

AGROVIVE™

2019/2020 PRODUCT GUIDE



AGROVIVE: OUR BEGINNING

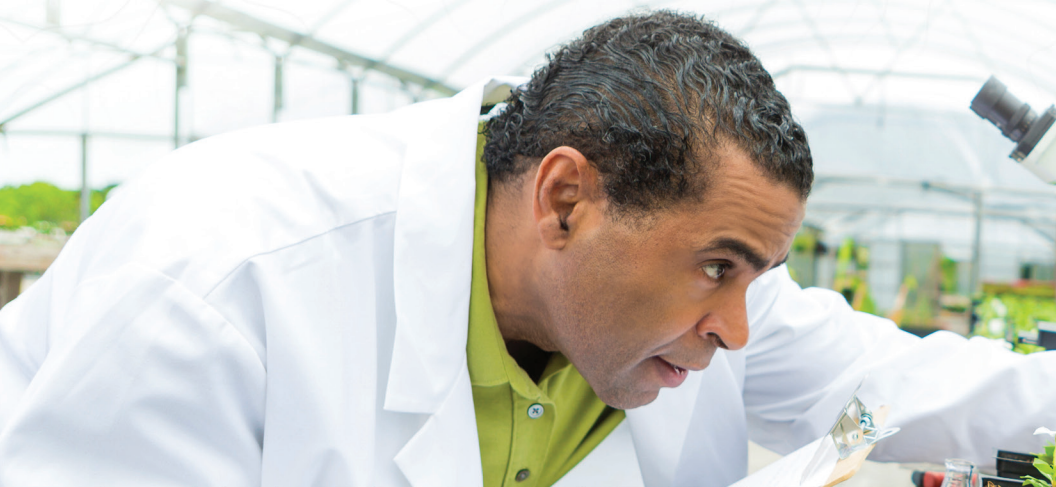
With many years of research and experiments building microbial and enzymatic platforms for the bioscience sector, the Agrovive team has discovered unique microbial strains that have demonstrated extraordinary effects on many plant species.

Sourced from aquatic environs and fens of the Coteau prairie, these microbial strains have delivered consistent yield and tonnage gains in a multitude of crops, forage and vegetables. Our Patent Pending microbes have been individually sequenced and publicly indexed.

PRODUCT COMPATIBILITY

Agrovive products unlock a plant's natural ability to produce growth regulators and metabolites that influence growth and other critical factors to production.

Hormone based products should **NOT** be applied after product inoculation without testing the effect on the plant in a small limited trial in the field. The effect of using untested hormone-based products after inoculation can significantly reduce growth and yield of the crops.



WHAT IS A MICROBIAL ENDOPHYTE AND HOW DOES IT WORK?

A microbial endophyte is a microorganism that lives inside the plants. The microbes live in the intercellular spaces and the cell walls where metabolism and cell division are regulated.

The plant maintains salts and micronutrients all day in an available ionic state. The removal of ionic state limitations within a cell allows for more pronounced cell division which results in the plant's ability to enhance the biomass, root number, leaf number, petiole and dry weight of the aerial portion.

The microbes recycle nutrients and micronutrients on a cellular level reducing daily cyclic limitations to plant metabolism. By reducing these limitations, the plant can continuously create metabolites such as IAA, IBA growth regulators, Pyruvate, Acetyl-CoA and other molecules necessary for reaching a plant's genetic potential.

Our Patent Pending microbes help to reduce limitations within the plant to allow increased growth, phosphate solubilization, nitrogen fixation and nutrient uptake.



