



## Application Form 2020/2021 edition

**Name of the project:**

**Improving soil biodiversity and humus content for better soil fertility and climate change resilience of farms; Biodynamic farm Černelič**

**Date of application:**

**28th January 2021**

Supported by



\* to be filled out by the ELO Award Coordinator

## Introduction

Sustainable land and soil management is central to improve our food systems, maintain a healthy environment and ensure European rural development. Indeed, soils, through their structure and the great variety of species they host, perform numerous functions including food production, nutrient and water storage, filtering, buffering as well as breaking down and conserving organic matter. They also play a central role in the protection of water and in the natural exchange of gases with the atmosphere. Moreover, soils are biological habitats, gene pools, elements of landscapes and of cultural heritage as well as providers of raw materials. They are therefore crucial for agriculture and for all human beings as well as for nature itself, and are the foundation of our health and our wealth. Soils are as such part of Europe's greatest treasures; thus, it is important to promote and reward practices which contribute to their protection.

## About the Award

The prize rewards land use and soil management practices mitigating soil threats i.e. soil degradation, erosion, reduction of organic matter content, diffuse contamination, and compaction as well as the reduction of soil biodiversity, salinization, sealing, flooding and landslides. In doing so, the award sheds light on outstanding achievements, encouraging new concepts of land and soil protection and their implementation in land management, as well as enhancing awareness about the importance of land and soil functions.

## Who can apply?

Farmers, landowners, land managers, groups of farmers, on their own or in collaboration with research institutes, universities and/or private companies. The call is open to applicants from all European countries.

## Why to apply?

To recognize the great value of the farmer's work, by promoting the winning project as a good practice at the European. Also, to enhance the visibility of such ways of farming at the local, national as well as European scale and to encourage the farmers to further develop their work in a sustainable path.

5.000 € is awarded to the winning project every year. The Jury can also award a Diploma of Recognition.

## How to apply?

Fill out the application form and send it back to the Award Coordinator before the application deadline

**(January 29,2021):**

**Land and Soil Management Award**

**European Landowners' Organization**

**Rue de Trèves 67 – B-1040 Brussels OR**

**By Email to: [emmanuelle.mikosz@elo.org](mailto:emmanuelle.mikosz@elo.org)**

The call for application is open every year until December 31.

The award is bestowed to the winner every year during the Forum for the Future of Agriculture (FFA).

## Partners

This award has been launched in 2008 by the European Landowners' Organization (ELO), under the auspices of the European Commission (DG Environment and the Joint Research Centre) and in association with the University of Natural Resources and Life Sciences (BOKU) of Vienna, Syngenta International AG, as well as the Centre for Soil and Environmental Sciences of the Ljubljana University.

**SECTION A**  
**Administrative introduction**

**Applicant**

<b>Short Name</b>	Farm Černelič		
<b>Legal Information on the Applicant</b>			
<b>Legal Name</b>	Zvone Černelič	<b>Legal Status:</b>	
<b>VAT N° (optional)</b>	/	<b>Public</b>	<input type="checkbox"/>
<b>Legal Registration N°</b>	/	<b>Private</b>	<input type="checkbox"/>
<b>Registration Date</b>	/	<b>Natural person</b>	<input checked="" type="checkbox"/>
<b>Legal Address of the Applicant</b>			
<b>Street Name and N°</b>	Dečno selo 48	<b>PO Box</b>	
<b>Post Code</b>	8253	<b>Town/City</b>	Artiče
<b>Country Code</b>		<b>Country Name</b>	Slovenia
<b>Applicant Contact Information</b>			
<b>Telephone N°</b>	00386 51 363 447	<b>Fax N°</b>	
<b>E-mail</b>	ekocernelic@gmail.com	<b>Website</b>	<a href="http://www.biodinamicnakmetija-cernelic.si">http://www.biodinamicnakmetija-cernelic.si</a>

