



# Inside the ZONE™



## Sila-Bac® brand Forage Inoculants – What Sets Us Apart in the Field?

### Unique, Patented Bacterial Strains

Developed from unique, patented bacteria, Pioneer® brand inoculants are the brand of choice for the many forage inoculant users in the US and Canada. DuPont Pioneer researchers select exclusive microbial strains and form multiple strain combinations to provide maximum benefits on forages and high moisture corn. In addition to an extensive, world-class research and development program, Pioneer inoculants are made with world class quality controls.

### Quality in Every Step

**Master seed** is the bacterial culture used to produce vials of the bacteria that eventually become commercial product. Once we identify individual strains as having commercial potential, the master seed culture is deposited in ultra-low cold storage, below -20° C. The ultra-low temperature places the strains in suspended animation, which keeps strains healthy and preserves their beneficial characteristics.

**Preinoculation material (PIM)** vials are produced from master seed. PIM vials are a key component in product quality. Extensive DNA fingerprinting is done on PIM vials and compared to the master seed culture fingerprints to ensure unique identification. This assures we produce the same quality product again and again.

**Production cultures**, made from PIM vials, are used to scale up to production volumes. During this fermentation process, the strains are grown individually to maintain strain purity and quality. The fermentations are monitored closely and any batch that falls outside of strict parameters is destroyed. After the fermentation process, strains are concentrated and freeze dried. Dried strains are stored carefully until they are blended to form Pioneer inoculant products.

Throughout the entire strain growing process, DuPont Pioneer adheres to strict quality control standards. Quality assurance tests confirm all strain specifications are met and only desired strains are present.

**Controlling product shelf life** is critical to delivering a quality product to customers. Pioneer inoculants are managed carefully by monitoring demand signals and producing only as much product as needed for each season. Packaging in sealed, air-tight containers help maintain a dry, oxygen-limited package. Using a moisture scavenger helps eliminate bacteria-activating moisture in the bottle or package.



Finally, unused inoculants are returned to the production plant for recertification of bacteria counts each season.

**Improving application success** is accomplished by using unique ingredients as inoculant carriers. Pioneer inoculants set the standard for product mixing and flowability in applicators including our Appli-Pro® Super Low Volume (SLV) applicators. The introduction of SLV applicators help provide consistent, uniform applications of bacteria using very low water volumes.

### Protecting Bacteria in the Tank

Many years of field experience have helped Pioneer understand the influence of environmental factors on bacteria viability during the process of application. To address these issues, Pioneer scientists have tested and modified our inoculant products to excel in difficult environments.

**Water treatment** varies around the country and can affect viability of bacteria. Well water is most often used for mixing water soluble inoculant. Some farmers access water from municipal supplies which are treated with chlorine or hydrogen peroxide. In some cases sterilizing agents may be added to a tank to prevent algae growth.

Being sterilants, many such compounds have the potential to reduce viability of bacteria stains in silage inoculants. Pioneer has tested inoculant products for bacterial viability to both hydrogen peroxide and chlorine.



Hydrogen peroxide treatment of drinking water is of little concern. This compound is short-lived, has little residual activity, and does not cause any harm to the inoculant bacterial strains at the recommended treatment concentrations of 10-30 ppm. Typical well treatments are considerably below 25 ppm.

Municipal water chlorine treatments typically range from 0.2-0.6 ppm. Pioneer research demonstrated that it is safe to use chlorinated water up to 4 ppm.

If concerns exist about treated water, bottled water can be purchased and used to mix Pioneer® brand inoculant. Using the SLV applicator makes this possible since very low water volumes are required.

**Tolerance of high temperatures** is critical to bacteria viability during application. Applicator tanks or SLV applicator bottles are frequently exposed to high temperatures on a chopper during summer months. DuPont Pioneer research shows our inoculant strains (*L. plantarum*, *enterococcus faecium* and *L. buchneri*) to be tolerant at temperatures up to 45°C.

**High pressure applicators** will not reduce Pioneer bacteria viability. SLV applicators use a high pressure compression system to help deliver inoculants to forage. When tested at up to three times normal pressure, bacteria counts were not reduced.

**Cold weather** can lead to applicator or product freeze up, especially during late fall harvests. Pioneer researchers have shown the addition of 10%-20% **propylene glycol** concentrations in Appli-Pro bottles will not reduce bacterial product viability. This allows use of our inoculant products during the cold fall harvest season while maintaining uniform applications.

Together these proven inoculant technologies help deliver the world's leading inoculant products, even in the toughest application environments. Preserving and protecting quality forages helps you achieve top animal performance.



**Appli-Pro® SLV Applicator**



**Appli-Pro® Basic Applicator**

Written by Dan Wiersma, DuPont Pioneer Livestock Information Manager

## Controlling Algae Growth in a Tank Applicator System

- Water tank applicators may promote the growth of algae when allowed to sit for prolonged periods during warm temperatures.
- Algae are not toxic but may cause other problems such as creation of offensive odors and plugging up sprayer nozzles.
- Algae growth in tanks can be prevented by adding 2-3 teaspoons (or 10-15 cc) of a household bleach product for each 189 L (50 gal) of water in the tank. This recommendation applies only to Sila-Bac® brand inoculants

### To Clean a dirty tank.

1. Empty the tank, flush with clean water.
2. Remove and clean filters and nozzles.
3. Fill tank with water and add 2 tablespoons of household chlorine bleach solution per gallon of wash water. After one hour drain the chlorine wash water from tank.
4. Refill the tank with clean water and drain from tank. Replace filters and nozzles.

## Storage of Mixed Inoculant Solutions for Maximum Bacteria Viability

	Sila-Bac® brand inoculants	
	Fermentation products	<i>L. buchneri</i> products
<b>Action Step</b>	1174, 11H50, 1132, 1189	11C33, 11G22, 11B91, 11AFT, 11CFT, 11GFT
<b>Keep in cool location</b>	<ul style="list-style-type: none"> <li>•Up to 24 hrs. in water tank</li> <li>•Up to 3 days in SLV bottle</li> </ul>	<ul style="list-style-type: none"> <li>•Prefer refrigeration after 4-6 hours</li> <li>•Up to 3 days in SLV bottle</li> </ul>
<b>Refrigerate</b>	•Up to 7 days	•Up to 5 days
<b>Freeze*</b>	•Up to 12 months	•Up to 12 months

\*Pioneer recommends thawing frozen Appli-Pro bottles in warm water (less than 38°C). Up to 24 hours may be required for the product to thaw in air or in warm water. Do not thaw using a microwave as extreme heat decreases bacterial viability.