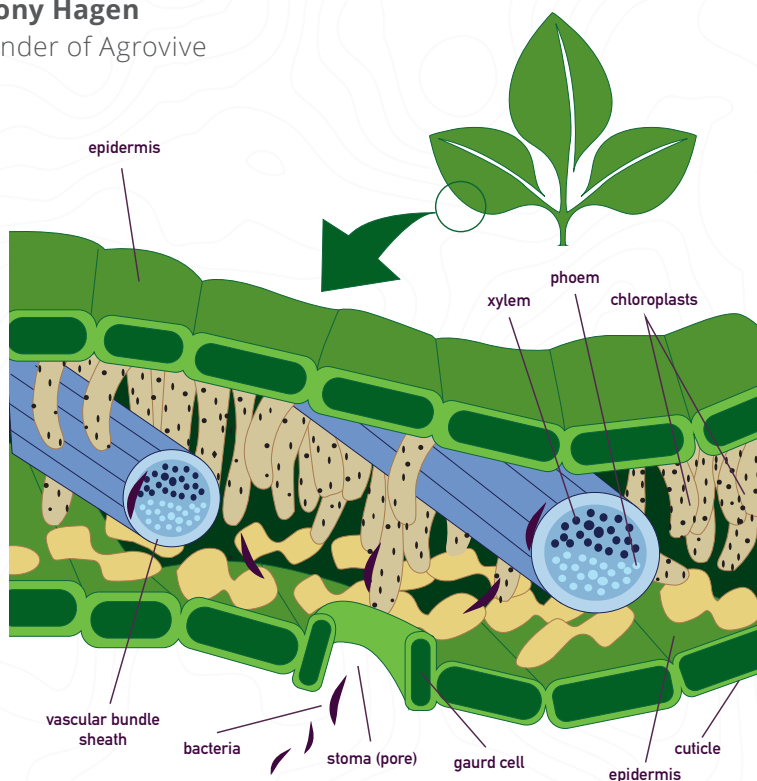
Plant biochemical pathways require micronutrients and amino acids to work properly. These “cofactors” act like keys to keep these biochemical engines working properly. Microbial endophytes in Agrovive™ also need these biological cofactors to ensure a balance of protein synthesis and utilization, leading to enhanced growth and crop performance. BioPryme™ was developed to provide micronutrients, vitamins and amino acids that are needed by all plants to get the full benefit from Agrovive™ microbial products.

Use of BioPryme™ is recommended for use with any microbial program that causes a significant increase in biomass or yield potential.

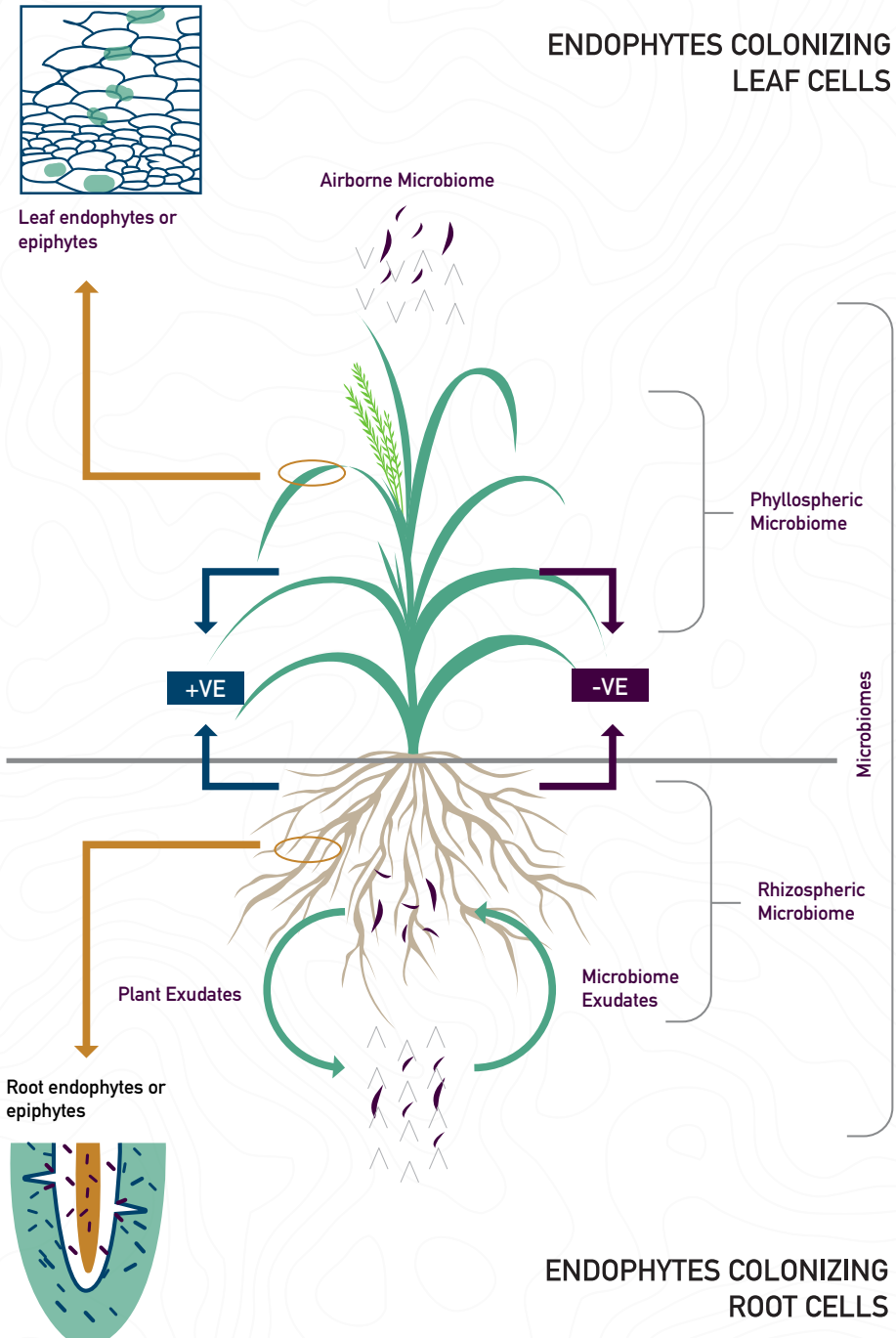
“If you see a bigger plant or close your canopy faster, I recommend the use of BioPryme™ to push the plant to finish and fill your grain.”

