

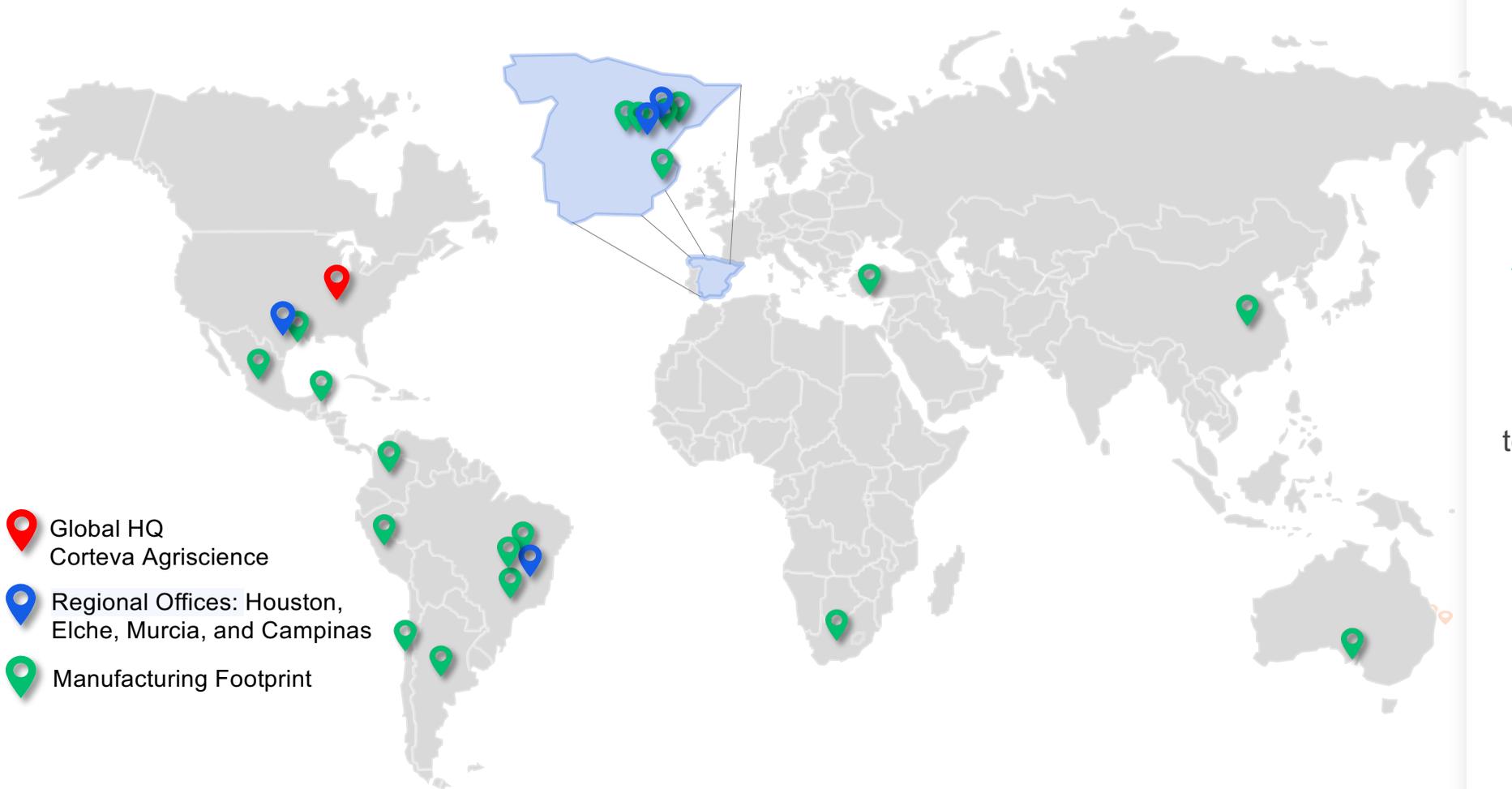
A close-up photograph of a person's hands holding a bunch of fresh red radishes with green leafy tops. The person is wearing a blue t-shirt and their hands are covered in soil. The background is dark and out of focus.

