

KeyGene: Innovating the future of agriculture

An international research and development organization empowers its partners to optimally respond to new farming technologies

Business needs

KeyGene required powerful compute to process large data sets and overcome data bottlenecks. Support for artificial intelligence (AI), machine learning (ML) and deep learning (DL) workloads was critical for gene discovery and breakthroughs in crop improvement.

Business results



Supported large and demanding datasets without compromise.



Enabled AI models to run 24/7 on-premises with lower costs of ownership.



Accelerated insights and analytics with AI, ML and DL across all data science teams.



Reduced rack space and data center footprint by 50%.

Solutions at a glance

- [Dell PowerEdge XE8545 Servers with AMD EPYC™ Processors with NVIDIA GPUs](#)



Powerful, intelligent results for the agriculture industry.

Innovating plant breeding with intelligent, actionable data insights.

KeyGene is an international research and development organization. Technological innovations in data science, proteomics, metabolomics, cell and tissue technology, genome editing and genomic breeding are driving crop improvements for sustainable agriculture all over the world.

“Artificial Intelligence and Data Science are rapidly becoming drivers of research in life sciences”, said Marcel van Verk, Vice President of Crop Data Science at KeyGene. “We are turning these into technologies with which we create impactful innovations for our partners in the agri-food sector.”

The company is strategically positioned to offer end-to-end research, from data scientists to plant researchers and specialists – all under one roof. By developing technological innovations, KeyGene delivers continuous crop improvement for its partners and contributes to building a safer, more sustainable future for agriculture. The company empowers its partners to optimally respond to new technologies such as vertical farming, smart greenhouses, robotics and precision breeding which are driving rapid change within the agriculture sector.

To support its demanding AI, ML, and DL workloads, KeyGene selected Dell PowerEdge Servers for their huge storage scalability and powerful processors.

Nurturing innovation in the field.

Modern DNA sequencers produce billions of data points per crop. Combining and linking this data with crop performance metrics from the greenhouse and field is an incredibly costly and timeconsuming process.

Vast quantities of data must also be analyzed, processed and interpreted to provide enhanced insights and ultimately the best crop varieties.

KeyGene’s previous solution struggled to support this influx of data and train new algorithms over an increasing number of parameters. While it could handle burst calculations, it was far too expensive to run its training models 24/7 with all the desired parameters.

Harnessing technology to improve crops.

Time is always a factor in the agriculture sector. For example, the constant ‘arms race’ between plant immunity and pathogens’ capability to break the plants’ immunity.

Image recognition, algorithms and AI improve the speed of analyzing crop data but, crucially, the accuracy of detecting potential diseases, pathogens and preventing certain crop varieties from extinction. Identifying valuable genes, proteins and metabolites also helps the breeders to find new, sustainable alternatives for the production of key materials such as rubber.

Developing technology innovations for crop improvement is a priority for KeyGene. A lean and efficient solution would help the company reduce rack space, energy consumption and its overall data center footprint.

Unlocking faster results with PowerEdge.

Designing an IT platform that could securely handle all of KeyGene’s AI and ML models – while reducing rack space and operational costs – was exactly what Dell Technologies’ partner Bluetron and distributor TD SYNEX had in mind when offering the PowerEdge XE8545 servers to KeyGene.

PowerEdge’s NVIDIA A100 Tensor Core GPUs proved to be perfect for running AI workloads.

Instead of manually analyzing crops, KeyGene now has AI powered computer vision that enables the monitoring of crop performance. This innovation significantly reduces labor costs

“ Artificial intelligence is crucial for the future of farming.”

Niek Bouman,
Data Scientist, KeyGene

“ **The agriculture sector is rapidly changing. We need to make sense out of the ever-growing amounts of data and solve biological questions.**”

Marcel van Verk,
Vice President Crop Data Science, KeyGene



while increasing the quality of analyses, crops yields and profit margins.

AI is also used to model genomic data and select the optimal plant combinations to obtain the desired crop.

PowerEdge XE8545 series simple, compact 2-socket, 4U system enabled the company to reduce its rack space and data center footprint by 50% – helping KeyGene to make progress towards its sustainability goals.

Combining tech and expertise for a new era.

By working with Dell and Bluetron, KeyGene has the technology it needs to expand its status as a leading plant research company. Its new PowerEdge servers have enabled enhanced predictability of crop improvement in cutting-edge research for science and agriculture sectors.

As a result, KeyGene’s Crop Data Science department is one of the fastest growing departments in the entire company.

“ **With PowerEdge, we have more control over our data. We’re now able to run our AI models much faster without any surprises.**”

Marcel van Verk,
Vice President Crop Data Science, KeyGene

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