Sunday Evening News No 325

2023-05-01 – 2023-05-07

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Wissenschaftskreis Genomik und Gentechnik e.V.

Meetings – Conferences / Veranstaltungen - Konferenzen

Datum bitte vormerken: FGV-WGG-Pressekonferenz „40 Jahre Grüne Gentechnik“
01.06.2023, Berlin
Redner werden die beiden Nobelpreisträger R. J. Roberts und C. Nüsslein-Vollhard sein.

Press Releases -Media / Presse- und Medienberichte

Kromp R.: **"Wir müssen den Elfenbeinturm verlassen"**
https://www.news.at/a/heinz-fassmann-interview-13003765

Müller-Jung J.: **Gentechnik auf dem Feld**
https://www.faz.net/aktuell/politik/wie-die-landwirtschaft-gentechnik-auf-dem-feld-nutzen-sollte-18853450.html

Rukwied: **Starke Pflanzenzüchtung ist ein Schlüssel zur Weiterentwicklung der Landwirtschaft**
https://www.bauernverband.de/topartikel/rukwied-starke-pflanzenzuechtung-ist-ein-schluessel-zur-weiterentwicklung-der-landwirtschaft

Testbiotech: **EU-Kommission will Neue Gentechnik zügig deregulieren**
https://www.testbiotech.org/aktuelles/eu-kommission-will-neue-gentechnik-z-gig-deregulieren

EU Commission plans to proceed rapidly with deregulation of New GE
https://www.testbiotech.org/en/news/eu-commission-plans-proceed-rapidly-deregulation-new-ge

Miller,H.I.: **Charles III Might Be King, but He’s Still the Dunce of Wales to Me**
https://www.acsh.org/news/2023/04/27/charles-iii-might-be-king-he%E2%80%99s-still-dunce-wales-me-17004

Only some selected press releases or media reports are listed here. The daily up-date of the press releases and media reports are ▶here: May week 18

Publications – Publikationen

Broad, G.M. (2022): **Improving the agri-food biotechnology conversation: bridging science communication with science and technology studies.** Agric Hum Values |
https://doi.org/10.1007/s10460-023-10436-4
At a time when agri-food biotechnologies are receiving a surge of investment, innovation, and public interest in the United States, it is common to hear both supporters and critics call for open and inclusive dialogue on the topic. Social scientists have a potentially important role to play in these discursive engagements, but the legacy of the intractable genetically modified (GM) food debate calls for some reflection regarding the best ways to shape the norms of that conversation. This commentary argues that agri-food scholars interested in promoting a more constructive agri-food biotechnology discussion could do so by blending key insights, as well as guarding against key shortcomings, from the fields of science communication and science and technology studies (STS). Science communication’s collaborative and translational approach to the public understanding of science has proven pragmatically valuable to scientists in academia, government, and private industry, but it has too often remained wedded to deficit model approaches and struggled to explore deeper questions of public values and corporate power. STS’s critical approach has highlighted the need for multi-stakeholder power-sharing and the integration of diverse knowledge systems into public engagement, but it has done little to grapple with the prevalence of misinformation in movements against GM foods and other agri-food biotechnologies. Ultimately, a better agri-food biotechnology conversation will require a strong foundation in scientific literacy as well as conceptual grounding in the social studies of science. The paper concludes by describing how, with attention to the structure, content, and style of public engagement in the agri-food biotechnology debates, social scientists can play a productive conversational role across a variety of academic, institutional, community-level, and mediated contexts.
https://link.springer.com/article/10.1007/s10460-023-10436-4

Svobodová Z., Zemek R, Habuštová O.S. (2023): **Different maize varieties have greater impact on *Tetranychus urticae* (Acari: Tetranychidae) than GE maize expressing Cry3Bb1 insecticidal protein** Journal of Insect Physiology 146, 104502 | https://doi.org/10.1016/j.jinsphys.2023.104502

Genetically engineered (GE) maize expressing *Bacillus thuringiensis* Cry3Bb1 protein was developed to control *Diabrotica* spp. (Coleoptera: Chrysomelidae). However, Cry proteins have been reported to have effects on non-target arthropods. We therefore investigated whether the non-target pest *Tetranychus urticae* (Acari: Tetranychidae) was negatively affected by GE maize expressing the insecticidal Cry3Bb1 protein. Five treatments were used in the laboratory tests to determine the life history parameters of *T. urticae* on leaves of field-grown maize varieties: (1) GE maize MON 88017, (2) isogenic maize, (3) isogenic maize protected with the soil applied insecticide chlorpyrifos (Dursban 10G), and two unrelated varieties (4) Kipous and (5) PR38N86. Newly emerged *T. urticae* larvae were individually released on the upper surface of leaf discs placed on water saturated cotton wool. Immatures and adults survival, duration of developmental stages and female fecundity were recorded daily until *T. urticae* died. Age–stage, two-sex life table method and test for trends, revealed no significant differences in 13 of 18 studied parameters. The unrelated varieties Kipous and PR38N86 on one side and maize with the same genetic background, namely GE maize and isogenic maize with or without insecticide protection, on the other side, showed significant variations in male longevity, larval survival rate, preoviposition period, and fecundity. In addition to the differences between varieties, GE maize and insecticide-protected isogenic maize showed a substantial difference in age-specific fecundity, but not in the mean number of eggs laid by females.

