Multidisciplinary project

by Paul Schmit of Luxembourg

In the SFJ issue 45/2, the EU-funded transnational Leader project "Horsepower – Innovation in small-scale agriculture and gardening" with project partners from Luxembourg and Sweden, was presented, which has since been further developed.

As part of the conception phase in 2022, an online survey was conducted in April to explore the need of European smallholdings for new horse-drawn implements. Furthermore, a workshop has been held in southern Sweden end of May. During the practical part of the day, single-horse and team lawn mowers were compared and with draft force measuring, the effectiveness of a three-horse hitch vs. a pair hitch was analysed on a I&J ground drive sickle bar mower. The results of these trials are to be backed up by further tests at the beginning of September and one of the next SFJ issues will report on this. After the workshop, the SmP developed single-horse lawn mower stayed for a few months in Sweden and was tested at other farms.

Since the participants of the workshop showed great interest in a further cooperation for the joint development of new workhorse equipment, an additional online webinar was held at the beginning of July. Following a presentation and discussion of the preliminary results of the mower tests, two further questions were discussed in so-called "breakout rooms", divided according to the languages of the participants. These questions related to the areas of use for the new machines to be developed, as well as to modular machines, which should allow beginners to start with simpler machines and single-horse hitches, which could later be upgraded for multiple hitches and more complex applications.

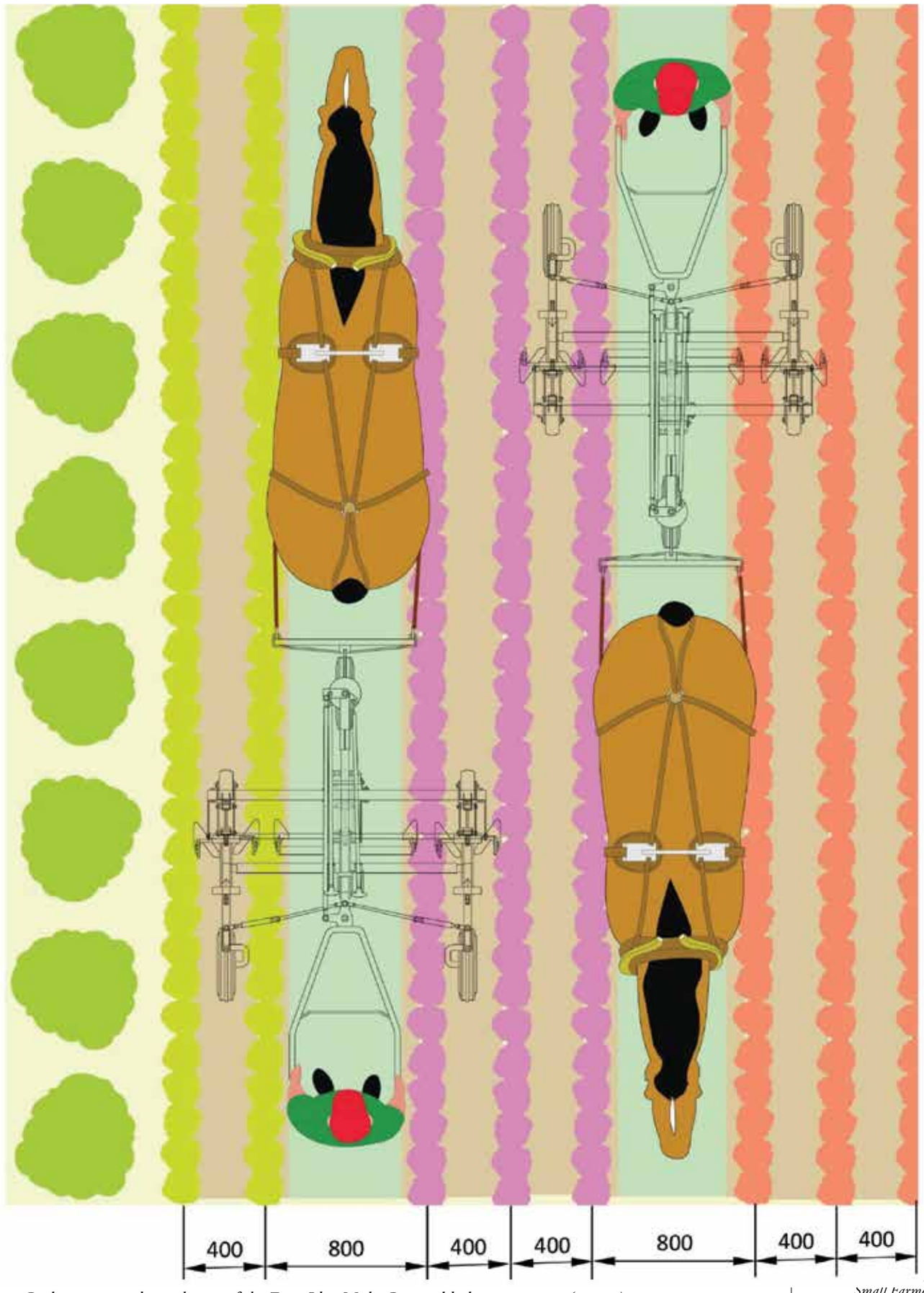
The conception phase will conclude in November with an international online symposium, to which an invitation can be found on the following pages of the SFJ. By fourteen lectures with current reports from research all-around the world, background knowledge and best-practice examples from European small-scale farms, the current situation of animal traction will be analyzed and possible perspectives for the future discussed.