## Partner 1

<b>Short Name</b>	Ajda Posavje		
<b>Legal Information on the Applicant</b>			
<b>Legal Name</b>	Društvo za biodinamično gospodarjenje Ajda Posavje	<b>Legal Status:</b>	
		<b>Public</b>	<input checked="" type="checkbox"/>
		<b>Private</b>	<input type="checkbox"/>
		<b>Natural person</b>	<input type="checkbox"/>
<b>Legal Address of the Applicant</b>			
<b>Street Name and N°</b>	Boštanj 30	<b>PO Box</b>	
<b>Post Code</b>	8290	<b>Town/City</b>	Sevnica
<b>Country Code</b>		<b>Country Name</b>	Slovenia
<b>Applicant Contact Information</b>			
<b>Telephone N°</b>	Majda Hriberšek	<b>Fax N°</b>	
<b>E-mail</b>	majda.hribersek@gmail.com	<b>Website</b>	

## Partner 2

<b>Short Name</b>	Agriculture and Forestry Institute Celje (KGZS-Zavod CE)		
<b>Legal Information on the Applicant</b>			
<b>Legal Name</b>		<b>Legal Status:</b>	
Chamber of Agriculture and Forestry of Slovenia Agriculture and Forestry Institute Celje		<b>Public</b>	<input checked="" type="checkbox"/>
		<b>Private</b>	<input type="checkbox"/>
		<b>Natural person</b>	<input type="checkbox"/>
<b>Legal Address of the Applicant</b>			
<b>Street Name and N°</b>	Trnoveljska cesta 1		<b>PO Box</b>
<b>Post Code</b>	3220	<b>Town/City</b>	Celje
<b>Country Code</b>	Slowenia	<b>Country Name</b>	
<b>Applicant Contact Information</b>			
<b>Telephone N°</b>	00386 41 435 528 00386 3 42 55 511	<b>Fax N°</b>	
<b>E-mail</b>	vesna.cucek@ce.kgzs.si	<b>Website</b>	<a href="http://www.kmetijskizavod-celje.si">www.kmetijskizavod-celje.si</a>

## SECTION B

Description of the project – this part can be written in native language if a quality Executive Summary is enclosed.

The questions are all based on the selection criteria of the jury

### I. Description of the project

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A. Among the following 8 main soil threats, which ones do you address in your project?  
(more than one can be indicated)

- erosion**
- compaction**
- salinization
- landslides
- decline of soil organic matter**
- biodiversity decline**
- contamination

B. Describe the project's objectives covering both short and long term (maximum 1000 words)

#### **Long-term objectives**

Our main ambition over the years has been to produce good food of the best quality, with the best attitude towards nature, which ensures that our biodynamic farming is environmentally friendly and sustainable and that our farm has good resilience towards climate change.

We give special attention to the soil, as we want to enliven and develop it as much as possible and preserve it in the best possible condition for the generations in the future.

We want to prove that it is possible to farm in this way and live from the incomes, using the knowledge learnt on farm, from other similar farmers in Slovenia and from biodynamic farmers abroad.

For us it is very important, that we are able to transfer this knowledge to other interested farmers through conferences, farm visits and workshops that we hold at our farm and in other venues.

Nevertheless, our long-term objective is also to inform the consumers about the great value of the farmer's work in preserving the nature and producing vital and healthy food and to inform them about the importance of farmer's activities to improve soil functions.

#### **Short-term objectives**

- Specialization and modernization of agricultural production (greenhouses for production of vegetables and strawberries, irrigation system with water accumulation lake, own solar plant power, modern implements for appropriate soil cultivation, sowing, harvesting of vegetables and hay, machines for stirring and spraying the biodynamic preparations, ...)
- Improved working conditions on the farm.
- Improved production capacities of the farmland (optimizing the soil functions by encouraging soil biodiversity organisms, improving soil structure and % of humus...)
- Regeneration of the plot in Krška vas, ruined by construction works.

