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Locus Agriculture expands Unpac Soil Technology as compaction emerges as bigger crop-performance challenge

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Fermentation-derived glycolipid technology is being deployed across row and specialty crops to improve water movement, root-zone conditions and crop performance



Locus Agriculture is expanding the use of Unpac, its fermentation-derived glycolipid soil conditioner, across row and specialty crop production systems as growers look for new ways to tackle soil compaction and increasingly constrained water availability.

Soil compaction is not simply a soil-health issue. For growers, it can become a productivity problem when dense soil restricts root development and prevents crops from fully accessing available water and nutrients. A USDA Economic Research Service analysis found that growers identified soil compaction as a resource concern on 22 per cent of surveyed wheat, soybean, oat and cotton fields.

Unpac takes a different approach to the problem. Rather than relying on mechanical soil disturbance, the product is designed to influence the interaction between water and soil. Its glycolipid technology reduces surface tension, allowing water to penetrate and spread more effectively through the soil profile and helping create conditions more conducive to root development.

Third-party laboratory testing of Unpac across agricultural soils collected from California's Central Coast and Central Valley found reduced soil density across a range of moisture levels. The testing also showed improved water penetration through both soil types compared with untreated water.

“Compaction is more than a soil problem. It’s a crop performance problem,” said Dave Dyson, lead agronomist at Locus Agriculture. “When roots encounter dense soil, they have a harder time exploring the soil profile for the water and nutrients the crop needs. Unpac gives growers another tool for improving that root-zone environment.”

From soil structure to crop economics

The significance of soil compaction becomes more apparent in high-value crops, where root-zone conditions can influence crop establishment, development and ultimately yield.

In potato production, Unpac can be incorporated into crop programmes through in-furrow application, where it is intended to help create a looser growing environment as roots and tubers develop. Locus says field experience with programmes combining Unpac and its microbial technology has delivered yield increases of 10 per cent to 15 per cent.

In California’s strawberry production systems, growers are incorporating Unpac through drip irrigation beneath plastic-covered raised beds, where soil compaction can develop during bed construction. Locus agronomists have observed looser soil conditions and improved root penetration in these systems.

The proposition is broader than improving soil structure alone. Growers have already invested heavily in fertiliser, irrigation and crop-protection inputs; the ability of the root system to access those resources ultimately determines how efficiently those investments translate into crop performance.

“Growers already have significant investments in fertility, water and crop protection in every acre,” said Jason McGarrh, vice president of Locus Agriculture. “When compaction restricts the root system, the crop can have a harder time accessing those resources. Improving root-zone conditions gives growers another way to protect the productivity of the inputs they have already paid for.”

Targeting the soil-water interface

Unpac is designed to address compaction through soil-water interactions rather than mechanical disruption.

At an application rate of approximately 4 fluid ounces per acre, the product reduces surface tension, helping water move laterally and penetrate more effectively into the soil profile. By facilitating water movement into soil micropores, the technology is intended to improve the root-zone environment and support root penetration and access to available water and nutrients.

That positioning could make soil-water management an increasingly important part of crop-management programmes as growers contend simultaneously with compaction, irrigation constraints and the need to extract greater productivity from existing acres.

Extending fermentation technology beyond biologicals

Unpac also represents a broader expansion of Locus FS’ fermentation-derived technology platform into agriculture.

While Locus Agriculture’s microbial products rely on biological activity, glycolipid-based products such as Unpac use functional molecules produced through fermentation to address physical and chemical challenges within crop-production systems.

The company is continuing to expand its crop-performance portfolio across biologicals, inoculants, foliar products, soil solutions and adjuvants. Its technology development is focused on challenges spanning root development, nutrient efficiency, soil and water management and spray performance across the crop-production cycle.

For growers, the larger opportunity is not necessarily another standalone input, but a more targeted approach to managing the conditions that determine how efficiently crops use the water, nutrients and other resources already available to them.