1 Agronomy

Nutrient supply

1.1 G. Campagna, M. Sandona
Sugar beet and other crops in rotation sustainability cultivation (Carbon footprint) in Italy

1.2 P. Götze, H.-J. Koch
Effect of crop rotation and removal of beet leaves and tops on soil organic carbon stocks in the crop rotation experiment at Harste

1.3 G. Bodner, H. Eigner, D. Horn, S. Geyer, K. Keibliger
EUF soil extraction for the determination of structure-relevant organic carbon fractions

1.4 A. Stracke, H.-J. Koch
Above- and below-ground biomass and N uptake of catch crops affecting soil Nmin over winter

1.5 D. Horn, G. Müller
Challenges of nitrogen and phosphorus fertilization advice for sugar beets with regard to the implementation of the EU Nitrates Directive

1.6 M. Zavanella, M. Cenacchi, D. Rosini, G. Campagna
Survey on soil fertility in the Coprob beet communities: second contribution

1.7 J. Ekelöf
Decreasing soil P and K reserves – a hidden threat to improvements in sugar beet yields

1.8 Á. Olsson Nyström, L. Persson, J. Blomquist
Structure lime and ground limestone in sugar beet rotations

1.9 S. Malmilehto
Structural liming in Finland

1.10 S. Muurinen
Survey of sulfur status of sugar beet in Finland

Tillage

1.11 J. Przybył, N. Mioduszewska, I. Kowalik
Analysis of simplified tillage systems in sugar beet production in the aspect of yield quantity and quality

1.12 N. Mioduszewska, J. Przybył, K. Pilarski
Analysis of simplified tillage systems in sugar beet production in the aspect of soil physical properties

1.13 R. Duval, V. Tomis
Soil compaction in Northern France sugar beet crop systems: a collaborative study to give a clear picture of the situation and identify solutions

Seed quality, sowing and early establishment

1.14 S. Ducournau, A. Wauters
Testing Beta vulgaris seed quality in laboratory to predict field emergence

1.15 J. Long, R. Marcinek, J. Brooks
Improving young plant growth with seed technologies

1.16 H. Ebmeyer, C. Hoffmann
Reasons for the strong effect of drought stress in young sugar beet plants

1.17 L. Tillier
The impact of canopy architecture on radiation use efficiency and yield potential of sugar beet

1.18 C. Hoffmann
Can yield of sugar beet varieties be assessed by the leaf canopy?

1.19 M. Zavanella, G. Campagna, A. Vacchi, A. Fabbri
Feasibility study of autumn sowing in the Coprob districts (Italy)

Organically grown sugar beet

1.20 M. Cenacchi, G. Campagna, M. Zavanella, D. Rosini
Organic sugar beet cultivation in Italy – first experience on field

1.21 A. Loriaux, B. Jacobs, M. Brandt, B. Dequiedt, B. Vandamme
Challenges and opportunities of organic sugar beet seed production for SESVanderHave

1.22 O. Nielsen
Three-year experience with organic sugar beets

Communication/Benchmarking

1.23 C. Roß, K. Trimpler, N. Stockfisch
Communication of data from a farm survey

1.24 N. Stockfisch, C. Roß, A.-K. Mahlein
Comparison of indicators for pesticide use intensity
Digital technologies
1.25 F. Joudelat, D. Dutartre, S. Madec, E. David
Measuring vegetative heterogeneity of sugar beet varieties with drone and deep learning phenotyping
1.26 T. Ekkblad
Automatic image analysis of sugar beet – a deep learning approach
1.27 A. Barreto, S. Paulus, A.-K. Mahlein
Proof of concept for the digital visual rating of Cercospora leaf spots using multispectral UAV images
1.28 G. Campagna, A. Fabbri, M. Bassi, A. Bresolin
Monitoring water-nutritional and NDVI on sugar beet in Italy
1.29 U. Wilczek
Development of a sensor system for low-damage sugar beet harvest – state and perspectives

Harvest, storage, and beet quality
1.30 A. Andrusiak, Z. Wyszyński
Evaluation of sugar beet yield depending on the method and harvesting date
1.31 C. Kenter, E. Ladewig
Storability as a varietal characteristic of sugar beet?
1.32 M. Leijdekkers
Experiences with mechanical ventilation of sugar beet storage clamps in the Netherlands
1.33 S. Malmilehto
Fleece cover for sugar beets. Risk or possibility?
1.34 N. Nause, C. Hoffmann
Cambium rings and cell wall composition of sugar beet genotypes differing in root strength
1.35 W. English
In season texture analysis of sugar beets using a handheld penetrometer
1.36 M. Nilsson
Pressure mapping of sugar beets
1.37 E. Hilscher, H. Narten, S. Meldau
Opportunity to improve sugar beet quality lab sample measurement and analysis quality using the BEETROMETER™