C. Describe the actions and means involved in order to reach the project's objectives  
(maximum 1000 words)

Our whole farming approach (actions and means) involved to reach the project objectives is described in the summary.

Regarding one of short term objectives we want to present how effective in relatively short period is our approach for regeneration of soil, which was impermeable because of construction works and with very bad structure.

**We prepared a short photo and video report, to show and demonstrate very evident extraordinary good results. Please, look to the attachment and you will be surprised.**

In 2018 we accepted a challenge to restore degraded soil in Krška vas (1,4 hectares). Brežice Hydro Power Plant asked for our help to restore the plot 4338/1, which was a part of a 4 hectare dumping area for construction works on building a new river bed for the river Sava in 2014.

Because of heavy construction machinery and huge amount of soil and material from the river, which was deposited to this area and then removed in 2017, the soil structure was totally ruined, compacted. This caused water stagnation in micro and macro depressions (photos in the attachment).

According to the expertise about restoration of arable land on the territory of a temporary dumping area in Krška vas (made by Ljubljana University, Biotechnical Faculty), the soil on this plot in June 2017 was practically impermeable for water (hydraulic permeability 0- 20 cm deep:  $5,20 - 5,89 \cdot 10^{-05}$ ). The soil analyses show also very poor content of P and K in June 2017:  $0,7P_2O_5$  and  $7,9K_2O$  (mg/100g). According to recommendations in the expertise, Construction Company ripped the soil with a bulldozer (50-80 cm deep), used NPK 15-15-15 fertilizer 250 kg/ha and sowed grass-clover mixture in July 2017.

We took over this plot in April 2018. At the end of April, we started with ripping the plot (40 cm deep) and spraying it with biodynamic preparation 500. We repeated the spraying after some days and sowed a biodiversity mixture bought in Germany (23 plant varieties, by the Camena Company) with a seeding and ripping machine.

At germination the plants had showed promising results, because the mixture germinated evenly and very good, there were no empty places. Also the growth of the plants during the summer 2018 was incredibly good, vigorous all over the plot. When we visited the plot in the time of flowering of most plants, we were very surprised, because there were many pollinators and bees, it was like being near a beehive.

In early September 2018 the mixture on the plot was mulched (2 m high, look at a video on the link in the attachment), worked in the soil with the ripper (30 cm deep) and soil was sprayed with a biodynamic preparation made of manure according to the Maria Thun method. After some days, we sprayed the soil with preparation 500 and sowed a frost resistant mixture (Wintergrün of Camena company, 6 varieties of plants).

The plants of this mixture again germinated evenly and very good, which is well seen on photos from April 2019. This winter mixture was also surprisingly vigorous and 2 m high.

After mulching it in May 2019, we repeated the procedure by ripping, spraying the biodynamic preparation 500 and sowing a summer biodiversity mixture in May (the same as the previous spring).

In September 2019, the mixture was mulched, soil was sprayed with preparation 500 and after ripping grass leguminous mixture was sown.

As you can see on photos the procedures extremely improved fertility of the soil, even in the first month after taking over this plot: after ripping and spraying biodynamic preparations in April 2018. The proof for this is excellent germination of the mixture in May 2018.

We are sure that we had activated the soil life with aeration by ripping 35-40 cm deep and spraying biodynamic preparations. Afterwards we considerably activated soil life and improved soil biodiversity with the help of summer mixture with 23 plants. With the help of very diverse plants (diverse exudates of plant roots, and organic mass of plants themselves) we invigorated the soil life. The soil organisms released minerals, and made them accessible- available for plants (as scientists in [EU SOILSERVICE project say](#)). The fact is that plants of the summer mixture in 2018 were vigorous and gave high yield of organic substance, although the soil analysis in 2017 showed very poor content of P and K.

After 16 months of regeneration of this plot (1,4 hectare) in Krška vas, we decided to lease it in Autumn 2019, because we want to preserve the soil in this good state.

