

Gene Editing at GDM

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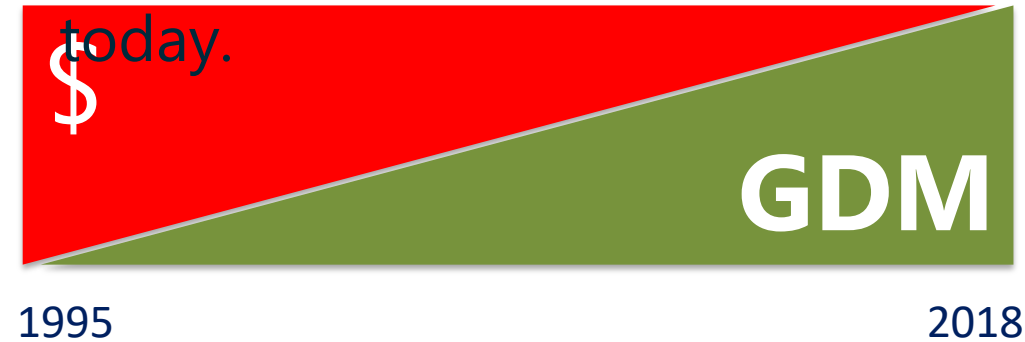


Why did GDM decide to invest in Gene Editing?

- ❁ GDM's **know-how development** in several related areas across the years:
- **Gene Discovery projects.**
 - **Next-generation sequencing.**
 - **Tissue culture, transformation, etc.**
 - **Regulatory expertise** from transgenic traits.



- ❁ GDM's **market growth** in South America increased our R&D investment.
- ❁ Significant **cost reduction** from transgenesis in the 90's to NBT's today.



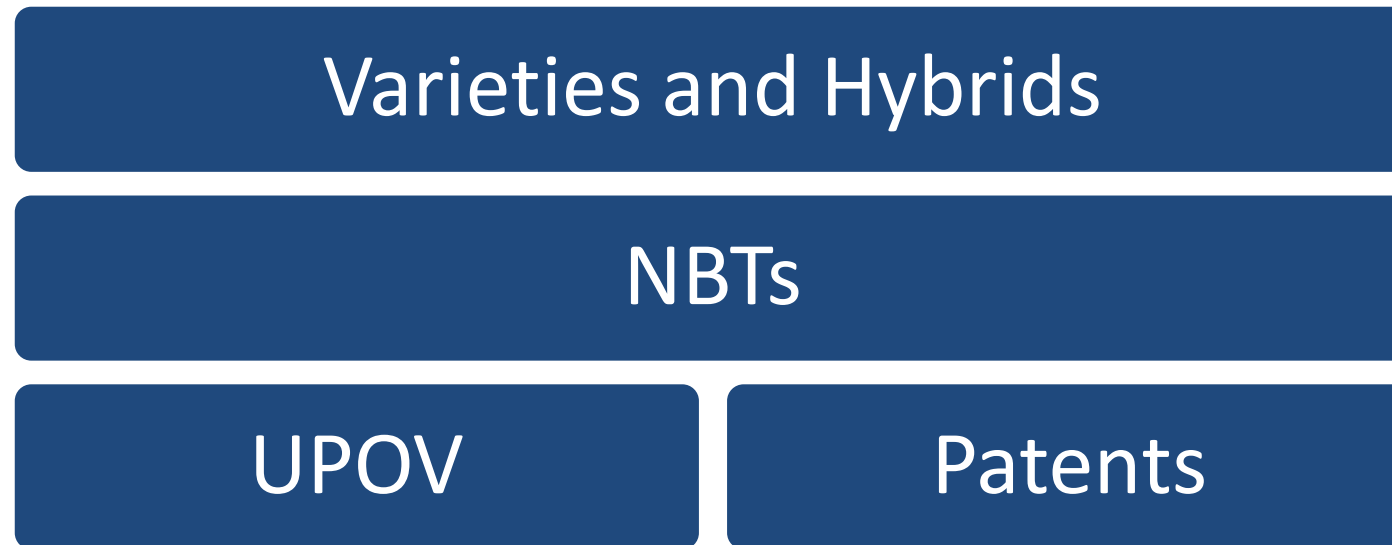
Greatest opportunity if NBTs are not regulated as GMO worldwide.

- If NBT's products could be considered NON-GMO (after a case-by-case analysis) the reduction in deregulation cost, time, and complexity would be huge.
- This would increase the number of players and create a healthy competitive market.
- Great progress was made first by Argentina and then by most of the Americas in having a clear and adequate Gene Editing Regulatory framework.
- **Normalization across geographies would simplify its use and impact on agriculture.**



Analysis of NBT's IP in seeds in South America:

- ❁ It is unclear if Gene Editing products will be protected under Seed Law (like Germplasm) or under Patents (like Transgenic traits).



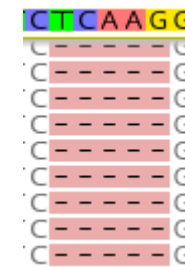
Gene Editing program at GDM



- ❁ **Collaborations** with universities, research institutes, and companies in **Gene Discovery** (searching for editing targets).
- ❁ GDM has focused in developing in house transformation and plant regeneration infrastructure and know how with the goal of **editing ELITE GDM GERMOPLAM**.



GDM's NBTs Lab (Londrina, Parana, Brazil):



5 bp
deletion



Conclusions

- ❁ Gene Editing will allow us to expand the genetic diversity available today.
- ❁ GDM has taken the strategic decision to invest in this technology further strengthening its commitment to bring the best genetics to farmers.
- ❁ Clarity and harmonization of the Regulatory and IP status of the Gene Editing products worldwide are needed.



Thank you

