

ScienceDirect®

CHEMICAL R&D

Case Study: Creating a commercially successful additive from a waste product

ScienceDirect helps a research team at a chemical innovation company make a major breakthrough for a multi-million dollar chemical additive



Summary

A Director of Research at a chemical innovation company seeking to make useful products out of waste products explains how the wide breadth and depth of scholarly research available on ScienceDirect helped her team break out of a long-term dead end in their research and develop a commercially successful product in a fraction of the time they expected.



“The research we found on ScienceDirect gave us the key to massively improving the quality of a product that’s already on the market in a fraction of the time we’d expected.”

—Lana Tolmach, R&D Director



Challenge

A team of researchers at a chemical innovation company sought to transform a common waste product — a clay-like separation byproduct of the coal-cleaning process — into a useful additive for crop soils. But after years of intensive data-gathering from test crops, the team was still having difficulty finding meaningful correlations between potting mix variations using their additive and crop performance.

“My team and I typically come to our board with ideas, based on anecdotal word of mouth,” recalls Lana Tolmach, a Research Director at the company.* “Then we’re told, ‘Okay, that idea is interesting. Go find out what’s possible there.’ But in this case, even though all the theory made perfect sense, we couldn’t seem to find the meaningful correlation we needed in order to break through to the next phase of experimentation.”

“It was making me crazy,” Tolmach continues. “I told my team, ‘It’s time to look through the literature and find out how other labs are approaching this.’”

Solution

Tolmach and her team used ScienceDirect to explore the full breadth and depth of Elsevier’s journals to find out whether any other researchers had designed experiments using similar mix variants and found conclusive results.

Zooming in on relevant research

Tolmach uses an array of search tools to discover papers relevant to her team’s research. “But about 90 percent of our searching is done on ScienceDirect,” she says. “I have access to the articles at my fingertips, and one of the features I really like is the ability to quickly discover related material from the Recommended Articles feature.” The team began by casting a broad net of search terms related to coal, the mineral and the soil, and then steadily narrowed its focus around several of the most important component minerals in their potting mix — until suddenly, a technician hit on a paper that transformed the entire project.

Discovering a viable mineral additive

“One of our technicians found a paper from Korea, which we’d never have found if it hadn’t been for ScienceDirect,” Tolmach remembers. “That paper had relevant data on growing tomatoes in a potting mix with a product very similar to ours. We went straight into the lab and started creating a cleaner, crisper design experiment for a new potting mix based on the design in the paper.” Over the next six months, the team grew new crops of tomatoes in a mixture modified from the one they’d found on ScienceDirect.

*For confidentiality purposes, names have been changed.

“Without ScienceDirect, we could have kept working on our existing design for years, adjusting different variables and still getting no clear results. Finding that paper on ScienceDirect pushed our research further in three months than we’d moved in years.”

– Lana Tolmach
R&D Director

Reproducing results effectively

Tolmach and her team followed the procedures in the paper very closely, watching carefully for significant new correlations to emerge. “By the time our fresh crops of tomatoes had grown to maturity, we had actionable new linear data for the first time in two years,” Tolmach recalls. “Finding that paper on ScienceDirect pushed our research further in three months than we’d moved in years.”