The plot was mowed for the first time in 2020, the yield per 1,4 hectare: first Cut 6.460 kg of hay (19 bales), second Cut 3.400 kg of hay (10 bales) and estimation for third Cut which was mulched - the same as the second Cut. This means 9.471 kg of hay/hectare; hay was picked up in round bales.

Today soil is healthy, very good aerated, with excellent structure (photo from January 2021), no water is staying on the surface after heavy rainfalls any more. Vigorous crops in 2018, 2019 and 2020 are showing us excellent fertility of the soil, which proves that we have activated and improved soil life, which helps us now to reach amazingly good and quality yields.

The soil analyze from January 2021 shows: 5.18 % organic matter (W&B), 2.8 P<sub>2</sub>O<sub>5</sub> and 15.9 K<sub>2</sub>O. In 2017, it was 2.6% organic m., 0,7P<sub>2</sub>O<sub>5</sub> and 7.9 K<sub>2</sub>O (mg/100g).

We have to underline that in the period from April 2018 until now, we have worked with the soil very carefully. That is why we ripped it only when it was not too wet. We used a tractor with an 86-horsepower diesel, with a total weight of 3.5 tons. The speed did not exceed 5 km/h, which is most important. In addition, the soil was sprayed with the backpack sprayer, by hand, because we are aware of the fact that heavy mechanization ruins the structure the most.



D. Describe the results of the project so far and its innovativeness (in terms of outcomes, of means employed, of working practices, etc.) (*maximum 1000 words*)

The results of our 17 years organic and 10 years biodynamic farming are:

- 2 generations live and work on the farm, 2 persons full employed and 2 occasionally.
- The farm has been developing all the time in every aspect. We are able to invest, the latest investments are: accumulation lake for all rainwater from farm buildings and yard, with 2.000 m<sup>3</sup>, irrigation system, a new greenhouse (670 m<sup>2</sup>), warehouse for hay, special rippers, seedling machine, solar power plant for electricity for the farm...
- Excellent structure of the soil, high % of organic matter, excellent soil biodiversity.
- Very good resilience of the farm to climate change.
- Healthy animals.
- Healthy members of our family.
- Rich biodiversity on the farm (more than 30 varieties of vegetables, biodiverse rich mixtures for green manure, 3 varieties of farm animals, old fruit trees, forest, bushes along creeks, natural grassland in hilly region, accumulation lake which is rich in plants and animals important for the balance on the farm).
- Very good yields and excellent quality of vegetables and fruit (both with excellent taste).
- Very good personal relations with our consumers.
- Very good image of the farm in public.
- Confidence of the local community, because people who cannot take care of themselves for their arable land in hilly region any more, asks us to take care of their land.
- Good collaboration, networking, exchange of knowledge with other organic and biodynamic farmers, agriculture advisors, experts...
- Significantly low fuel consumption: 55 liter/hectare in comparison to typical consumption in conventional plugging system 200 liter/hectare.
- Our positive approach to climate change was also noticed by Umanotera, the Slovenian foundation for sustainable development; two years ago it included our farm among the 20 cases of best practice in Slovenia under the project of reduction of carbon dioxide emissions carried out in partnership with the European Commission, the European Parliament and the Slovenian Government. [Video](#)

Innovativeness from the aspect of common agricultural practice:

- basic cultivation with rippers-subsoilers (the shape of tines is very important), no plugging for more than 25 years in greenhouses and 10 years on the rest of the fields,
- use of tractors light as possible, with maximum speed 5 km/h when ripping or working with the soil,
- working with the soil only when it is dry enough,
- ridge sowing and planting,
- use of biodynamic preparations 500, 500 prepared, 501, Maria Thun preparation and biodynamic compost preparations for healthier soil and vital plants,
- a lot of attention is given to the preparation of the compost from cow manure,
- use of very precise machines for stirring biodynamic preparations,
- use of machines - some also made at home for stirring and spraying of biodynamic preparations on large area of our farm (fields and grassland),
- use of tractor implements for cultivation of vegetables and arable crops; we also participated in development and construction of some implements,
- innovative spreader of compost, which was adapted according to our needs.