2 Pest, disease and weed challenges

Root rot diseases
2.1 L. Persson
Measurement of Aphanomyces root rot potential in soil
2.2 J. Vegas, E. De Bruyne, I. Adetunji, O. Amand
Genetic study of charcoal rot (Macrophomina phaseolina) resistance in sugar beet using a diverse panel of commercial and non-commercial hybrids
2.3 V. Stošić, D. Budakov, Ž. Ćurčić, A. Stankov, T. Dudaš, F. Bagi, N. Nagl
Influence of NPK mineral nutrition and cultivar on sugar beet root rot
2.4 A. Stankov, N. Nagl, V. Stošić, D. Budakov, F. Bagi, T. Dudaš, M. Isakov
Characterization of Trichoderma spp. for antagonistic activity against charcoal root rot

Fungal leaf diseases
2.5 D. Budakov, V. Stošin, Z. Curcic, T. Dudas, A. Stankov, F. Bagi, M. Grahovac
Influence of sugar beet cultivar and NKP nutrition on Cercospora leaf spot
2.6 Ž. Ćurčić, D. Budakov, A. Stankov, K. Taški-Ajduković, N. Nagl, V. Stošin
Effect of different sowing dates on Cercospora beticola infection level
2.7 M. Vanderstukken, J. Sels, O. Amand, D. Boehm, H. Tschoep
An integrated breeding approach towards Cercospora resistant varieties – a perspective from SESVanderHave
2.8 M. Khan, G. Campagna
Strategic management of C. beticola using improved resistant cultivars of sugar beet
2.9 M. Müllender, M. Varrelmann, G. Stammmler
Possible causes and mechanisms for alterations in the sensitivity of Cercospora beticola towards DMI fungicides
2.10 T.M. Heick, A. Fejer Justesen, L. Nistrup Jørgensen, A.L. Hansen
Disease control and management of QoI resistance of sugar beet powdery mildew (Erysiphe betae) in Scandinavia
2.11 H. Yvanne
Can we harness disease resistance by association directly in wild sea beet?
## Beet pests

<table>
<thead>
<tr>
<th>Session</th>
<th>Authors</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.12</td>
<td>G. Campagna, A. Vacchi</td>
<td><em>Lixus junctus</em> and <em>Conorrhinchus mendicus</em> diffusion on sugar beet in Po Valley and control strategy</td>
</tr>
<tr>
<td>2.13</td>
<td>M. Mayrhofer, F. Kempl, H. Eigner</td>
<td>Sugar-beet weevil (<em>Bothynoderes punctiventris</em>) – Investigations on the efficacy of insecticides in model trials</td>
</tr>
<tr>
<td>2.14</td>
<td>Z. Klukowski, J. Piszczek</td>
<td>Biological aspects of Sugar Beet Weevil control – Polish experience of 2014-2019 outbreak</td>
</tr>
<tr>
<td>2.15</td>
<td>G. Malatesta, W. Huet</td>
<td>Increase of the weevil population in France</td>
</tr>
<tr>
<td>2.16</td>
<td>A. Olsson Nyström</td>
<td>Free living nematodes and root gall nematodes in sugar beet</td>
</tr>
</tbody>
</table>

## Growing sugar beet in a post-neonic world

<table>
<thead>
<tr>
<th>Session</th>
<th>Authors</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.17</td>
<td>C. Royer, C. Gouwie, F. Boyer, F. Maupas</td>
<td>The aftermath of the neonicotinoid ban in France: first lessons and new perspectives</td>
</tr>
<tr>
<td>2.18</td>
<td>F. Kempl, K. Wechselberger</td>
<td>Efficacy of seed treatments with and without neonicotinoids</td>
</tr>
<tr>
<td>2.19</td>
<td>N. Wynant, I. Munnery, J. Sels, H. Liesse, G. Willems, J. Vegas, E. de Bruyne, O. Amand, H. Tsoeop</td>
<td>An integrated breeding approach to develop insect tolerant varieties at SESVanderHave</td>
</tr>
<tr>
<td>2.20</td>
<td>L. Frijters, E. Raaijmakers, L. de Zinger</td>
<td>Testing alternative pesticides and monitoring systems for the control of pygmy mangold beetles (<em>Atomaria linearis</em>) under field conditions</td>
</tr>
<tr>
<td>2.21</td>
<td>K. Antoons, F. Vancutsem</td>
<td>Optimizing of pest management in Belgium thanks to the observation and warning network</td>
</tr>
<tr>
<td>2.23</td>
<td>E. Raaijmakers, F.-J. Bulthuis, N. Wynant, E. De Bruyne, J. Luimes</td>
<td>Monitoring of aphids in sugar beet fields and trial fields, a basic tool to understand virus yellow epidemics in the post neonic era</td>
</tr>
<tr>
<td>2.24</td>
<td>R. Hossain, W. Menzel, M. Vanrelmann</td>
<td>Virus yellows in sugar beet – biology, occurrence and influence on yield parameters</td>
</tr>
<tr>
<td>2.26</td>
<td>Ž. Čurčić, Ž. Milovac, K. Taški-Ajduković, A. Stankov, A. Radonjić, O. Petrović-Obrodić, B.-L. Lennefors</td>
<td>Beet Yellow Virus a possible threat to sugar beet production in Serbia?</td>
</tr>
</tbody>
</table>

