



ENHANCING 10-34-0 OR 11-37-0 STARTER FERTILIZERS WITH UNDERTOW® by John D. Bailey, PhD

In modern agriculture, the selection of fertilizers and their application methods significantly impact crop yield and soil health. Two common methods are in-furrow and banded applications of 10-34-0 or 11-37-0 liquid fertilizer. Below, we highlight how using **UNDERTOW®** could enhance the efficiency of these fertilizers.

RISKS OF APPLYING 10-34-0 OR 11-37-0 FERTILIZER

In-Furrow: One of the primary concerns with in-furrow application is the potential for salt injury to seeds and seedlings. The high salt content in 10-34-0 or 11-37-0 can damage young roots and (or) cause phytotoxicity, reducing the population or speed of emergence.

Banded: While banding starter fertilizers help address the risk of salt injury, banded fertilizers may be less accessible to developing seedlings compared to in-furrow applications, especially under dry conditions.

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The introduction of **UNDERTOW®** (a proprietary blend of surfactants and purified fulvic acid) into in-furrow or banded fertilizer formulations can mitigate risks and improve the performance of 10-34-0 or 11-37-0 by providing the following benefits:

Reduced Risk of Salt Injury: Surfactants help mitigate salt concentration around the seed by improving soil moisture distribution and reducing localized salt concentration. This lowers the risk of salt injury associated with in-furrow application of 10-34-0 or 11-37-0.

Improved Nutrient Availability and Uptake: Fulvic acid is known to chelate fertilizer nutrients, enhancing their availability and uptake by roots. This can improve nutrient use efficiency associated with banding application of 10-34-0 or 11-37-0.

Enhanced Root Development: Surfactants and fulvic acid work together to improve root growth. Surfactants improve the wetting and penetration of fertilizer into the soil by reducing the surface tension of water, allowing nutrients to spread nutrients more efficiently throughout the soil and root zone. Fulvic Acid promotes root growth by stimulating cell division and elongation, leading to more extensive root architecture, capable of accessing additional water and nutrients from exploration of a larger volume of soil.

Better Soil Health: Surfactants and fulvic acid work together to maintain soil health. Surfactants improve soil structure and water infiltration, creating a more favorable environment for root growth. Fulvic acid improves nutrient use and root growth. The actions on the root system cause higher production of root exudates which directly contribute to microbial activity and soil organic matter, both of which directly impact overall soil health.

CONCLUSION

The use of 10-34-0 or 11-37-0 fertilizer in row crops, whether through in-furrow or banded applications, presents a mix of advantages and challenges. While in-furrow application offers efficient nutrient delivery, it carries risks of salt injury which can harm yield. Banded application reduces the risk of salt injury and provides balanced nutrient distribution but supplies nutrients less efficiently. Adding **UNDERTOW®** into these fertilizers can significantly enhance their effectiveness by reducing the risk of salt injury with in-furrow applications, improving nutrient efficiency in banded applications, and supporting better root development and soil health in all applications.