USDA AMS Process Verification Program to Verify Quality of Plant Biostimulants

Terry Stone, Global Biological Regulatory Policy Leader, Corteva Agriscience

BPIA Annual Meeting, March 27, 2024

Corteva Agriscience Biologicals Business



-  Global HQ
Corteva Agriscience
-  Regional Offices: Houston,
Elche, Murcia, and Campinas
-  Manufacturing Footprint

Building a Market Leading offering

~1,800 employees*
in 16 countries

Sales in more than 60 countries

Differentiating
our portfolio

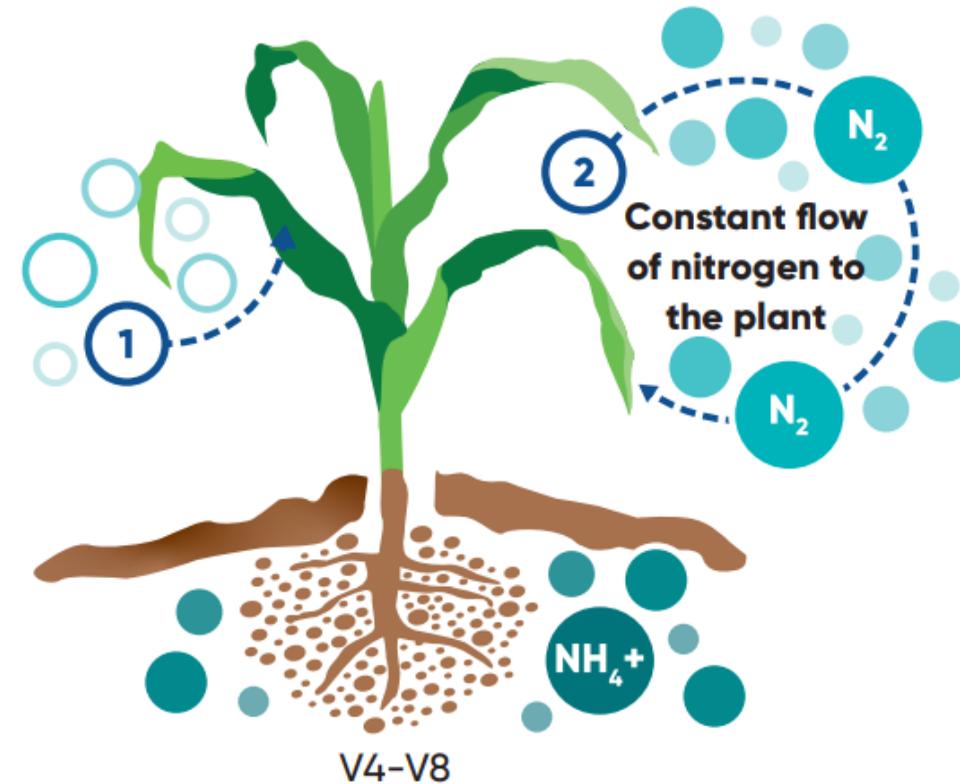
to boost performance, build resilience
and protect potential

19 manufacturing locations

Acquisition of 2 leading biological
companies; regional offices in North
America, Brazil and Spain

Utrisha™ N

Fixes nitrogen from the air and converts it for the plant



- 1 Enters the plant through the stomata and gets into the leaf cells.
 - 2 Converts N_2 from the air into ammonium resulting in a constant supply of amino acids to the plant
- No plant energy required.

Supplies nitrogen throughout the crop cycle in an effective and controlled way

Utrisha™ N



Action Drivers

- In the US, **regulatory clarity and credibility** for plant biostimulants **remains in development**.
 - Unless requiring registration under the Federal Fungicide, Insecticide, and Rodenticide Act, these **products are registered under fertilizer regulations in each US state**.
 - **State regulations and requirements vary widely**, regarding product labelling and composition, efficacy and safety data.
- Consequently, **growers, retailers, input providers, academics, and other stakeholders have expressed concerns over the quality and efficacy** of these products.

In the absence of consistent regulatory requirements, Corteva sought independent verification of the **quality, safety and efficacy of Utrisha N** via the **USDA Process Verification Program (PVP)**



USDA Agricultural Marketing Service Process Verified Program (PVP)

- Voluntary audit-based service
- Based on ISO principles and requirements
- Provides independent verification that specific processing points are clearly defined, implemented, and transparent
- Allows products to be marketed as “USDA Process Verified”
- Assures consumers that the USDA validated quality management systems and process points established to indicate product quality

Utrisha N/ Blue N PVP & Process Points

Assure farmers that **USDA validated quality management systems and process points** Corteva established to **indicate the quality of Utrisha N**, specifically:

