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Poster Programme

1 Breeding and seeds

1.1	Loel, J., C. Hoffmann	Evaluation of the breeding progress of sugar beet varieties from 1964 to 2003
1.2	Henry-Bounan, K., B. Mangin, F. Sandron, B. Devaux, V. Laurent, P. Devaux	Genetic diversity among cultivated and wild species accessions of sugar beet (*Beta vulgaris* L.) based on SNP and DArT markers: molecular and ecogeographical analyses and linkage map building
1.3	Eujayl, I., C. Strausbaugh	Whole genome sequencing of sugar beet and SNP development
1.4	Barnes, S., K. Koh, A. Sharpe, S. Vanstraelen, G. Willems	Relationship between physical and genetic distances in sugar beet chromosomes
1.5	Adetunji, I., G. Willems, H. Tschoep, A. Burkholz, S. Barnes, M. Boer, M. Malosetti, S. Horemans, F. van Eeuwijk	Genetic diversity and linkage disequilibrium analysis in elite sugar beet breeding lines and wild beet accessions
1.6	Miller, J., M. Rekoske, E. Lindroos	Impact of American germplasm for resistance breeding in sugar beet
1.7	Stevanato, P., L. Sella, C. de Lucchi, C. Broccanello, L. Hanson, L. Panella, M. McGrath	Improving key root traits in sugar beet: *Fusarium* tolerance
1.8	Tossens, A., N. Debontridder	FT-NIRS for the quantification of pesticides on coated sugar beet seeds
1.9	Pedersen, H.C.	Field Vision Technology for evaluation of product quality

2 Agronomy

2.1	Koch, H.-J., H. Eigner	Recent activities and future topics of the IIRB Plant & Soil study group
2.2	Schlinker, G., A. Windt	Equal distance drilling of sugar beets
2.3	Horemans, S., B. Maudoux, R. Robinson, F.J. Bulthuis, N. Tillett, T. Hague, P. Garford	Computer vision guided chemical thinning
2.4	Wenninger, E.J., O.T. Neher, D.W. Morishita, W.H. Neibling	Soil water content, disease, weed, and insect responses in strip-till sugar beet
2.5	Laufer, D., G. Sander, G. Schlinker, H.-J. Koch	Autumn strip tillage in sugar beet cultivation – first experiences on loess soils in Northern Germany
2.6	Nübel, V., B. Loibl, K. Bürcky	Investigation on strip-till growing of sugar beet in Southern Germany
2.7	Muurinen, S., H. Louramo, M. Turakainen	Different cover materials on sugar beet growing
2.8	Zavanella, M., A. Vacchi, A. Fabbri, G. Bettini	Experimental quantification of machine trampling damage in sugar beet cultivation in Italy
2.9	Khan, M.	Effect of simulated hail on yield of sugar beet
2.10	Becker, C., H.-J. Koch	Utilization of deteriorated beets as top-dressed manure in winter wheat
2.11	Aylaj, M., El Kbir Lhadi	Impact of the salinity of water on the chlorophyll contents of two varieties of sugar beet
2.12	Sigl, G., T. Assinger, H. Eigner, P. Liebhard	Characterisation of different species for their suitability as intercrop before sugar beet
2.13	Sigl, G., T. Assinger, H. Eigner, P. Liebhard	Impact of different intercrop species on yield and quality of sugar beet

