić Ivica, Szemők András

Tillage system between intensive farming and sustainable intensification of agriculture

Bašić F.

Lessons from a long-term tillage experiment at the James Hutton Institute, Dundee, U.K.

McKenzie B.M., Brown J.L., George, T.S., Ball, B.C., Newton, A.C., Cloy, J.M., Valentine, T.A., Hallett, P.D.

No-till in Europe: A review of problems and opportunities for sustainable agriculture

Roger-Estrade J.

The use of visual soil evaluation methods in soil structure assessment

Pulido-Moncada M.A., Munkholm, L. J.

Current arable farming systems in the Czech Republic – agronomic measures adapting to soil protection and climate change

Smutný V., Neudert, L., Dryšlová, T., Lukas, V., Handlířová, M., Vrtílek, P.

Modern approach to soil tillage in Serbia: from productivity and energy efficiency towards agroecosystems resilience and sustainability

Kovačević, D., Momirović, N., Dolijanović, Ž., Poštić, D.

Conservation soil tillage effectiveness in severe weather conditions

Jug D., Jug, I., Birkás, M., Vukadinović, V., Brozović, B., Stipešević, B., Komljenović, I., Đurđević B.

ORAL PRESENTATIONS:

Yield improvement by using biostimulant products in winter wheat managed with No Till

Marquez-García, F., Gil-Ribes, J.A., González-Sánchez, E.J., Blanco, G.L.

Soil Functional Ability for groundwater recharge related with Land Use and Tillage System in a dry Mediterranean climate, southern Portugal

Sampaio, E., Corte-Real, J.

Characterisation of Luvisol compaction under two different tillage systems and field traffic zones by assessing soil mechanical properties

Tagem, E. M., Destain, M.-F., Roisin, C., Dalcq, A.-C., Mercatoris, B.C.N.

Management effect in vineyards on compaction, water conservation and CO₂ emission in trafficking zones

Bogunović, I., Bilandžija, D., Andabaka, Z., Stupić, D., Kisić, I., Maletić, E., Đurđević, B.

The Application of the drip irrigation in the production of tobacco and sugar beet in the Republic of Croatia

Turšić, I., Danon, V., Šimunić, I., Ivančević, G., Zdeličan, J.

Carbon dynamic after conversion of permanent grassland into arable soil

Pospíšilová, L., Vlček, V., Jandák, J., Menšík, L., Barančíková, G.

Effects of biochar and sugar factory lime application on soil pH in acidic soils

Đurđević, B., Jug, I., Vukadinović, V., Brozović, B., Stipešević, B., Bogunović, I., Jug, D.

Tillage, farmyard manure, gypsum and sulphur effect on soil physical properties and yield of oats (*Avena sativa* L) in organic farm in Mediterranean Croatia

Bogunović, I., Vukadinović, V., Kisić, I.

Yield and Yield Components of Maize (*Zea Mays* L.) Hybrids as Affected by Irrigation Scheduling and Meteorological Conditions

Marković, M., Šoštarić, J., Josipović, M., Brkić, A.

Carbon footprint of rainfed and irrigated arable crops under tillage compared to no till & guide assistance

Marquez-García, F., Gil-Ribes, J.A., Blanco, G.L., González-Sánchez, E.J.

Agrometeorological forecast of soil temperatures

Kuraži, D., Vučetić, V.

Projections of temperature-based agroclimatic indices in southern Romania

Piticar, A., Croitoru A.-E., Djurdjević, V.

Future projection of warm spells and cold spells in transition seasons in low-lands of Western Romania

Ciuperdea, A.F., Piticar, A., Djurdjevic, V., Croitoru, A.-E., Scripcă, A.S.

The assessment of carbon footprint of major field crops in Vojvodina Province of Serbia

Šeremešić, S., Ćirić, V., Vasin, J., Đurđević, B., Đalović, I., Milošev, D., Ninkov, J.

Impact of soil tillage and fertilization on soil properties

Turan, J., Zoltan, K., Sedlar, A., Jug, D., Ponjičan, O., Bugarin, R., Višacki, V.

The Presence of Cadmium in Cattle Meat and Offal on the Area of Central Bosnia Canton with the Risk Assessment on Human Health

Čolić, A., Mačkić, S., Ahmetović, N., Antunović, B., Šukalić, A., Brkić, E., Hero, M., Hodžić, A., Karić, E.

Human health risk assessment of heavy metals from the agricultural soil in South Herzegovina

Šukalić, A., Ahmetović, N., Mačkić, S., Leto, A., Džubur, A., Antunović, B.