1. Confirm identity of bacteria claimed on label
2. Confirm quantity of bacteria claimed on label
3. Confirm presence of contaminant bacteria¹, heavy metals², and total aromatic hydrocarbons³ are equal to or below stated limits
4. Confirm mechanism of action/activity of *Methylobacterium symbioticum* SB23



CONTAINS NONPLANT FOOD INGREDIENT(S)

SOIL AMENDING GUARANTEED ANALYSIS

Active ingredient:

3%	Microbe
		<i>Methylobacterium symbioticum</i> SB23, 3 x 10 ⁷ CFU/g
97%	Total Other (Inert) Ingredients (Carriers)
100%	Total

IN ORDER TO AVOID RISKS TO PEOPLE AND THE ENVIRONMENT, FOLLOW THE DIRECTIONS FOR USE

Guaranteed and Distributed by:
Corteva Agriscience LLC
9330 Zionsville Road
Indianapolis, IN 46268

™/®Trademarks of Corteva Agriscience and its affiliated companies

Country of Origin: Spain

Lot Number: See Packaging
Manufacturing Date: See Packaging
Expiration Date: See Packaging
FL license F003207



Powered by 

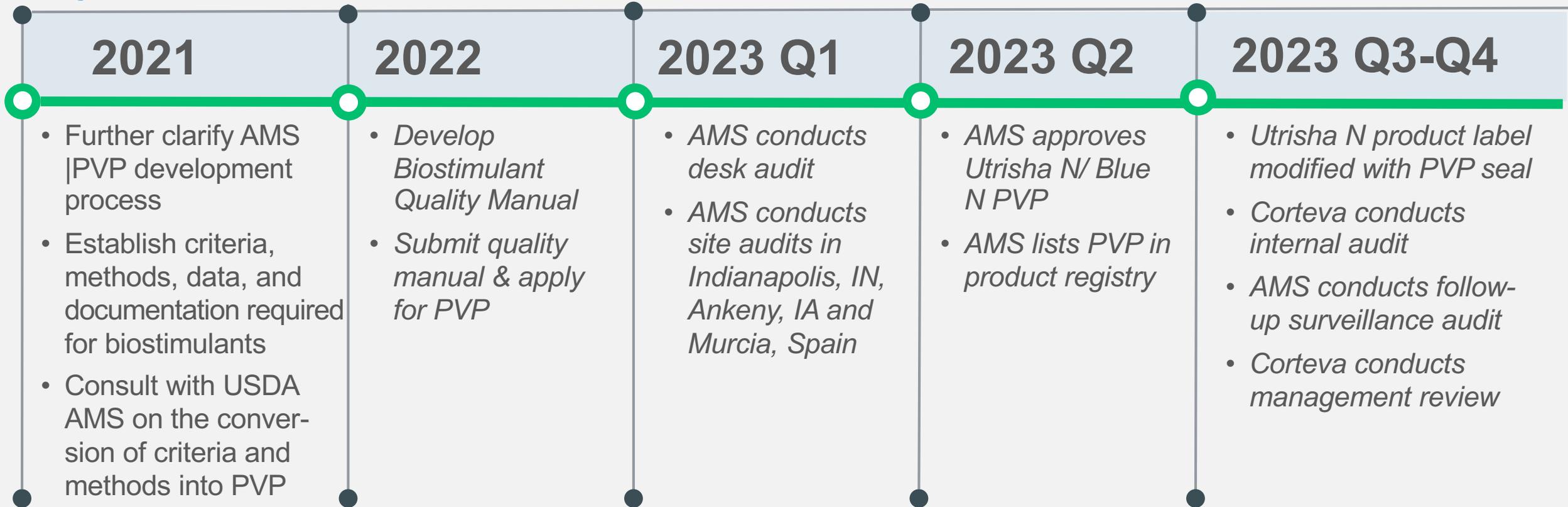


NET WEIGHT _____ **lbs** / _____ **kg**

Utrisha N/ Blue N PVP Development Timeline



Key Milestones



Cost of USDA PVP review, desk and site audits ~\$27,000, including \$19,700 for Murcia site audit

USDA AMS PVP Seal and Certificate



CERTIFICATE OF CONFORMANCE

United States Department of Agriculture
Agricultural Marketing Service
Livestock and Poultry Program

Certifies that:
Corteva Agriscience™
Indianapolis, Indiana, U.S.A.

has met the requirements of the
USDA Process Verified Program

and is entitled to market products as “USDA Process Verified” for the scope of

Utrisha™ and BlueN® Biostimulants:

