Seed Co Limited

Best practices in information management drive commercial success

Context

Seed Co is a seed company headquartered in Zimbabwe, with regional operations in a number of countries in Southern and East Africa, and more recently in West Africa. It develops and markets certified crop seed, principally hybrid maize, as well as cotton, wheat, soya bean, barley, sorghum and groundnut. The company is growing rapidly, increasing its market share and expanding into new crops, countries and region. It is currently the biggest producer and marketer of certified crop seed in Southern Africa, and it aims to become the dominant seed company across Africa and to take a leading role in feeding the continent.

Challenges

Seed Co's big ambitions mean that it needs to compete with the top players in the seed industry. Meanwhile, its rapid growth is creating a data explosion. It is crucial for Seed Co to make the best possible use of its data, and of the breeding materials those data describe. This requires not only technical capacity, but also the implementation of best practices in data organisation and management processes.

The structure of Seed Co means that sharing is hard-wired into the organisation. Breeding for each crop is divided into several programmes corresponding to ecoregions, with an additional crosscutting programme that receives advanced material for unbiased evaluation and preparation for release. Other specialist groups include pathologists breeding for disease resistance and biotechnologists working on double haploids, both receiving and generating thousands of lines. With all this seed moving around the organisation, data need to be able to move too, and collaboration between researchers made as easy and effective as possible. It is also crucial that data are not lost when individual computers break or staff move on, and that data are meaningful and accessible across the company.

> " After observing the BMS' development and evolution, and learning about what it can do, I was convinced that it would answer our needs. I have been spearheading its use across all of our breeding activities ever since.
> — Dr Elliot Tembo, Senior Maize Breeder, Head of Station, Group Breeding Systems Manager, Seed Co. West Africa Research Centre in Ghana "

Solution

The IBP provides Seed Co with both the tools it needs for data management and the expertise to apply best practices, offering long-term support from a highly experienced team. Since May 2017, Seed Co has been running the server version of the Breeding Management System (BMS) across its maize and soya bean breeding programmes, in the first stage of a full institutional deployment, following a training and an adoption workshop on the specifics of preparing work for the next breeding cycle. The process of deployment has led researchers at Seed Co to think about their data in a new light, and to make real improvements in how they organise it. IBP is with users every step of the way, working closely with them throughout deployment and use. Graham McLaren, Global Deployment Manager at IBP, explains: "As we set up the system, we were getting people to think deeply about information management and data flows from a new perspective, even though they know their programmes incredibly well. We mapped out a content architecture that reflects the real structure of Seed Co's operations, which makes a big difference in how easily users can find and share data. There's a continuous effort to support and engender these best practices."

Seed Co runs thousands of trials every cropping season, and those data have a huge commercial value. In the case of Maize, to take just one of their targeted programmes as an example, their breeders have entered more than 49,000 germplasm entries, 180,000 plots and 2,400,000 phenotypic values since the server instance was launched a few months earlier. Considering the gains in data quality – due to standardised formatting and curation – and in time – due to digital data capture with tablets, and a simple and direct data transfer protocol to the BMS database – this kind of knowledge collection easily adds up to many thousands of dollars in productivity savings, not to mention the enhanced value of the data resource itself. Seed Co breeders are now using the BMS across the company to manage and analyse almost all of their evaluation data, and to make decisions about which products to release. Some of the system's most eager users are technicians working in crosscutting breeding programmes, who are responsible for preparing and analysing very large trials across the continent.

Evolution

The relationship between Seed Co and the IBP has seen exponential growth. Some staff at Seed Co have a long-term interest in tools for data management, and had received training on the BMS Desktop on an individual basis. This created champion users within the company, like Dr Elliot Tembo, Senior Maize Breeder based in West Africa: "All my nurseries are now in the BMS and, with support from management and myself, most of my fellow breeders are rapidly moving to using it as well. The IBP provides my team and I all the technical back-up we need, and they were able to adapt to some of our specific requirements." As of September 2017, Seed Co has around 30 staff using the BMS, of whom 20 are very regular users, a figure that has been growing steadily.

An early user of the BMS during his academic career, Dr John Derera came in as Global Head of R&D at Seed Co with a strong interest in modernisation, so his arrival brought a complementary top-down impulse from the management level. When the IBP came offering the server edition of the BMS, institutional deployment was a natural leap. "I am happy that our breeding programmes are now in a central database which also holds the molecular data for the company's key lines," confirms Dr Tembo.

I am Tavengwa Ndowa, ICT and Product Evaluation Officer at Seed Co Zimbabwe; I work on data processing across all crops, though mostly maize.

I use the BMS to make seed preparations, randomisations, manage trials and conduct data analysis. I am also exploring how to manage nurseries to be able to assist our breeders when needed.

I have been involved with the BMS for three years, during the course of which I have received several training sessions from the IBP team. I am now involved in internal training myself, to help more of my Seed Co. colleagues take up the tool. In fact, I would be more than willing to train anyone – even from outside of my own organisation – who hasn't yet come across the BMS, because I see it as a well-advanced system that every scientist should be using in this modern world where technology is fast accelerating. I think it is a brilliant idea to have everything online where our users are able to work even from outside the office or the country; it makes it all the more flexible.

I am looking forward to more interaction between our users and IBP developers and grateful for the open communications between us so far.

Looking forward

While use of the BMS within Seed Co for analysis and evaluation is well advanced, the next step will be to expand its use to more programmes, and to embed it even more pervasively into routine for planning and managing breeding activities. This means demonstrating to breeders that it is easier and more effective to use the BMS from the outset than to continue doing things the old way (and entering data later). The final milestone for full deployment will be the use of the BMS across Seed Co for the management and inventory of the company's seed store, i.e. the repository of its genetic assets. For a plant breeding company, information about germplasm is their livelihood, without which they would be out of business. Data management is proving to be the critical connection between that information and seeds in bags, strengthening a core commercial advantage for the company.

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