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3 Plant nutrition

3.1	Grzebisz, W., P. Barłóg, W. Szczepaniak	A balanced uptake of nitrogen by sugar beet during the growing season as a prerequisite of high yield of sugar
3.2	Legrand, G., A. Wauters	Interaction between some varieties and the mineral nitrogen availability
3.3	Trimpler, K., N. Stockfisch	N_2O-emissions resulting from N-fertiliser application in sugar beet cultivation
3.4	Persson, L., Å. Olsson	Liming as a method for integrated control of Aphanomyces in sugar beet
3.5	Olsson, Å., L. Persson	Liming of different soil types – effect on soil factors and sugar yield
3.6	Hergert, G.W., M.K. Darapuneni, R. Wilson, R. Harveson, J. Bradshaw, R. Nielsen	Effect of precipitated calcium carbonate on soil characteristics and sugar beet yield and quality
3.7	Lemme, H., D. Horn, H.-J. Koch	Liming increases EUF extractable, labile, and plant available P on loess soils
3.8	Fürstenfeld, F., D. Horn	Is the P and K supply in soils enough for optimum sugar yield?
3.9	Muurinen, S., M. Turakainen	Yield response in Finnish sugar beet trials with starter application of phosphorus
3.10	Szczepaniak, W., W. Grzebisz, A. Kozera	Potassium replacement by sodium in different sugar beet fertilising systems
3.11	Barłóg, P., W. Grzebisz	Effect of sodium application on nutritional status of sugar beet plants at critical stages of growth
3.12	El-Sayed, H.M., M.A. El-Hawary, M.K.K. Awad	Influence of boron sources on yield and quality of some sugar beet varieties

4 Control of pests, diseases and weeds

4.1	Vagher, T., A. L. Fenwick, L. Panella	Preparation of inoculum of *Rhizoctonia solani* Kühn for an artificially inoculated field trial
4.2	Renner, A.-C., B. Boine, R. Apfelbeck, M. Zellner	Molecular assay for rapid quantification of *Rhizoctonia solani* AG2-2IIIB
4.3	Renner, A.-C., B. Boine, G. Wagner, G. Simeth, M. Zellner	Effect of different sugar beet pre-crops and agricultural practices on soil inoculum densities of *Rhizoctonia solani*
4.4	Schulze, S., H.-J. Koch	Soil structure effects on *Rhizoctonia* infestation of sugar beet (*Beta vulgaris*) – concept and first results
4.5	Kreitzer, C., H. Eigner	Management of *Rhizoctonia solani* by specific intercrop cultivation and biological control agents
4.6	Champeil, A., K. Bouchek-Mechiche, C. Chatot, P. Dolo, V. Faloya, D. Gaucher, B. Mille, F. Montfort	Reduce the pressure of brown rhizoctonia attacks in the crop rotation involving corn, sugar beet and potatoes
4.7	Bartholomäus, A., S. Mittler, M. Varrelmann	Chemical control of the late root and crown rot in sugar beet caused by *Rhizoctonia solani*
4.8	Bredehoeft, M.W., V. Rivera, G. Secor	Analysing a late season root rot of sugar beet in the Imperial Valley of California
4.9	Christ, D., M. Varrelmann	Development of two biotests for the identification of *Aphanomyces cochlioides* resistance in sugar beet
4.10	Josic, D., M. Starovic, V. Stojsin, F. Bagi, D. Budakov, R. Pivic	Mycoantagonistic activity of indigenous antibiotic-producing *Pseudomonas* spp. against sugar beet pathogens (*Fusarium* spp., *Macrophomina phaseolina* and *Rhizoctonia solani*)
4.11	Secor, G., V. Rivera, M. Bolton, M. Khan	Current status of DMI and QoI fungicide resistance in European Union populations of *Cercospora beticola*

4.12	Wieczorek, T.M., L. Nistrup Jørgensen, A. L. Hansen, L. Munk, A. Fejer Juestensen	Early leaf disease control and detection of *Ramularia beticola* in sugar beets using spore traps and qPCR
4.13	Persson, L., Å. Olsson	Occurrence of Verticillium wilt in sugar beet in Sweden
4.14	De Bruyne, E., G. Willems, L. Broos, J. Hermes	Genetic diversity of the BNYVV virus by whole genome sequencing – some new insights
4.15	Kimmel, J., L. Potyondi, F. Csima, E. Takacs	The effect of climate change on sugar beet pests and diseases in Hungary
4.16	Horn, D., T. Hetterich, F. Fürstenfeld	Experience of the determination of *Heterodera schachtii* in soils and implementation into farming practice
4.17	Meinecke, A., K. Ziegler, K. Bürcky, A. Westphal	Importance of weeds on stubble fields for population densities of *Heterodera schachtii*
4.18	Olsson, Å., S. Andersson, A. L. Hansen	Survey of free living nematodes in sugar beet fields in Sweden and Denmark 2012-2013
4.19	Zavanella, M., G. Campagna, M. Silvagni	Mapping the spread of sugar beet cyst nematodes in Northern Italy
4.20	Schlatter, C., C. Watrin, A. Oliveira	Developing an integrated approach to the control of beet cyst nematode in sugar beet
4.21	Hauer, M., H.-J. Koch, S. Mittler, A. Windt	Water use efficiency of three sugar beet types in relation to cyst nematode infestation
4.22	Manderyck, B., E. Raaijmakers	Chemical and biological methods for the control of leatherjackets (Tipulidae) in sugar beet
4.23	Schlatter, C., A. Yilmaz, W. Fischer, F. Brandl	The use of rhizotrons in sugar beet root research