—Tony Hagen

Founder of Agrovive



ENDOPHYTES COLONIZING LEAF CELLS



ENDOPHYTES COLONIZING ROOT CELLS

SEED COAT APPLICATION GUIDE

PRODUCT MIXING AND APPLICATION INSTRUCTIONS

1. Application equipment must be clean and free of previously used chemical residues before applying Agrovive seed coat product.
2. Shake product well or agitate prior to use.
3. Mixing product with tank-mix partners: add the required water and
4. Add Agrovive Seed Coat Product, Optional Binder, Optional Colorant and other tank mix-partners to the mix tank. Start and maintain constant mechanical and by pass agitation throughout the entire mixing and treating process.
5. Accurate calibration of the application equipment and frequent checks of this calibration are recommended to ensure proper seed coverage.
6. Uniform coating of the seed is necessary to insure proper efficacy.
7. Depending on the type of seed treating equipment a small amount of water can be added to the product to facilitate product flow through the spray nozzles. Do not exceed five (5) fluid ounces of water per one gallon of Agrovive Seed Coat Product.
8. Environmental conditions such as temperature and humidity could have an effect on handling, especially during the drying of seed just after treatment.

Caution: Do not use with antimicrobial water conditioners, or water containing levels not approved under EPA human drinking water standards (TITLE 42 - THE PUBLIC HEALTH AND WELFARE). This includes, but is not limited to, Copper, Bleach, Fluoride, Chloramines, Chloride, Bacteriocides, Propiconazole (Slant™, Tilt™), Phosphoric Acid, Sulfuric Acid.

Effectiveness of Agrovive Seed Coat products is adversely affected by storage methods that allow desiccation of living microbial inoculants. Agrovive Seed Coated Inoculum should be applied and planted within 5 days to maintain maximum effectiveness. It is recommended that seed treated with Agrovive Seed Coat Products are planted within 21 days of application to seed. Living Colonies of bacteria are reduced by 50% at day 10 after application to seed.

Seed treated with Agrovive Seed Coat Inoculant must be stored between 50 degrees Fahrenheit and 85 degrees Fahrenheit with a minimum humidity of 55%. Do not allow inoculated seed to freeze.

Hand Application can be performed for small batch application using a "Cement" style mixer onsite. Follow recommended application rates and exercise "best judgment" based on perceived uniformity of coating on the seed to determine if the rate of application needs to be adjusted for your particular seed variety.

FOLIAR APPLICATION GUIDE

MIXING INSTRUCTIONS

1. Product may settle, shake container well before mixing.
2. Put 2/3 of water in tank.
3. Add correct amount of Product
4. Add other approved chemicals or fertilizers, if any.
5. Fill tank with balance of water, and agitate until thoroughly mixed.
6. Agitation may be required to maintain uniform mixing.

