

# 2011 Mixed Hay Field Trials

## Manufacturer/Distributor:

The following research evaluates the effectiveness of a product called BioWash 100 produced by 1<sup>st</sup> EnviroSafety, Inc., St. James City, Florida. Robert R. Treloar, retired Professor of Biology, who now farms in Northeastern Iowa, conducted the research. Positive Plant Products, LLC of Fredericksburg, Iowa is the distributor of this product.

## Product Summary:

BioWash 100 is an all-natural product that increases the ability of plant roots to absorb necessary nutrients and water. Tiny particles in BioWash 100 called colloidal micelles carry a negative charge that attract positive charged particles (cations) many of which are fertilizers and essential micronutrients. In previous studies BioWash 100 has been shown to:

- (1) Increase cationic exchange via the root system and the existing soil nutrients
- (2) Enhance translocation of these nutrients throughout the plant
- (3) Act as an adjuvant thus improving the efficacy of other products
- (4) Be a surfactant for improved absorption

## Research Focus:

The focus of the trials was to evaluate the use of BioWash 100 as a foliar amendment by itself and in conjunction with other foliar products. The hay is mixed grass (20%) and alfalfa (80%). The trial was conducted after harvest of the second crop. The soil type is very prone to drought stress. The results are reported in 2 tables. Table 1 is the data of the entire growing season showing the overall yearly yield. Table 2 data records the results of the special treatment on the third crop cutting. The selected foliar applications were 9 days after harvesting the second crop (alfalfa 8-9 inches tall).

## 2011 Research Results:

**Table 1: Overall Yearly Yield of 4 Cuttings**

Crop #	Harvest date	Treatment	Total #	Acres	Yield/acre
1	June 8	BioWash 100 5 oz. after dormancy	33320	5.2	6148
2	July 9	BioWash 100 – 5 oz. + MAZ-IN 1.5 qts./acre	12300	5.2	2278
3	August 15	See table 2 for details	12880	5.2	2385
4	September 16	BioWash 100 5 oz. + MAZ-IN 1.5 qts + Ascend 3.2 oz./acre	5520	5.2	1022
Totals			64020	5.2	6.16 ton/acre

**Table 2: Special Foliar Applications to Third Cutting Harvest**

Lane #	Treatment	# Hay/Acre	% Increase
1	None	1980	NA
2	BioWash 100 only <sup>1</sup>	2026	+2.27%
3	BioWash 100 + Ascend <sup>2</sup>	2255	+12.20%
4	BioWash 100 + Ascend + MAX-IN <sup>3</sup>	2616	+24.31%

<sup>1</sup> BioWash 100 at 5 ounces/acre foliar

<sup>2</sup> BioWash 100 at 5 ounces/acre + Ascend 3.2 ounces/acre foliar

<sup>3</sup> BioWash 100 at 5 ounces/acre + Ascend 3.2 ounces/acre + MAX-IN ZMB 1.5 quarts/acre foliar

## **Interpretation of Mixed Hay Results – 2011**

### **Discussion of Overall Crop Year Yield Data**

The data in table 1 showed an expected trend of highest yields early in the season with subsequent reductions in crops during the growing season. The 4<sup>th</sup> crop is not possible every year. The yield in cuttings 2-4 were predominantly alfalfa due to timely, but minimal rainfall (i.e. there was ½ inch during the month of August). Alfalfa has extensive root structure and was able to extract water and nutrients from the soil despite the seasonal weather limitations.

It must be noted that the soil type where the alfalfa crop was harvested is very sandy and prone to drought stress. The topsoil is a sandy loam with gravel subsoil instead of clay subsoil resulting in minimal retention of subsoil water. The soil type has a CSR\* of 62 which has the expected potential to produce 4.5 tons of hay per acre (see CSR explanation below). The actual production was 6.16 tons per acre which would be the equivalent of a CSR rating of 84. This increase in actual yield vs. expected yield is significant. Something maximized the availability of the plants to uptake water and nutrients. Prior studies using Biowash 100 has shown greatly improved results from marginal soils and drought conditions with other crops such as oats. Since Biowash 100 was used throughout the growing season on all 4 crops, its presence enhanced the uptake of available nutrients under differing weather conditions and seasonal influences.

### **Discussion of Foliar Application on Third Crop**

The foliar application of different products in the third crop trials demonstrated the use of Biowash 100 in combination with other products (refer to table 2 for specifics). The third crop was actually larger than the second crop which is unusual as growing conditions of less rain and more intense heat (mid -July to mid-August) is not as conducive to plant growth (refer to table 1, crops 2 and 3). The various treatments were applied after harvest of the second crop and influenced the crop during the 3<sup>rd</sup> crop growth period. The

combination of products produced the highest results. While there is some individual benefit that each product contributes, the three in combination appears to have a synergistic effect. The mechanism of the Biowash 100 is twofold in nature. As the data supports, Biowash 100 creates the vigorous root structure early in the season and also serves as a catalyst in the foliar application of the products. Visual inspection of the root structure in a test strip that was not Biowash 100 treated after the first spring application indicated a less extensive and vigorous root system. Observations throughout the season revealed minimal insect or fungal stress on the plants. There were no apparent nutrient deficiencies observed.

Application of the products was done each time mid-day one week after harvest (9-10 inch alfalfa regrowth plant height). It is suggested that the application be done early AM or prior to sundown so the stomata would be more responsive to the treatments in the cooler part of the day as the stomata will close during the warmest parts of the day.

**Conclusions:** It is recommended that this combination of products be adopted as a standard practice in our farming operation regarding alfalfa production. If alfalfa acreage is expanded, particularly on marginal soil, this combination of products should be a matter of practice with aforementioned application techniques.

\*The state of Iowa uses a CSR (Corn Suitability Rating) system assigned to a soil type. This system classifies the particular with a numerical value that rates its potential to raise corn - the higher the number, the more productive the soil. The CSR also rates its potential to produce hay. A rating of 62 has the potential to produce 170 bushels of corn and/or 4.5 tons of hay. By comparison a CSR of 84 has the potential to produce 202 bushels of corn and/or 6.2 tons of hay. Selecting the best crop to maximize the soil potential is the key. In years past, this particular soil did not produce very good results in corn and fair at best soybeans. Using conventional agricultural practices would rarely recapture input costs for a typical corn/bean rotation let alone make a profit.