Impact

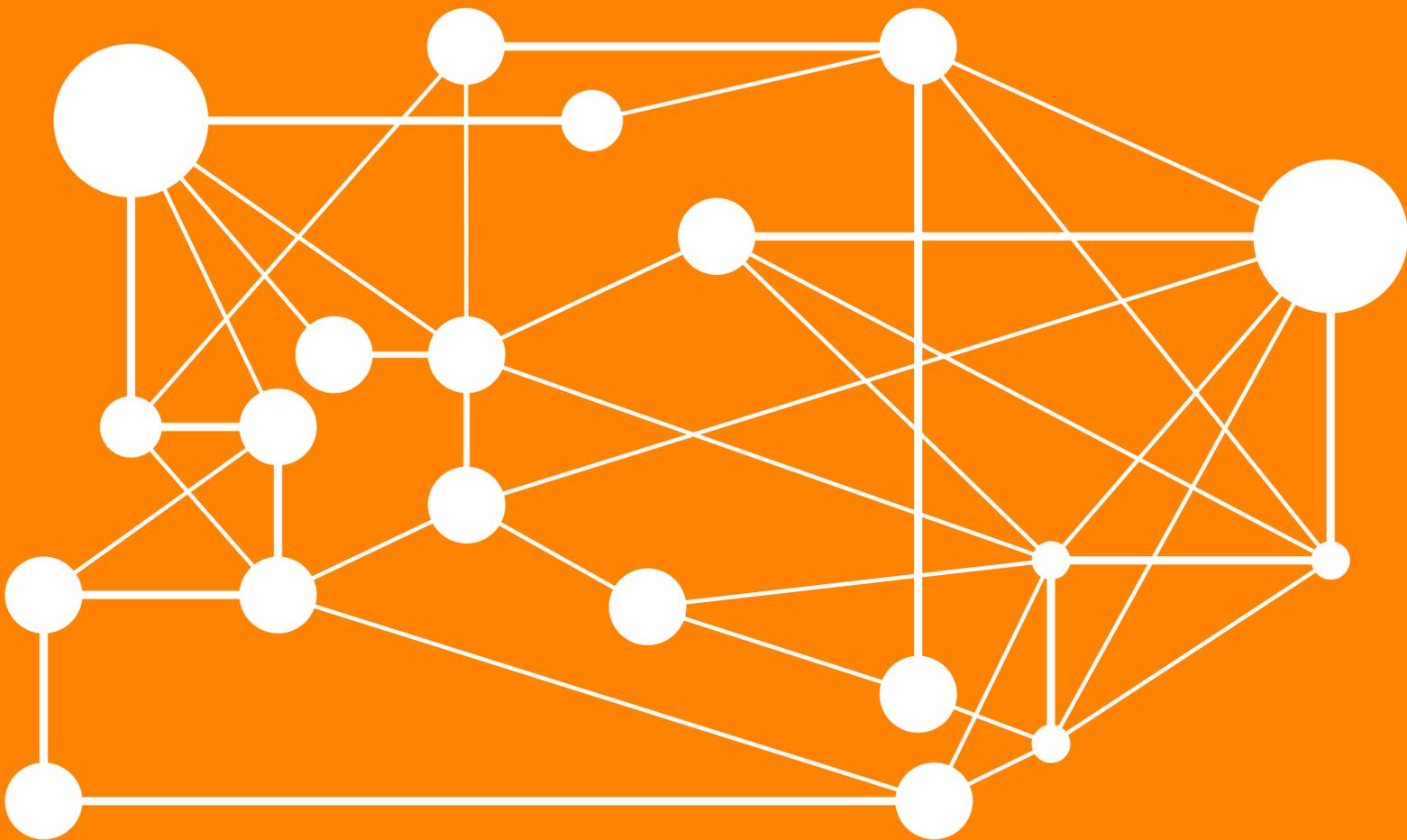
Creating commercially successful solutions

With the help of ScienceDirect, Tolmach and her team were able to develop a yield-boosting additive for soil mixes, which her company will soon market to potting companies.

In addition, the research team is authoring a paper in collaboration with the U.S. Department of Agriculture (USDA), and her company expects a sales volume of the additive of at least 50 million pounds within the first year on the market.

Not only did this company reach its original goal to show value for waste products, it also created a commercially successful application, with a plan for more applications to be developed in the next two years.

“The research we found on ScienceDirect gave us the key to massively improving the quality of a product that’s already on the market,” Tolmach says. “And we did it in a fraction of the time we’d expected.”



ScienceDirect

ScienceDirect helps researchers validate opportunities for NPD growth and optimize research and experimental approaches by providing visibility and in-depth insights on the latest state-of-the-art chemistry developments and chemical applications.

LEARN MORE

To request information or a product demonstration, please contact us at www.elsevier.com/solutions/sciencedirect/contact-sales.

Visit www.elsevier.com/rd-solutions or contact your nearest Elsevier office.

ASIA AND AUSTRALIA

Tel: + 65 6349 0222

Email: sginfo@elsevier.com

JAPAN

Tel: + 81 3 5561 5034

Email: jpinfo@elsevier.com

KOREA AND TAIWAN

Tel: +82 2 6714 3000

Email: krinfo.corp@elsevier.com

EUROPE, MIDDLE EAST AND AFRICA

Tel: +31 20 485 3767

Email: nlinfo@elsevier.com

NORTH AMERICA, CENTRAL AMERICA AND CANADA

Tel: +1 888 615 4500

Email: usinfo@elsevier.com

SOUTH AMERICA

Tel: +55 21 3970 9300

Email: brinfo@elsevier.com