One of these possible perspectives has been developed over the past few weeks as part of the Leader project. Indeed, it is planned to embed the Luxembourg part of the Leader project in a multidisciplinary project for climate resilience of agriculture, carbon sequestration a well as preservation of biodiversity and soil health, which is to be implemented from September 2022 to December 2024. In the Leader region Luxembourg-West, several silvoarable agroforestry projects are to be planned and realized together with wild plant seed production as well as several silvopastoral agroforestry projects with grassland renaturation.

The eco-friendly maintenance of the agroforestry strips, wild plant crops and grassland areas are the workhorse's part in the project. Four new implements will be designed and built for these tasks, with the entire development and manufacturing process being funded through the Leader project. The favourites are at the moment a ground driven transfer mulch and compost spreader, both for in-row and side delivery, a ground driven centre-cut sickle bar mower and a wheeled blade plow. All these implements for single-horse hitches to fit into the narrow rows of the wild plant crops or around the trees and hedges. The final decision on the new machinery to be developed will be made in mid-November.

Furthermore, some equipment from Equi Idea, the one-man company of SmP's founding member Albano Moscardo from Italy, which is already available on the European market, will be adapted for the cultivation of wild plants.

Picture 2: *Testing a SmP developed lawn mower around a Swedish homestead*



Picture 3: *Preliminary study on the use of the Equi Idea Multi-R in wild plant row crops (in mm)*

The main focus here is on the knife roller Rol-Cut and the various hoes, in particular the newly developed Multi-R, a steerable multi-row tool carrier for single-horse hitch.

In cooperation with the Environment Agency and the Nature and Forest Agency, both of Luxembourg's Ministry of the Environment, Climate and Sustainable Development, as well as the Administration of Technical Agricultural Services, which is part of Luxembourg's Ministry of Agriculture, Viticulture and Rural development, investigations into carbon storage in the soil and water storage capacity are to be carried out, this on scientific level as well as so-called "citizen science" using simpler methods like the Tea-Bag-Index. ***Picture 5:*** *Equi Idea Multi-R* As part of the next step within the Leader project, the development phase in 2023, several scholarships

Picture 4: *Equi Idea Rol-Cut*

Picture 5: *Equi Idea Multi-R*

are planned at the Department of Mechanical and Aerospace Engineering of the Polytechnic University in Turin (Italy), this for the CAD design of the new implements. Furthermore, an exchange with the Faculty of Agrobiotechnology at the University of Osijek (Croatia) has already started. The first joint field trials with draft force measurements during stubble ploughing took place already in Požega (Croatia) at the end of July. The Croatian scientists are planning a research project, to start in 2023, about the reintroduction of animal traction and on-farm produced fertilizers to improve the sustainability of agriculture.