It is important to thoroughly mix the product in the tank to maintain adequate coverage. This product is a living organism and can be killed by shear forces in application equipment if pressures exceed 40psi, or by antimicrobial materials present in the water or equipment. Adequately clean and rinse equipment to remove residues that may reduce effectiveness of microbial products.

Spray tip recommendations See page 16

Caution: Do not use with antimicrobial water conditioners, or water containing levels not approved under EPA human drinking water standards (TITLE 42 - THE PUBLIC HEALTH AND WELFARE). This includes, but is not limited to, Copper, Bleach, Fluoride, Chloramines, Chloride, Bacteriocides, Propiconazole (Slant™, Tilt™), Phosphoric Acid, Sulfuric Acid.

IMPORTANT NOTE: TEST PRODUCT AND TANK MIX ON SMALL TEST AREA OF CROP TO DETERMINE POSSIBLE PHYTOTOXICITY BEFORE APPLYING TO WHOLE OF FIELD OR CROP.

**** For more precise agronomic application rates suitable for your geographical area or the maximum allowable non-nutrient application rate per acre, consult a trained agronomist or call or email Agrovive with the address provided.**



alphajoule™

ALFALFA

WHAT TO WATCH FOR

Reduces drought stress

Broader leaves

Increased root mass

Stronger leaf connections

Tighter petioles

APPLICATION RATE

FOR FOLIAR:

1 quart per acre

APPLICATION TIMING



NEW SEEDING

2 weeks after
emergence through
crown development
(week 14-16)



BETWEEN CUTTINGS

optimal foliar is 3-7
days after cutting
or as soon as
sufficient leaf surface
area has formed

GENETICS

Do your genetics
support delayed
flowering?



SOYBEANS

WHAT TO WATCH FOR

Look for more consistency of
3 and 4 beans per pod
versus
1 and 2 beans per pod.

Increased nodulation

Increased leaf surface area

Combats drought stress

APPLICATION RATE

FOR SEED COATING:

4 oz of seedcoat per 100 lbs of seed

APPLICATION TIMING



APPLY SEED COAT

to increase rooting,
nodulation, branching
and pod count

GENETICS

Do your genetics
support more pod
bearing branches?

LIFECYCLE APPLICATIONS

Timing is critical to the success of any biologic inoculate. A seed coat application enhances root development and micro-nutrient uptake through the root surface, resulting in the best solubilization of nutrients, such as phosphorus.

The best way to affect tiller count, or stem girth and strength, is to time an application to when those traits are being established. For most plants, this occurs within the first few weeks of growth. Tillers are maximized as a seedcoat in small grains.

For an increase in biomass through leaf surface area and mass, apply the foliar product much later. For corn silage, a marked increase was realized with application from V5 to just prior to tassel at V7. This represents the latest application of the product in the 2017 growing season.

Alfalfa (one time application per cutting)

alphajoule™

SEED COAT



ENHANCE STAND
ESTABLISHMENT

2ND TO 3RD TRIFOLIATE



NEW PLANTING &
SPRING GREEN UP

AFTER CUTTING



APPLY WHEN AXIAL
LEAF RE-GROWTH
APPEARS

Sunflowers (one time application)

hydraval™

SEED COAT



ENHANCE STAND
ESTABLISHMENT &
DAMAGE RESILIENCY

V4 TO V6 FOLIAR



ENHANCE STEM STRENGTH
& LEAF SURFACE AREA

AFTER R1



NO EFFECT

To sustain the head weight or corn kernel counts, plan to time the application prior to the plant-fixing yields. With corn, plan to apply prior to the V3 stage so the plant is established and can support a greater yield. We recommend seed coat.