E. Describe the project's social and economic feasibility: do you think this project can be exported to other regions/countries? (*maximum 1000 words*)

The project may certainly be replicated and transferred to other farms, regions and companies. There are more and more farms in our country that have already adopted organic farming following our example.

For five years I am a president of the biodynamic association with 120 members, who are mostly gardeners and some farmers in the Posavje region, South East of Slovenia. For 4 years I was also a president of an association of organic farmers in our region. In last decade, we have organized around 50 courses, seminars and farm visits (cross visits) of biodynamic farming, also with very well-known biodynamic farmers and practitioners from Austria, Germany, Italy, Switzerland and Australia. Some of these seminars and farm visits were organized in collaboration with advisors working within public agricultural advisory service of Slovenia.

We have learned a lot from Pasquale Falzarano who runs the Demeter Farm Agrilatina (250 hectares big) in Italy and performed an excellent seminar in 2017 for 220 participants from Slovenia and even some from Croatia.

At our farm we have hosted numerous workshops, excursions, school field trips every year. In addition, I give lectures in various parts of Slovenia.

Our biodynamic Association, Ajda Posavje, shares know-how in Slovenia and cooperates with other similar associations, the Chamber of Agriculture and Forestry of Slovenia and also schools, such as the Agricultural School GRM Novo Mesto, where our endeavors related to quality of food inspired them to make a chamber for bio-crystallization for the studies of food quality.

We are aware that with good practice presentations, more farmers would start farming in a nature friendly and sustainable way and that it is important to cooperate with advisors of public advisory service who have good contacts with all farmers in their region. Because they can organize farm visits (cross visits) for conventional farmers and spread information about such environmentally friendly practice, which encourage soil life, soil biodiversity, development of humus, better storage of carbon in the soil, prevent soil erosion, soil degradation, soil compaction and flooding...

F. Any other remarks or specific features of the project you didn't mention above, but which you think are important? *(maximum 1000 words – this part is not compulsory and won't negatively influence your application. However, it can have a positive impact on it through the granting of bonus points by the jury in case of interesting additional details)*

Other factors, which have contributed to the results mentioned in Chapter D:

- Personal contact with our customers, letting them to know you as a person and the values you try to promote.
- Consistent work on improving yourself as a person and as a farmer, believing in the way you do things, always taking in consideration not only the products, but the whole nature and what consequences your way of farming brings to the soil, to the plants, animals and people.  
Good cooperation with agriculture advisors working within Public Advisory Service: they have brought many farm visits from other regions to our farm they also spread very good news, information about our farm, to farmers via their e-mail contacts.
- We are very interested in methods showing consumers how the vitality of soil (soil biodiversity) directly effects the quality of crops. Very good for the promotion of the quality - vitality of the food produced on our farm was degradation test of the cucumbers, which has enormous potential for communicating the vitality of organic and biodynamic food. The test (presented from Dr. Jens Otto Andersen in 2015 to our agriculture advisor and then to us) shows a significant difference in vitality of cucumbers in relation to type of agriculture production -organic, biodynamic, and conventional. I have made this test myself and shown the results to many consumers on the market. We also told this "story" of cucumbers, which have the ability to grow together after slicing them into paces, to the media. And the effect was very good.
- In addition, we contacted and cooperated afterwards with Dr. Jens Otto Andersen, Danish scientist who has dedicated his life to the research in the field of food quality. In 2018 he invited our farm to participate in a survey (article in the attachment).
- This information about the organic – biodynamic production of food is very valuable for consumers. This is also important, because consumers have to understand that food of high quality cannot have the lowest price on the market.
- Consumers have to be aware of their role in preservation of soil and environment, because their buying decisions affect them directly.
- We are very glad that all 15 articles and interviews about our farm published in media, after winning The Rural Inspiration Award in 2020, contributed to a better consumer's understanding of this topic mentioned in the last two indents. They also contributed to higher awareness of farmer's work and farmer's role of preservation of the soil biodiversity that directly affects vitality of plants and with plants on vitality of animals and human (two articles from national media in the attachment).