5 Weed control

5.1	Champion, G., E. Burks, P. Turnbull	Herbicide combinations to optimise control of black-grass in sugar beet
5.2	Šulík, R.	Control of Clearfield sunflower in sugar beet
5.3	Wendt M.J., M. Wegener, E. Ladewig, B. Märländer	Methodology of testing efficacy and durability of an ALS-inhibitor herbicide on weed species in sugar beet cultivation
5.4	Bartsch, D., U. Ehlers, A. Gathmann, C. Kula, A. Meisner, U. Middelhoff, A. Scheepers, W. Schenkel, M. Streloke	Environmental risk assessment of glyphosate tolerant H7-1 sugar beet

6 Harvest, storage and beet quality

6.1	Blocaille, S.	PERFBETT – Improve performances and uses of harvest machinery
6.2	Rydén, A.	Harvest losses – potentials and actions to catch them
6.3	Büsching, S., C. Linnes, D. Wollenweber, C. Becker	Load loss through the use of different cleaner loaders – possibilities of reducing loss and enhancing cleaning quality – results of a two-year trial
6.4	Nowakowski, M., P. Skonieczek, A. Paradowski, K. Kubicki	Yield and processing quality of topped and defoliated sugar beets cultivated on lessive soil in Poland
6.5	Schnepel, K., C. Hoffmann	Formula to calculate the invert sugar content based on the glucose content of sugar beet
6.6	Schnepel, K., C. Hoffmann	Estimation of the storability of sugar beet genotypes
6.7	Liebe, S., M. Varrelmann	Effect of genotype and environment on the development of root rots during long-time storage of sugar beets
6.8	Eigner, H., G. Sigl	Investigations on the storability of sugar beet varieties

6.9	Hein, W., F. Emerstorfer	Evaluation of the refractometric formula for the prediction of the technological quality of stored sugar beets
6.10	Olsson, R.	Sugar losses and effect on beet quality after different clamp covering concepts in Sweden
6.11	Danojević, D., N. Nagl, Ž. Ćurčić, I. Maksimović, M. Putnik-Delić, K. Taški-Ajduković, J. Boćanski	Changes in proline content and leaf traits under water stress in sugar beet lines and hybrids

7 Sugar beet as energy crop

7.1	Potyondi, L., J. Kimmel, F. Csima, E. Takacs	Biogas and bio-energy production from sugar beet
7.2	Auburger, S., E. Bahrs	Potential availability of arable land for additional sugar beet cultivation as a biogas crop in Germany
7.3	Brauer-Siebrecht, W., A. Jacobs, H.-J. Koch	Balance and leaching of nitrogen in energy crop rotations with and without sugar beet
7.4	Götze, P., J. Rücknagel, A. Jacobs, O. Christen	Risk of soil compaction in energy crop rotations with and without sugar beet
7.5	Pelka, N., O. Musshoff	Competitiveness and economic risks of crop rotations with and without sugar beets with biogas as production target under consideration of the individual risk acceptance

8 Winter beet

8.1	Hoffmann, C.	Bioenergy from winter beet – a joint project along the value chain
8.2	Kopisch-Obuch, F.J., M. Kirchhoff, F. Uhlmann, N. Pfeiffer, J. Ogutu, E. Orsini, A. Schechert, C. Jung	QTL for winter hardiness and post winter bolting resistance in sugar beet (*Beta vulgaris* ssp. *vulgaris* L.)
8.3	Loel, J., C. Hoffmann	Factors affecting the winter hardiness of sugar beet
8.4	Reinsdorf, E.	Risk assessment for frost killing of winter sugar beet by modelling the beet crown temperature
8.5	Stephan, H., U. Böttcher, H. Kage	Simulations of potential yields for non-bolting winter beet
8.6	Ohl, S., E. Hartung	Methane yield of winter beet
8.7	Ohl, S., E. Hartung	Producing biogas from winter beet: Is it reasonable?
8.8	Stockfisch, N.	Resource efficiency of winter beet cultivation