## Virus resistance breeding, variety testing

<table>
<thead>
<tr>
<th>Session</th>
<th>Authors</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.27</td>
<td>L. James</td>
<td>A novel pre-breeding strategy to reduce dependence on insecticides for virus yellows control in sugar beet – a final update</td>
</tr>
<tr>
<td>2.28</td>
<td>A. Wright, M. Stevens, E. Murche, D. Sparkes</td>
<td>Phenotyping varietal responses of sugar beet to virus yellows, beet cyst nematode and foliar diseases</td>
</tr>
<tr>
<td>2.29</td>
<td>C. Nilsson, T. Kraft, B.-L. Lennefors</td>
<td>Successful breeding for resistance/tolerance to virus yellows at MariboHilleshög</td>
</tr>
<tr>
<td>2.30</td>
<td>K. Okazaki, Y. Kuroda, K. Takashino, H. Matsuhiura, S. Ueda</td>
<td>Resistance breeding to virus yellows in Japan</td>
</tr>
<tr>
<td>2.31</td>
<td>N. Behnke, W. Beyer</td>
<td>Breeding for virus yellows resistance – a new success story?</td>
</tr>
<tr>
<td>2.32</td>
<td>Y. Kuroda, K. Okazaki, K. Takashino</td>
<td>QTL analysis of resistance to <em>Beet leaf yellowing virus</em> (BLYV)</td>
</tr>
</tbody>
</table>
2.33 M. Rekoske, H. Friehe, J. Miller
Betaseed: 50 Years of innovation – a company looking to the future

2.34 C. Kenter, P. Götze, E. Ladewig
Effects of sample size and head rows on the precision of variety trials in sugar beet

2.35 A. Wauters, K. Antoons
Field testing for BMYV-tolerance in sugar beet with different inoculation techniques

**Other pests and disease issues**

2.36 L. Potyondi
Challenges of non-renewal of approval of pesticides in Hungarian sugar beet production

2.37 L. Holmquist, S. Mittler, J. Fernando Gil, R. Johnsson
Syndrome Basses Richesses (SBR) in Sugar beet – crop robustness as a potential element for control

2.38 A. Wauters
Silvering disease in sugar beet caused by *Curtobacterium flaccumfaciens* pv. *betae* in Belgian sugar beet trials

**Rhizomania**

2.39 C. Chiiodi, C. Broccanello, P. Stevanato, G. Campagna, L. Treu, M. Moro, G. Bertoldo, M.C. Della Lucia, S. Ravi, L. Maretto, S. Campanaro, G. Concheri, A. Squartini
Bacterial community composition in a soil carrying a resistance-breaking strain of the rhizomania virus BNYVV in comparison to standard soils

2.40 S. Liebe, E. Maiss, M. Varrelmann
Application of a reverse genetic system for *Beet necrotic yellow vein virus* to study Rz1 resistance breaking in sugar beet

2.41 V. Wetzel, M. Varrelmann
Rz2 – a plant anti *Beet necrotic yellow vein virus* resistance protein derived from *Beta vulgaris* targets the viral movement-protein TGB1 as avirulence gene

**Weed control**

2.42 D. Laufer, E. Ladewig
Weed control in sugar beet without the active substances desmedipham and phenmedipham

2.43 S. Geyer, F. Kempl, H. Eigner
Weed control missing des- and phenmedipham

2.44 S. van der Heijden, E. Raaijmakers, I. Wijgergangs
Effectiveness of ALS-herbicides registered for cereals to control ALS-tolerant and ALS-non-tolerant weed beets

2.45 C. Stibbe, M. Klie, W. Wegener, J. Wiessner
CONVISO® SMART – experiences of the first two years in practice

2.46 D. Hyndriks, X. Sauvenier, N. De Temmerman
Performance of CONVISO® SMART sugar beet varieties under different weed control strategies

2.47 J. Kimmel
Experiences with CONVISO® SMART technology in field trials in Hungary

2.48 M. Palomäki
Farmers’ opinions about the CONVISO® SMART system in Finland

2.49 M. Palomäki
Tips of the use of CONVISO® SMART in Finland

2.50 M. Khan
Experiences and lessons learned from a decade of using herbicide tolerant sugar beet in the USA

2.51 C. Royer
Weeds resistant to chemical herbicide

2.52 R. Euben
How to use drift reducing spray nozzles and maintaining good weed control