## SECTION C

### Annexes

#### II. Topographic documentation (*compulsory – at least a Google screenshot of the location*)

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- enclose maps** showing the location of the estates in the national/ regional context
- enclose maps of the estate/ territory where the project is carried out
- enclose maps, graphs or other documentation on the localisation of the actions in the estate/ territory (land use, development, etc.)

#### III. Other documentation (*if available, welcomed by the jury*)

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- pictures: **Photo and video Report about regeneration of arable land in Krška vas**, described in Chapter C
- two articles about the farm from national printed media (Slovene language)
- article about Food vitality survey mentioned in F Chapter (German language)
- website: <http://www.biodinamicnakmetija-cernelic.si>
- other, **videos about the farm:**
  - [1. Video](#) (English language, 10 minutes),
  - [2. Video](#) (Slovene language, 18 minutes),
  - [3. Video](#) Ripping instead of plugging (1 minute)

## I. Executive summary of the project - compulsory

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*This part needs to be written in English, minimum 1200 words.*

*Applications without a well-structured summary can be discarded from selection.*

We began 26 years ago, with the purchase of a small 2,5 hectare farm. Today we care for 40 ha, of which 6 hectares are owned and 34 hectares are rented, half of them in 10 hilly villages in the surrounding, where cattle is grazing to prevent overgrowth. 24 years ago we stopped using chemicals for production of strawberries, and this was the turning point towards organic agriculture. The farm has been organic for 17 years. We are officially in biodynamic agriculture since 2012 and from 2014 we have got a Demeter Certificate.

More than 30 varieties of vegetables are grown on 0,7 ha and strawberries on 0,3 ha. Vegetables and strawberries are grown mostly in greenhouses. We sell our vegetables and strawberries directly in short supply chains: on the marketplace in Ljubljana, to some schools and other public institutions and to consumers who come in our small shop on the farm.

39 hectares of grassland are for our 40 heads of cattle, they are outside for 8 months, grazing on pastures in 8 villages in the surrounding. During the winter months they are fed only with dry hay, without any cereals or soya beans. This results in healthy livestock and good fertility. The biggest contribution for the nature is: no plastic for silage production, no transport for cereals, therefore less energy – fuel consumption. In winter, the cattle is also free in the stable (on deep litter), which is very important from the animal welfare aspect.

Our main ambition is to produce healthy food with the best flavor and taste, with the right attitude towards nature and consumers and with the lowest carbon footprint possible. We chose the biodynamic approach, because it is the best for members of our family, the best for our consumers, the best for our neighbors, the best for our soil and the best for the planet.

### ***Main concern in biodynamic approach is formation of living soil, humus***

In greenhouses we are not plugging already 25 years and on fields more than 10 years. We use special rippers-subsoilers (the shape of tines are very important, working from 20-30 cm deep), two times a year, which provide aeration of the soil with fewer disturbances than plugging, increase the soil's microbial mass and the soil's carbon sink capacity. Soil aerated in this way retains more water and prevents crop losses during droughts. During heavy rain, such soil with good structure and humus also absorb more water and prevent floods.

We work with the soil when it is not too wet, with appropriate tools, some of which are for the ridges, gently as possible, with tractors as light as possible...

We sow green manure crops, with a wide range of plant species, which contribute important to humus production. We use mixtures from Camena Samen Company from Germany, which offers many mixtures stimulating humus production. It is of great importance that the mixtures have many, more than 20 varieties of plants and provide huge row material for soil organisms. The green manure crops are mulched and then worked in the soil with the ripper. We also use diversified crop rotation.

The most important by all means is the use of the preparation 500, or 500 prepared, or Maria Thun preparation, not only after ripping but on all our land, including grassland. All preparations are prepared within the biodynamic association.

