Dispersible Granule Technology

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Turf & Specialty Group

Grain & Ethanol
Rail
Plant Nutrient
Consumer Retail
Turf & Specialty
Dispersing Granule Technology
Why dispersibility?
Dispersibility... Why?

1976
- “Stimpmeter” was introduced
- Televised professional golf increases
- Greens-speed war between courses

Today

\[
\begin{align*}
0.25” & \quad .12” \\
\end{align*}
\]
Dispersibility... Why?

1976

Today

.25"

.12"

Liquids

Granules

Liquids

Granules
Granules picked-up in mower basket
Granule pick-up in mower basket


47% of M.U. granules picked-up in hopper through multiple mowings
Development of our first DG
Dreaming of the ideal pesticide carrier ...

- Bulk density = 45 lb ft$^3$
- pH for stability = neutral
- Low moisture ( < 2%)
- Particle uniformity = UI of 35+
- The right shape = spherical
- Water dispersible
- Durable = rta 90%+
Dreaming of the ideal pesticide carrier...

- The right particle size
- Low moisture (< 2%)
- Bulk density = 45 lb ft³
- pH for stability = neutral
- Particle uniformity = UI of 35+
- The right shape = spherical
- Durable = RTA 90%+
- Water dispersible
Development of DGlite

The effect of particle count with dispersibility

<table>
<thead>
<tr>
<th>Particles per square inch</th>
<th>200 pounds per acre</th>
<th>45 pounds per ft³</th>
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<tbody>
<tr>
<td>SGN215</td>
<td>SGN150</td>
<td>SGN100</td>
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Development of DGlite

The effect of particle count with dispersibility

Particles per square inch
- 200 pounds per acre
- 45 pounds per ft³

“Self-Incorporating Granule”
Particle Count (coverage)

0.3/in²
0.9/in²
2.6/in²
7.2/in²
20.5/in²

Effect of particle sizing on Dimension/Fert, 0.38 lb Al/A

*Carrier was sized Nutralene, application rates and concentrations equal.*
The success of “DGlite” gave rise to the need for Dispersible Nutrients
Playing with M.U.D.
Methylene Urea Dispersible

- M.U. = perfect marriage for dispersibility
- Can utilize “short-chain” MU40 to “long-chain” Nitroform
- In beginning, we focused on solving the mower pick-up issue and pesticide efficacy
Customer feedback: “Efficiency Gains”
Efficiency with Dispersibility

Early stories from users talked about efficiency

- No mower pick-up
- Tracking
- Lack of “wash-outs”
- Reduced volatilization?

- Self-incorporating granule
First market hurdle: MU-40 stigma
Dealing with the M.U. Stigma

“MU40 is 8-week green-up at best”

1#/1000 ft², 100% MU40
May 7th app – Cool season turf

Focus on price per bag leads to blends of 50% SRN... value of the slow release is nearly lost
Dealing with the M.U. Stigma

“longer-chains will build-up in soil resulting in exploding growth with hot weather”
Revitalizing an old friend:

Could a spreadsheet save the day?
Revitalizing an old friend

Early M.S. Excel tool used to model release of nitrogen

Nitrogen Release Breakdown Calculator (V1.0) - Fast

Model release
Revisiting an old friend

Many turf managers are finding significant savings in their turf nutrition budgets using the TNT in combination with Andersons product technology. All you need to use this tool is a computer and Microsoft Excel 97 or higher versions (Excel 2002 or higher for best performance).

1) The first step is to download the file (right click and "save as" in the local system, right click icon, and "Save Target as..."). Then place the file in your desired computer folder.

2) Save the file to your computer using the "click, then save" (If you are running Vista operating system, right click icon, and "Save Target as..."), and then place in your desired computer folder.

See below video training on the TNT.
Revitalizing an old friend

Combination with Andersons product technology. All you need to use this tool is a computer and Microsoft Excel 97 or higher versions (Excel 2002 or higher for best performance).

1) The first step is to download the application from the menu below (If you are running Vista operating system, right click icon, and "Save Target as..."):

2) Save the file to your computer using the right click, then save (If you are running Vista operating system, right click icon, and "Save Target as..."), and then place in your desired computer folder.

See below video training on the TNT.

3) Open the file. Please note the file has macros, which will not harm your computer, but you may get a warning "File xxxx, contains macros, macros may contain viruses...", select, "enable macros".

Note: If you open this file without a warning, and the
Revitalizing an old friend

Temperature regions

Product Selection

Application Rate

Projected Nitrogen Response

Target N
Revitalizing an old friend

Quick Demo
In closing...

The Future...
Ohio Dept. of Development Grant

3rd Frontier Investment = 3-year, $10 million research & commercialization

1. Soil Dispersing Granules
2. Foliar Granules
3. Foaming Granules
4. Advanced Applicators
5. Emerging Biomaterials
4. Advanced Applicators

Thank you