- Confirm the identity of bacteria claimed on label - (*) *Methylobacterium symbioticum* SB23
- Confirm quantity of bacteria claimed on label - (*) 3x10 to the 7th CFU/g
- Confirm presence of contaminant bacteria and heavy metal contaminants equal to or below stated limits
(*) Heavy metals assays – Inorganic Arsenic (≤40 ppm), Cadmium (≤1.5 ppm), Cobalt (total) (≤1.0 ppm), Copper (≤600 ppm), Lead (≤120 ppm), Mercury (≤1.0 ppm), Molybdenum (≤1.0 ppm), Nickel (≤50 ppm), Selenium (≤0.5 ppm), and Zinc (≤1500 ppm).
(*) Microbial pathogens – Salmonella spp. (Absence in 25g), Listeria monocytogenes (Absence in 25g), Escherichia coli (Absence in 1g), and Staphylococcus aureus (≤10 CFU/g).
(*) Total Aromatic Hydrocarbons – Polycyclic Aromatic Hydrocarbon (PAH) – (≤ 6.0 ppm).
- Confirm mechanism of action/activity of bacteria

*Methodologies follow already accepted methods such as EPA, ISO, or AOAC

as described in the
Corteva™ Process Verified Program Quality Manual

Certificate No: PV3062ZZA Rev01
Issue Date: April 21, 2023
Renewal Date: October 21, 2023

Michael E. Lopez, Program Manager
Quality Assessment Division
AMS, Livestock and Poultry Program

This certificate is receivable by all officers of all courts of the United States as prima facie evidence of the truth of the statements therein contained. This certificate does not excuse failure to comply with any of the regulatory laws enforced by the United States Department of Agriculture (USDA).

The USDA is an equal opportunity provider, employer, and lender.

USDA AMS PVP Official Listing

<https://www.ams.usda.gov/sites/default/files/media/Official%20ListingPVP.pdf>

Official Listing of Approved USDA Process Verified Programs

Company	Process Verified Points	Program Scope	Verification Information
<p>Corteva Agriscience™ 9330 Zionsville Road Indianapolis, IN 46268</p> <p>Contact: Roydean Armstrong Phone: (800) 258-3033 Email: CortevaPVP@corteva.com</p>	<p>Utrisha™ N and BlueN® biostimulants:</p> <ul style="list-style-type: none"> • Confirm the identity of bacteria claimed on label (* <i>Methylobacterium symbioticum</i> SB23. • Confirm quantity of bacteria claimed on label (*) 3x10 to the 7th CFU/g • Confirm presence of contaminant bacteria and heavy metal contaminants equal to or below stated limits (*) Heavy metals assays – Inorganic Arsenic (≤40 ppm), Cadmium (≤1.5 ppm), Cobalt (total) (≤1.0 ppm), Copper (≤800 ppm), Lead (≤120 ppm), Mercury (≤1.0 ppm), Molybdenum (≤1.0 ppm), Nickel (≤50 ppm), Selenium (≤0.5 ppm), and Zinc (≤1500 ppm). (*) Microbial pathogens – Salmonella spp. (Absence in 25g), Listeria monocytogenes (Absence in 25g), Escherichia coli (Absence in 1g), and Staphylococcus aureus (≤10 CFU/g). (*) Total Aromatic Hydrocarbons – Polycyclic Aromatic Hydrocarbon (PAH) – (≤ 6.0 ppm). • Confirm mechanism of action/activity of bacteria <p>*Methodologies follow already accepted methods such as EPA, ISO, or AOAC</p>	<p>Plant Biostimulant: Crops and Grasses</p> <p>Location(s): Manufacturing and Warehouse Facilities</p> <ul style="list-style-type: none"> ▪ Murcia, Spain ▪ Ankeny, Iowa 	<p>PVP Certificate No.: PV3062ZZA</p> <p>Issue Date: April 21, 2023</p> <p>Original Approval Date: April 21, 2023</p>



Summary

- Corteva Agriscience sought a mechanism to **assure farmers of the quality of Utrisha N/ Blue N** its first microbial biostimulant.
- The **USDA Process Verified Program** (PVP) is a voluntary program that offers a credible independent external verification of biostimulants and biofertilizers.
- The **PVP is based on ISO** quality management principles and requirements
- The **PVP is flexible** enabling a company to verify critical quality attributes specific to their product.