

New genetic engineering techniques

What is on the field What is in the pipeline?

Dr. Eva Gelinsky
Initiative for GE-free seeds and breeding

What is on the field?



Rape seed, CIBUS (ODM), Herbicide resistant

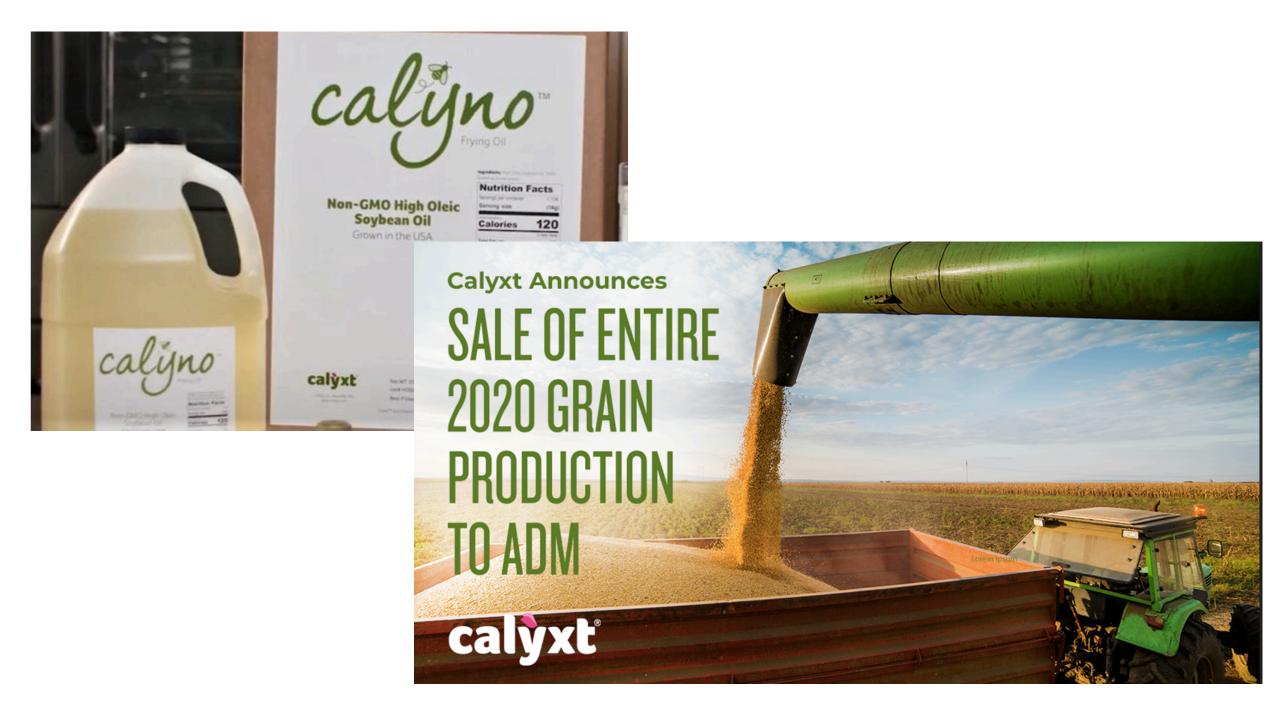
On the field: USA, Canada

USA (2019): 32 000 ha

Soya, CALYXT (Talen), High-Oleic

USA (2020): 40 460ha

Total harvest goes to Archer Daniels Midland



What's new in 2021?





«GABA is said to contribute to relaxation and help lower blood pressure» First CRISPR-Plant CRISPR-Cas9

Tomato, «Sicilian Rouge High GABA»

Tomato contains more than 5 times the amount of GABA (gamma-Aminobutyric acid)

What's in the pipeline for 2021/2022?

2021: Alfalfa, CALYXT (Talen), improved nutrient composition, better digestibility (animal feed).



2022: Soya, CALYXT (Talen), altered fatty acid composition (higholeic) & low linolenic acid (HOLL). APHIS-Permit 2020.



2022: Wheat, CALYXT (Talen), high fiber content.

Annual figures: Company data!



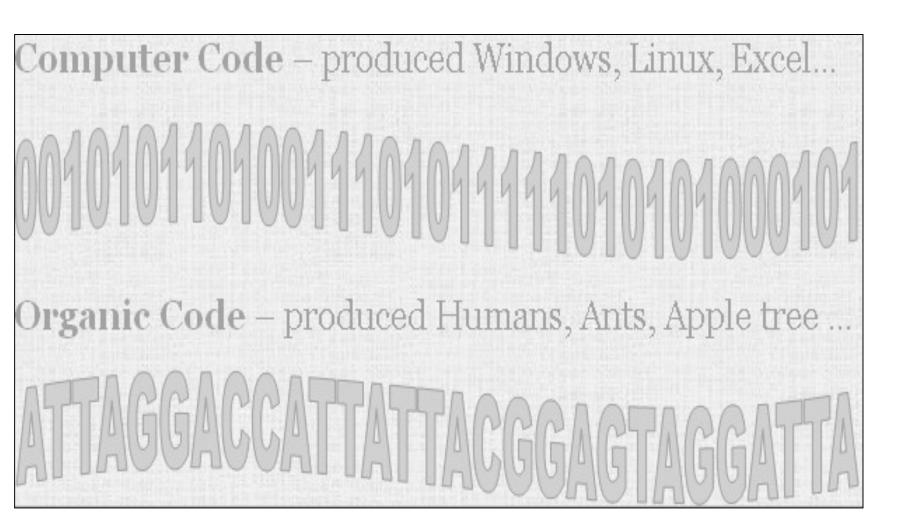
Which traits are dominant?

- Altered metabolic properties: e.g. altered fatty acid patterns.
- Herbicide resistance: still widespread, some companies focus on this trait (e.g. Bioheuris, Argentina).
- "Knock-out" traits: Non-browning suppression of oxidation processes.

Potential of the new techniques?

- Problems of old genetic engineering are not addressed: Development of resistance, pesticide use, etc.
- Old promises: e.g. drought tolerance. But: Complex traits are not so easy to produce even with new genetic engineering.
- Traits such as altered fatty acid patterns (high-oleic) can also be bred using conventional methods.
- Plants with modified nutrient content: Effects on human health?

Can we code plants like computers?













"So a product that we're interested in, sort of it's a longer term product, is to create a cherry without a pit. You can imagine being able to just pop a cherry in your mouth and really enjoy that healthy, healthy fruit. Cherries are in season right now. They're great, but I keep ending up with purple fingers from eating them all. I'd love to be able to just pop them over my mouth and eat them like grape. So that's the kind of thing where we're taking it down the barrier so that a consumer can really enjoy the cherry differently."

Thank you!



For your attention!