The obtained results do not indicate that consumption of Cry3Bb1 has negative effect on *T. urticae* and suggest that GE maize does not pose a risk with respect to the non-target mite pest *T. urticae*. The results may have implications for the approval and renewal of import and cultivation for GE crop in the European Union.

https://www.sciencedirect.com/science/article/abs/pii/S0022191023000288?via%3Dihub

Bakku, R.K., Yamamoto, Y., Inaba, Y. et al. (2023): **New insights into raceway cultivation of *Euglena gracilis* under long-term semi-continuous nitrogen starvation.** Sci Rep 13, 7123 | https://doi.org/10.1038/s41598-023-34164-1

This study aimed to investigate the physiological responses of *Euglena gracilis* (*E. gracilis*) when subjected to semicontinuous N-starvation (N−) for an extended period in open ponds. The results indicated that the growth rates of *E. gracilis* under the N− condition (11 ± 3.3 g m^{-2} d^{-1}) were higher by 23% compared to the N-sufficient (N+, 8.9 ± 2.8 g m^{-2} d^{-1}) condition. Furthermore, the paramylon content of *E.gracilis* was above 40% (w/w) of dry biomass in N− condition compared to N+ (7%) condition. Interestingly, *E. gracilis* exhibited similar cell numbers regardless of nitrogen concentrations after a certain time point. Additionally, it demonstrated relatively smaller cell size over time, and unaffected photosynthetic apparatus under N− condition. These findings suggest that there is a tradeoff between cell growth and photosynthesis in *E. gracilis*, as it adapts to semi-continuous N− conditions without a decrease in its growth rate and paramylon productivity. Notably, to the author's knowledge, this is the only study reporting high biomass and product accumulation by a wild-type *E. gracilis* strain under N− conditions. This newly identified long-term adaptation ability of *E. gracilis* may offer a promising direction for the algal industry to achieve high productivity without relying on genetically modified organisms.

https://www.nature.com/articles/s41598-023-34164-1

Soares D., Vertuan H., Bacalhau F., José M. et al. (2023): **Genetically modified crops do not present variations in pollen viability and morphology when compared to their conventional counterparts**. PLoS ONE 18(5): e0285079. https://doi.org/10.1371/journal.pone.0285079

Modern agricultural biotechnologies, such as those derived from genetic modification, are solutions that can enable an increase in food production, lead to more efficient use of natural resources, and promote environmental impact reduction. Crops with altered genetic materials have been extensively subjected to safety assessments to fulfill regulatory requirements prior to commercialization. The Brazilian National Technical Biosafety Commission (CTNBio) provides provisions for commercial release of transgenic crops in Brazil, including requiring information on pollen dispersion ability as part of environmental risk assessment, which includes pollen viability and morphology studies. Here we present the pollen viability and morphology of non-transgenic conventional materials, single-event genetically modified (GM) products, and stacked GM products from soybean, maize and cotton cultivated in Brazil. Microscopical observation of stained pollen grain was conducted to determine the percentage of pollen viability as well as pollen morphology, which is assessed by measuring pollen grain diameter. The pollen viability and diameter of GM soybean, maize and cotton, evaluated across a number of GM events in each crop, were similar to the conventional non-GM counterparts. Pollen characterization data contributed to the detailed phenotypic description of GM crops, supporting the conclusion that the studied events were not fundamentally different from the conventional control.

https://journals.plos.org/plosone/article/comments?id=10.1371/journal.pone.0285079

Pfotenhauer A.C., Occhialini A., Harbison S.A., Li L. et al. (2023): **Genome-Editing of FtsZ1 for Alteration of Starch Granule Size in Potato Tubers.** Plants, 12 (9), 1878 | https://doi.org/10.3390/plants12091878

Genome-editing has enabled rapid improvement for staple food crops, such as potato, a key beneficiary of the technology. In potato, starch contained within tubers represents the primary product for use in food and non-food industries. Starch granules are produced in the plastids of tubers with plastid size correlated with the size

of starch grana. The division of plastids is controlled by proteins, including the tubulin-like GTPase FtsZ1. The altered expression of FtsZ1 has been shown to disrupt plastid division, leading to the production of “macro-plastid”-containing plants. These macro-chloroplast plants are characterized by cells containing fewer and enlarged plastids. In this work, we utilize CRISPR/Cas9 to generate FtsZ1 edited potato lines to demonstrate that genome-editing can be used to increase the size of starch granules in tubers. Altered plastid morphology was comparable to the overexpression of FtsZ1 in previous work in potato and other crops. Several lines were generated with up to a 1.98-fold increase in starch granule size that was otherwise phenotypically indistinguishable from wild-type plants. Further, starch paste from one of the most promising lines showed a 2.07-fold increase in final viscosity. The advantages of enlarged starch granules and the potential of CRISPR/Cas9-based technologies for food crop improvement are further discussed.
https://www.mdpi.com/2223-7747/12/9/1878

Wie immer wird für Hinweise und der Zusendung von Publikationen und sonstigen Informationen gedankt. pdf-Dateien können meist direkt aus den links heruntergeladen werden.
*As always, I thank you all for hints and for publications. M*ost of *the pdf files can be downloaded directly from the links.*

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