Strategies of growing several sorghum cultivars as a post-harvest crop in North-Eastern Croatia condition

Stipešević, B., Brozović, B., Jug, D., Jug, I., Đurđević, B., Vukadinović, V.

Maize response to conservation tillage and nitrogen management

Jug, I., Jug, D., Kotorac, F., Vukadinović, V., Brozović, B., Stipešević, B., Tucak, M., Bertić, L., Đurđević B.

Role of post-harvest residue treatment on the spring crops productivity in haplic chernozems

Iliev, I., Nankova, M., Milev, G.

Effect of the main soil tillage types on the agronomic response of wheat in the region of south dobrudzha

Nankova, M., Bankova-Atanasova, G.

Low grain yield of soybean and its temporal variability are improved by deep ripping tillage

Etchegoimberry, P., Izaguirre, R., Ernst, O.

Adapting the spraying machinery to increase the environmental safety in PPP applications in traditional and intensive olive orchards

Miranda-Fuentes, A., Rodríguez-Lizana, A., Cuenca, A., González-Sánchez, E.J., Márquez-García, F., Blanco-Roldán, G.L., Gil-Ribes, J.A.

Soil processing technology and nozzles type as factor of pesticide residues in the soil

Sedlar, A., Zoltan, K., Turan, J., Jug, D., Ponjičan, O., Bugarin, R., Višacki, V.

Foliar fertilizers deposition quality with different nozzle types in wheat

Višacki, V., Sedlar, A., Turan, J., Ponjičan, O., Bugarin, R., Ivanišević, M., Kalajdžić, M.

Estimation of soil properties on the base of multispectral remote sensing data and derived indexes

Novák, J., Lukas, V., Křen, J.

POSTER PRESENTATIONS:

Characterization of household differentiation from the perspective of farmland transfer in eastern China using an agent based model

Xiao Chang, Liming Liu

The impact of tillage and fertilization on wheat grain infection with *Fusarium* spp.

Vrandečić, K., Jug, D., Ćosić, J., Ilić, J., Kesić, I., Jug, I.

Effects of winter cover crops incorporation on weed infestation in organic popcorn maize production

<i>Brozović, B., Stipešević, B., Jug, D., Jug I., Vukadinović, V., Đurđević, B.</i>
The changes of soil structure and water stability of soil aggregates under different compost doses <i>Novotná, J., Badalíková B.</i>
PEG-induced drought in wheat genotypes at the germination stage <i>Ižaković, M., Španić, V., Marček, T.</i>
Green beans (<i>Phaseolus vulgaris</i> L.) root nodules number after treatment with nettle leaf extract <i>Perincic, B., Brkljača, M., Ban, D., Romić, M., Goreta Ban, S.</i>
Forage legumes breeding strategies for adaptation on the future environment challenges <i>Tucak, M., Popović, S., Čupić, T., Krizmanić, G., Horvat, D., Jug, I., Jug, D.</i>
Effect of different tillage intensity on physical and hydrophysical properties of soil <i>Houšť, M., Procházková, B., Neudert, L., Lukas, V.</i>
Effect of different soil tillage on yield and chosen grain qualitative parameters of malting spring barley <i>Pernicová, A., Procházková, B., Procházka, J., Houšť, M.</i>
Product of NDMI, NDVI and LST to detect the impact of climate variability on agricultural land <i>Rošca, F.C., Harpa, G.V.</i>
Produced levels mechanic vibration in operator cabin of agricultural tractor by various agrotechnical surfaces <i>Barač, Ž., Plaščak, I., Jurišić, M., Heffer, G., Vidaković, I., Zimmer, D.</i>
The influence of agronomical factors on the yield of winter wheat in the crop rotation with livestock production <i>Vrtílek, P., Smutný, V., Neudert, V., Dryšlová, T.</i>
Distribution of manure and slurry - case study <i>Zimmer, D., Šumanovac, L., Jurišić, M., Plaščak, I., Vidaković, I., Barač, Ž.</i>
Future changes in Consecutive Dry Days index in Central Romania <i>Harpa, G.V., Rosca, F.C., Horvath C.</i>
Mapping of soil spatial variability by on-the-go measurement of soil electrical conductivity <i>Lukas, V., Neudert, L., Novak, J.</i>
Innovated retro: Cover cropping and horse traction to combat soil compaction and improve soil fertility <i>Gantner, R., Zimmer, D., del Vechio, I., Schlechter, P.</i>
The impact of various soil tillage methods on soil physical properties in grain maize stands <i>Neudert, L., Smutny, V.</i>
Grain yield of spring barley grown in long-term stationary experiment <i>Dryšlova, T., Kren, J., Smutny, V., Prochazkova, B.</i>
The effect of water deficit on yield and yield component variation in winter wheat <i>Smutná, P.1, Elzner, P.</i>
Assessment of the main agro-ecological parameters effects on the cultivation of <i>Miscanthus x giganteus</i> grown on marginal soils in the Republic of Serbia <i>Maksimović, J., Željko Dželetović, Ž., Dinić, Z., Stanojković-Sebić, A., Cvetković, O., Pivić, R.</i>
Monitoring of agricultural land as a basic tool for sustainable land management in Croatia <i>Jug, I., Cvitković, I., Bubalo, A., Galić, A., Vukadinović, V., Đurđević B., Jug, D.</i>
The role of soil suitability assessment system for sustainable food production <i>Vukadinović, V., Jug, I., Đurđević, B., Jug, D., Stipešević, B., Brozović, B., Miklavčić, D., Tkalčec, G., Vukadinović, V.</i>