9 Beet pulp

9.1	Potthast, C., S. Brinker, K. Maier	Assessment of the effects of chemical silage additives in pressed pulp silage
9.2	Brinker, S., C. Potthast, K. Maier	Microbiology of pressed beet pulp silage under practical conditions

10 Communication and cooperations

10.1	Zavanella, M., D. Rosini, N. Minerva	A Decisional Support System sustaining the Italian sugar beet growers
10.2	Raaijmakers, E., B. Hanse, P. Wilting, E. van Oorschot	Sugar beet diagnostic service: a winning system for all involved
10.3	Smit, A.B., K.J. Poppe	The position, role and future of cooperative sugar refineries in the EU
10.4	Risser, P., K. Bürcky	(Consumer) communication – sustainable beet cultivation

4.10 DRAGANA JOSIC[1], M. STAROVIC[2], VERA STOJSIN[3], FERENC BAGI[3], D. BUDAKOV[3], R. PIVIC[1]

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MYCOANTAGONISTIC ACTIVITY OF INDIGENOUS ANTIBIOTIC-PRODUCING *PSEUDOMONAS* SPP. AGAINST SUGAR BEET PATHOGENS (*FUSARIUM* SPP., *MACROPHOMINA PHASEOLINA* AND *RHIZOCTONIA SOLANI*)

Effet inhibitif de variétés indigènes de Pseudomonas spp., productrices d'antibiotiques contre des agents pathogènes fongiques (*Fusarium* spp., *Macrophomina phaseolina* et *Rhizoctonia solani*) / Hemmende Wirkung einheimischer, antibiotikaproduzierender Pseudomonas-Arten gegenüber pilzlichen Krankheitserregern der Zuckerrübe (*Fusarium* spp., *Macrophomina phaseolina* und *Rhizoctonia solani*)

ABSTRACT

Isolation of indigenous *Pseudomonas* spp. from natural disease-suppressive soils allowed the selection of beneficial strains with biocontrol and growth-promoting traits. *Pseudomonas* spp. are well adapted to growing in the rhizosphere and some of them possess bacterial traits and genes contributing to rhizosphere competence and the mechanisms of pathogen suppression. To select isolates with mycoantagonistic activity, 56 fluorescent Pseudomonas were isolated from five Serbian disease-suppressive soils. Using PCR, some of antibiotic production genes: phenazine-1-carboxylic acid (PCA), 2,4-diacetylphloroglucinol (DAPG), pyrrolnitrin (PRN) and pyoluteorin (PLT), were detected in 31 indigenous Pseudomonas isolates. Mycoantagonistic activity of antibiotic-producing isolates against sugar beet pathogens was tested in vitro on Waksman agar. All tested fungal isolates originated from sugar beet plants were collected from the main growing regions in Republic of Serbia. In pathogenicity tests, typical symptoms were recovered on leaves or roots of artificially inoculated plants, depending on a pathogen. *Fusarium* spp. (SR27/11 and SR7/12) were isolated from roots with symptoms of dry rot and vascular necrosis. Monohyphal isolates of *Macrophomina phaseolina* (62/4) and *Rhizoctonia solani* (SR17/12) were isolated from roots exhibiting characteristic symptoms of charcoal and Rhizoctonia root rot, respectively. The growth inhibition rate ranged from 12 to 68% for *Fusarium* spp., 8 to 52% for *M. phaseolina* and 3 to 86% for *R. solani*. The Pseudomonas isolate K38 showed the highest percentage (86%) of growth inhibition of *R. solani*. The most promising indigenous antibiotic-producing Pseudomonas isolates will further be investigated for disease suppression of sugar beet pathogenic fungi in field conditions.