

CASE STUDY

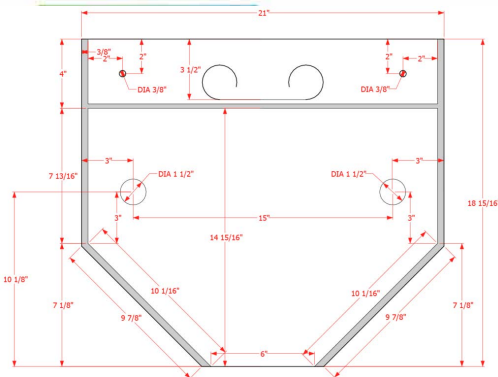
# iNvigorate® Flex Pack

## ISSUE

- Maintain microbe viability for liquid application by farmers while planting
- Compatible with SIMPAS® at-plant, in-furrow application equipment
- Durable, disposable package needed
- Package must empty completely

## ACTION

- Custom bag-in-bag package development
- Fluid dynamics and filling studies
- Check compatibility with SIMPAS equipment



We were looking for a partner experienced in creating innovative packaging and with deep expertise in microbiology. Our challenge was making our product work with existing equipment. The equipment is what it is, and the requirements are very specific because SIMPAS equipment is known for precisely applying material only where needed. The end result of our work with 3Bar has met all of the project requirements and exceeded our expectations.

**RICK RICE**

Director, Application Technology at AMVAC

## RESULT

A bag-in-bag solution is compatible with SIMPAS equipment and delivers viable microbes that provide efficacious results for farmers.

- 3Bar's design worked with liquid products
- 3Bar's design also avoids material waste with tubing and fluid dynamics
- 3Bar's design is cost effective, even though the bag is disposable

Fast design to production timeline

- 2 Phases over approximately 1 year

Next step

- Commercial quantity scale-up by the client

**1 Year**  
Development

**2 Phase**  
Process

**Numerous**  
Iterations

**Exhaustive**  
Quality Tests



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Our project with AMVAC gave us a chance to shine. It tested our packaging engineers and our microbiologists like never before because the requirements for the SIMPAS equipment were very detailed. We designed, iterated, redesigned, and delivered a unique solution that works perfectly in the equipment. It was not easy, but this project demonstrates our ability to tailor new delivery solutions to customer products and their stringent specifications. And we came through for them.

### BRUCE CALDWELL

CEO, 3Bar Bio

#### About AMVAC:

AMVAC®, an American Vanguard® Company (NYSE: AVD) headquartered in the U.S., is a solutions provider for global agriculture that is committed to technology, innovation, and sustainability. Since 1969, AMVAC® has successfully served results-driven global markets through development, manufacturing, and marketing products for agricultural use. We focus on four innovation platforms: Proven Chemistries, Precision Agriculture, GreenSolutions™, and Sustainability Solutions for plant and soil health.

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#### About 3BarBio

Founded in 2013 by CEO Bruce Caldwell, 3BarBio offers increased profitability to discovery companies and distributors by guaranteeing viable microbes and creating a smarter supply chain. 3Bar addresses the major hurdle to further adoption of biologics by designing innovative packaging to deliver viable microbes to the ag market. With its proprietary Design. Develop. Deliver. process, 3Bar delivers on demand for partners around the world.