ROUND TABLE:

Conservation agriculture – Global respond / response to climate change!?

Moderators: prof. dr. sc. Danijel Jug and prof. dr. sc. Jean Roger-Estrade

After scientific part of Conference, third day was organized a Field trip and excursion to Family farm "PG Knežević" (where was prepared Traditional Croatian breakfast), Nature Park Papuk: Locality "Jankovac" (a guided conducted tour) and Nature Park Papuk: Locality Rupnica (Basalt columns).

CONCLUSION:

[Background for better understanding relations of sustainability, conservation agriculture, climate change and soil tillage improvement in the Central – South-East Europe and wider (related to Conference theme and Round table)]

Primary objective of that joint Scientific Conference as a Central Europe Division of ISTRO initiative (CEDSTRO) is:

- promotion, development and grow of interest and knowledge about soil tillage science,
- exchange ideas and experiences,
- dissemination modern approach of technology application in agroecosystems,
- encouraging a more intensive association in scientific research frameworks.

The main theme of the conference was within the title "Sustainability Challenges in Agroecosystems", which sought to highlight the increasingly important role of multidisciplinary approach to issues of sustainability of agricultural production in changing agroecological conditions.

The focus is on the next few most important points:

- There is no doubt among scientists today about whether or not we are in the period of climate change;
- Very heterogeneous area and very divergent agroecological conditions influenced on yield levels from year-to-year in wide scale. This variation primarily depends on climate aberrations but also due to many other problems, which every single or/and all together lead to reduction of production and low productivity.
- Conservation agriculture, including conservation soil tillage, still is not "mainstream" in Europe;
- Main encouragement to adoption conservation approach in crop production are positive financial effect, but unfortunately, the other positive effects arising from the application of conservation production/tillage systems are still in the background (reduction of soil erosion, increase biogenity and quality of soil, less traffic and soil compaction alleviation, nutritional status an quality traits of crops, weed infestation etc.);
- Conservation soil tillage systems by various measures and procedures can significantly affect the mitigation of adverse climatic impacts;
- Agriculture (including soil tillage) need to be based on sustainability and according / adapted to regional, local and site-specific levels;
- Approaches for adaptation of cropping systems need to include a number of specific strategies / measures / procedures;
- Choosing of the "best cropping system" or "best solutions" is a process which needs to be elaborated according to site-specific methods and crop-specific responses to mitigate climate threats;
- Main barriers for expanding adoption of conservation agriculture in Europe can be divided on two different group: Economic and social development (knowledge, tradition, technics, technology, science implementation etc.) and Agro-ecological conditions (climate, soil, water, crop, biology etc.).
- Conservation agriculture/soil tillage is a result of serious scientific research and practical testing, and it is the result of better and more comprehensive observation and understanding of the natural environment;

Since climatic changes do not follow national borders and since agriculture is extremely vulnerable to them, a common action to find adequate and effective measures to face climatic changes is an imperative. Conservation agriculture is one of the possible ways to combat many negative challenges primarily influence of climatic changes. This technology is not novelty in Europe, but it's application are usual because of economic reasons (cheaper production) or as an alternative system. Conservation agriculture includes three main bases for sustainable and successful agriculture production in relation to agro-ecological conditions, namely: minimal set of soil tillage treatments (minimal soil disturbance), permanent soil cover (with crop or crop residue) and diversification in crop production, predominantly crop rotation. At this moment, the application of conservation agriculture in the Central – South-East Europe (as in whole Europe) is still very heterogeneous and persists on different levels and with different success in each country of the region. As soil tillage is closer to conservation agriculture principles, we are step-closer to sustainability and we can expect less damages less potential problems and less risks in crop production.

President of Organizing Committee
President of CROSTRO

Prof. dr. sc. Danijel Jug