The planning of the agroforestry plots will be carried out by the final high school class 1GSE of the department for environmental sciences at the Lycée Technique d'Ettebruck (Luxembourg). In an initial phase, the students will be introduced to this topic for about six weeks through guest lectures of experts from various administrations and the University of Luxembourg, where another research project on this subject is currently being developed. Then, they should plan in student groups, within the following six weeks, individual agroforestry plots and, if the weather conditions will permit, put them into practice, at least partially, until April 2023. This part of the project will be implemented in close cooperation with the experts of the foundation Hëllef fir Natur (Help for Nature) and the Inter-municipal nature conservation association Sicona in Luxembourg. With the planting of the agroforestry plots, the wild plant fields and the renaturation of grassland are also put into practice.

Thus, 2023 will get the most challenging period of the project, as also the new implements will be developed, built and tested. 2024 will be the preliminary completion of the Leader project, with the focus here on field days and open access publications.

Paul Schmit Schaff mat Päerd asbl

Picture 6: *Evaluation of traditional ploughing equipment in Croatia*

As part of our transnational Leader project, we are pleased to invite you to our online symposium, with current reports from research all-around the world, background knowledge and best-practice examples from European smallholdings.

Horsepower
Innovation in small-scale agriculture and gardening

Participation is free of charge and registration is possible until October 28, 2022 via the following link:
https://forms.gle/59D54TTpHMMcsU1z6

After your registration, the link to participate will be sent to you automatically.
For further information, please contact
schaffmatpaerd@pt.lu

Saturday, November 5 (Central European Time)

09:30 **Sarah Mathieu – Leader Lëtzebuerg-West / Paul Schmit - Schaff mat Päerd (Luxembourg)**
Horsepower – Innovation in small-scale agriculture and gardening
10:10 **Katy Fox - Mycelium Ecosocial Design Consultancy (Luxembourg)**
Permaculture Design - Possibilities and Limits for Localising Production
10:50 **Wiebren J. Boonstra - Uppsala Universitet (Sweden)**
Going back to horses? Farming for post-fossil fuel societies
11:30 **João Brandão Rodrigues – Fectu (Portugal)**
Animal traction in the Iberian Peninsula - good examples to follow
Lunch break
13:00 **Walter Franco - Politecnico di Torino (Italy)**
Small is still beautiful - Developing appropriate machines for mountain peasant farming
13:40 **Paul Schmit – Schaff mat Päerd (Luxembourg)**
Living horsepower - Animal welfare and draught efficiency in modern implement design
14:20 **Lynn R. Miller – Small Farmer's Journal (USA)**
Animal Power, Regenerative Agriculture, and the Responsibility of Community Journalism

Sunday, November 6 (Central European Time)

09:30 **Sarah Mathieu – Leader Lëtzebuerg-West / Paul Schmit - Schaff mat Päerd (Luxembourg)**
Horsepower – Innovation in small-scale agriculture and gardening
10:10 **Anna Garré - Stockholm Resilience Centre (Sweden)**
Farming with Draft Animals - Using Retro Innovations for Sustainable Agrarian Development - A Case study in N. Italy
10:50 **Ranko Gantner – University of Osijek (Croatia)**
Integration of green manuring with animal traction can contribute to sustainability of agriculture
11:30 **Jelmer Albada – Gaast'sperges (The Netherlands)**
How horse farming experiences abroad led into an own Frisian homesteading
Lunch break
13:00 **Pit Schlechter – Fectu (Luxembourg)**
Relying on animal traction: a way to failure or success
13:40 **Tim Harrigan – Michigan State University (USA)**
Draft Relationships for Animal-Drawn Tools and Implements
14:20 **Hugo Sanhueza – Grupo de trabajo tracción animal (Colombia)**
Assessing the adaptability and use of work horses to local environmental conditions in Colombia

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