500 and 500 prepared = horn manure, works primarily on the soil and roots of plants:

- strongly help build soil structure,
- stimulates microbial activity and the formation of humus and
- stimulates growth of root system.

Horn silica, preparation 501 is complementary to horn manure. It works on the growing plant, brings light that helps to improve vitality of the plant and quality (taste and flavor) of the crop.

We control disease and pests not only with two main preparations 500 and 501 but also with other biodynamic preparations. Because of rich soil biodiversity, we do not have any problems with weeds, plant diseases nor pests.

For fertilization of the arable land, we use green manure crops and compost made from cattle manure prepared with six biodynamic compost preparations (made from oak bar, yarrow, dandelion, nettle, chamomile and valerian). These preparations act not only on the compost and regulate the process of composting, but work especially on the soil. They mobilize elements in the soil and soil life, provide the vitality of the plants and balanced growth.

These methods increase the proportion of organic matter in the soil, contribute to its ability to provide a sink for carbon, provide very good structure of the soil – in short they enable excellent and sustainable fertility of soil, good yields and the best quality of crops. In this way such soil management approach prevents soil erosion, soil compaction, water stagnation, decline of soil biodiversity, decline of soil organic matter on arable land and floods.

### **Conclusion**

With regeneration of the plot in Krška vas, which was ruined and impermeable due to a huge dumping area for construction works, we have proved that presented soil management is very efficient, even in short period of time. The procedures and means that we used are described in Chapter C. A very impressive and telling Photo and video report about our soil management approach regarding regeneration of this plot is in attachment.

Today soil on this plot is healthy, very good aerated and with excellent structure (take a look at the photo from January 2021); no water is staying on the surface after heavy rainfalls any more. Vigorous crops in 2018, 2019 and 2020 are showing us excellent fertility of the soil, which proves that we have activated and improved soil life, which helps us now to reach amazingly good and quality yields.

The soil analyze from January 2021 shows: 5.18 % organic matter (W&B), 2.8 P<sub>2</sub>O<sub>5</sub> and 15.9 K<sub>2</sub>O. In 2017, it was: 2.6% organic m., 0,7P<sub>2</sub>O<sub>5</sub> and 7.9 K<sub>2</sub>O (mg/100g).

Presented soil management approach for regeneration of soils with low humus content (in the early stages of desertification): ripping 20-30 cm deep + incorporation of diverse green manure mixtures + biodynamic preparations, guarantees improvement of soil structure and humus content even in short period of time.

We have to underline that for radical improvement of soil fertility (soil structure and soil biodiversity) it is vital, that neither herbicides nor other chemical pesticides are used, nor mineral fertilizers, because they all have extremely negative effect on biodiversity of soil organisms and their biomass, in particular on Mycorrhiza fungi.

Presented soil management approach and biodynamic farming approach are in accordance with EU Biodiversity Strategy to 2020 and EU Farm to Fork strategy, as they follow the main goal: reduction of the environmental and climate footprint.

This soil management approach is very efficient and can be used not only on small farms, but even on very large farms with 100 or 1000 of hectares – biodynamic farms in Australia, where climate conditions are much harder than in Europe, prove that (one of those farms with 1.200 hectares <http://www.powletthill.com.au/about-us.html>). For such large farms of course mechanization and appropriate implements with big working width are used, and appropriate bigger stirring and spraying machines for biodynamic preparations too (for instance spraying implement with 16 meters width). We are grateful that Alex Podolinsky from Australia and farmers from Croatia, who visited those farms in Australia, presented us these facts, which show a great potential for future truly sustainable and economically efficient farming in Europe in spite of climate changes.

If many more farms would use soil management approach as presented here, a radical change in Carbon dioxide sequestration into soil would be reached and the soil fertility would be improved. Higher uptake of atmospheric carbon dioxide into soil would mitigate global warming and reduce consequences of the climate change.