Cereal / Forage grains (one time application per cutting) **Crown^{fx}**

SEED COAT



MAXIMIZES
ROOT GROWTH, TILLER
COUNT & HEAD BEARING
STEM COUNT

AFTER FLAG LEAF EMERGES

BIOPRYME
FOLIAR APPLICATION

PROMOTES MOVEMENT OF
CARBOHYDRATES TO GRAIN

STAGE 4 TO 8



INCREASE LIMITED
TO BIOMASS
& TONNAGE

Soybeans (one time application - do not use on flood saturated ground))

Soy^{fx}

SEED COAT



MAXIMIZES ROOT GROWTH
& STAND ESTABLISHMENT

AFTER R1

BIOPRYME
FOLIAR APPLICATION

PROMOTES PRODUCTION
AND FILL OF PODS

AFTER R1



NO EFFECT

Corn (one time application)

ION^{fx}

SEED COAT



MAXIMIZES ROOT
FORMATION &
NUTRIENT UPTAKE

V1 TO V4 STAGE



INCREASES OVERALL
KERNEL COUNT &
STAND STRENGTH

V5 TO V7



ENHANCES LEAF
MASS STALK SIZE
& TONNAGE



FORAGE

WHAT TO WATCH FOR

Increased tonnage

Wider and longer leaves

Increased tiller count (with early seed application)

Maximized grain weight

APPLICATION RATE

FOR FOLIAR:

1 quart per acre

FOR SEED COATING:

4 oz of seedcoat per 100 lbs of seed

PLANNED FOR 2018

Triticale	Sudan Grass
Rye	Peas
Oats	Sorghum
Timothy Grass	

APPLICATION TIMING



APPLY SEED COAT

to optimize root system development & tiller formation



SINGLE SHOOT(S1) & EARLY TILLERING(S2)

affects stem count, thickness & head weight



TILLERING(S3) THRU LAST LEAF JUST VISIBLE(S8)

affects biomass



GRAIN CORN AND SILAGE

PRODUCT BENEFITS

- Increased leaf mass (tonnage)
- Reduce daily heat stress loss
- Increased kernel fill (with early application-V3 or earlier)
- Improve nutrient transport
- Allow for greater root metabolite transport

APPLICATION RATE

FOR FOLIAR:

1 quart per acre

FOR SEED COATING:

4 oz of seedcoat per 100 lbs of seed

APPLICATION TIMING



APPLY SEED COAT

to influence rooting



APPLY V1 THRU V3

to affect both kernel and biomass tonnage



APPLY V4 THRU V7

to increase leaf and stalk biomass and overall tonnage



hydra^{val}TM

SUNFLOWER

WHAT TO WATCH FOR

Increased leaf size

Reduced leaf wilt due to drought stress

Greater diameter of stems

Increased pollinator activity due to more sugars in the flower

Plant regeneration and resiliency after damage

APPLICATION RATE

FOR FOLIAR:

1 quart per acre

FOR SEED COATING:

5 oz of seedcoat per 100 wt

APPLICATION TIMING



APPLY SEED COAT

to optimize root system development



APPLY FOLIAR BETWEEN V4 & V6

for best results

GENETICS

Do your sunflower genetics support:

- A. Full-sized and multiple heads?
- B. Increased oil content?
- C. Increased seed size?
- D. Increased pollination?

COMING IN 2019

Additional trials and cropping methods



CEREAL GRAINS AND WHEAT

WHAT TO WATCH FOR

Increased head-bearing tillers

More consistent head height at harvest

Increased head weights

Increased leaf size makes more sugars

Increased straw tonnage

Increased root mass

Reduced daily drought & heat stress

APPLICATION RATE

FOR FOLIAR:

1 quart per acre

FOR SEED COATING:

4 oz of seedcoat per 100 lbs of seed

APPLICATION TIMING



APPLY SEED COAT

improves rooting and maximizes tiller count



FOLIAR APPLICATION STAGE 4 TO STAGE 8

affects leaf mass and head weights

SPRAY TIP SELECTION

TEEJET™ XR, XRC OR TEEJET TURBO

teejet.com

	LINE PRESSURE	APPLICATION SPEED
	-----	-----
RED TIP	20 PSI	8 MPH
	30 PSI	10 MPH
	MAX 40 PSI	12 MPH
BROWN TIP	10 PSI	12 MPH
	30 PSI	20 MPH
	MAX 40 PSI	15 MPH

APPLICATION STANDARDS

DILUTION WATER PER ACRE: 10 Gallons (37.85 acres)

RECOMMENDED SCREEN SIZE: No smaller than 50 mesh
No tip screen required

RESIDENCE TIME BEFORE RAIN: 3 hours prior

APPLICATION TEMPERATURE RANGE: 40 to 85°F (4 to 29°C)

AGROVIVE™

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