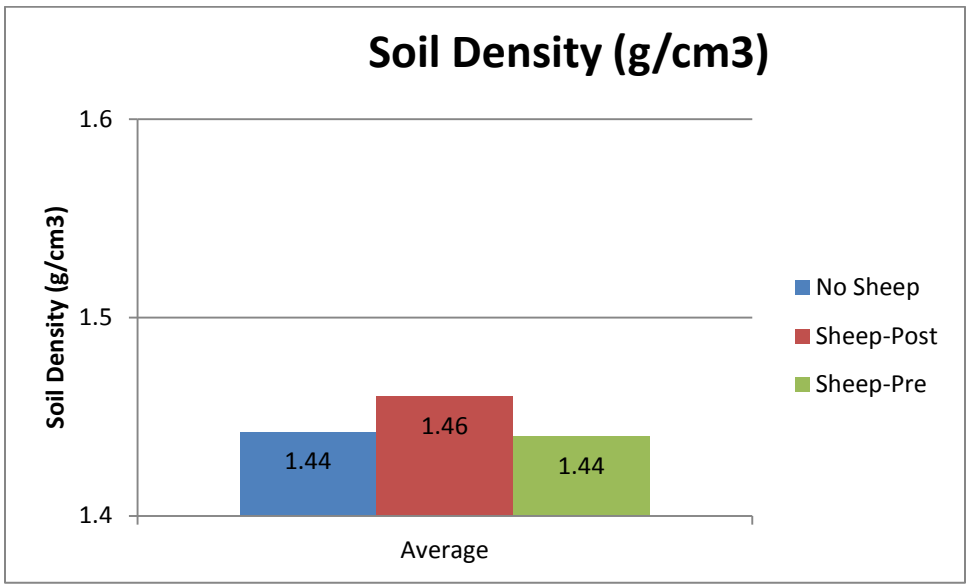
## Fetzer Bonterra Sheep Trial 2015 Stats and Graphs

# Soil Measurements:

Bulk Density was measured before and after the sheep were allowed to graze the cover crops. We also took measurements in our no-sheep grazing areas. We then calculated Soil Porosity based upon our measurements and ran statistical analysis using Statsgraphics Centurion. Bulk Density is the measurement of dry weight of soil per unit of volume, expressed in grams/$cm^3$. Soil samples were also extracted pre and post sheep to determine soil composition and organic matter. These samples were shipped to A & L Western Agricultural Laboratories for testing, see below for some select readings.



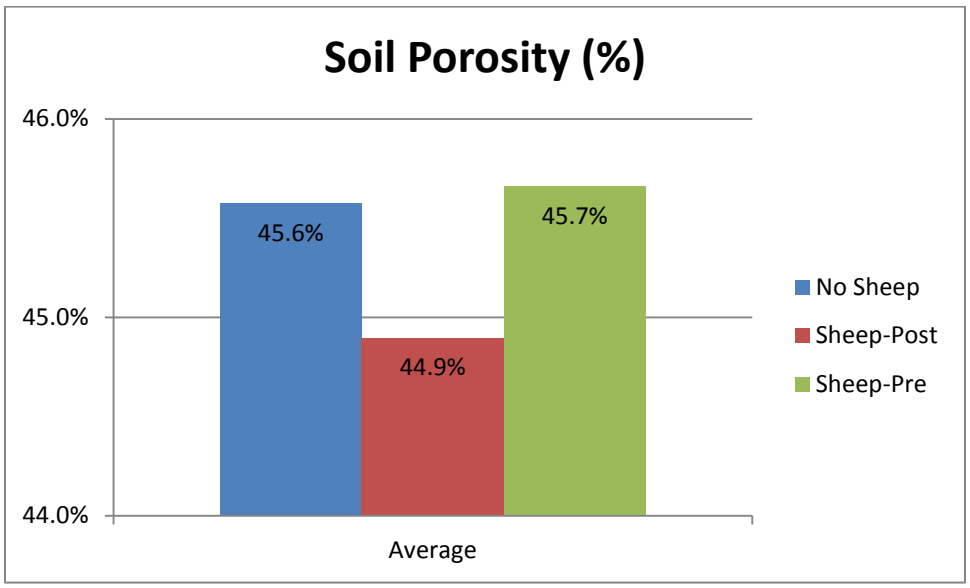

**Multiple Range Tests for Soil Density (g/cm3) by Treatment**

**Method: 95.0 percent Duncan**

| Treatment | Count | Mean | Homogeneous Groups | |
|---|---|---|---|---|
| **Sheep-Pre** | 16 | 1.44001 | X | a |
| **No Sheep** | 16 | 1.44231 | X | a |
| **Sheep-Post** | 16 | 1.46026 | X | a |

| Contrast | Sig. | Difference |
|---|---|---|
| No Sheep - Sheep-Post | | -0.01795 |
| No Sheep - Sheep-Pre | | 0.002302 |
| Sheep-Post - Sheep-Pre | | 0.020256 |

* denotes a statistically significant difference.




**Multiple Range Tests for Soil Porosity (%) by Treatment**

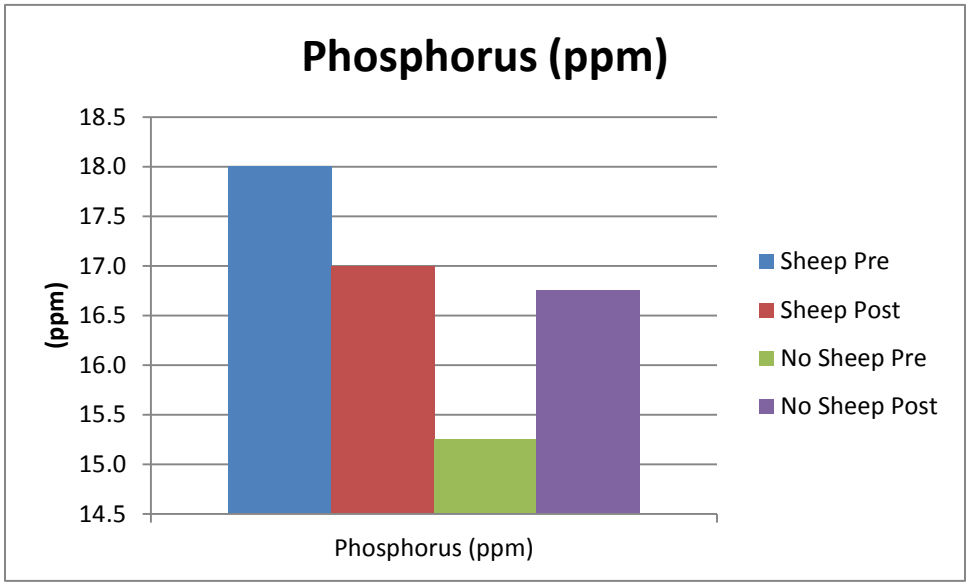
**Method: 95.0 percent Duncan**

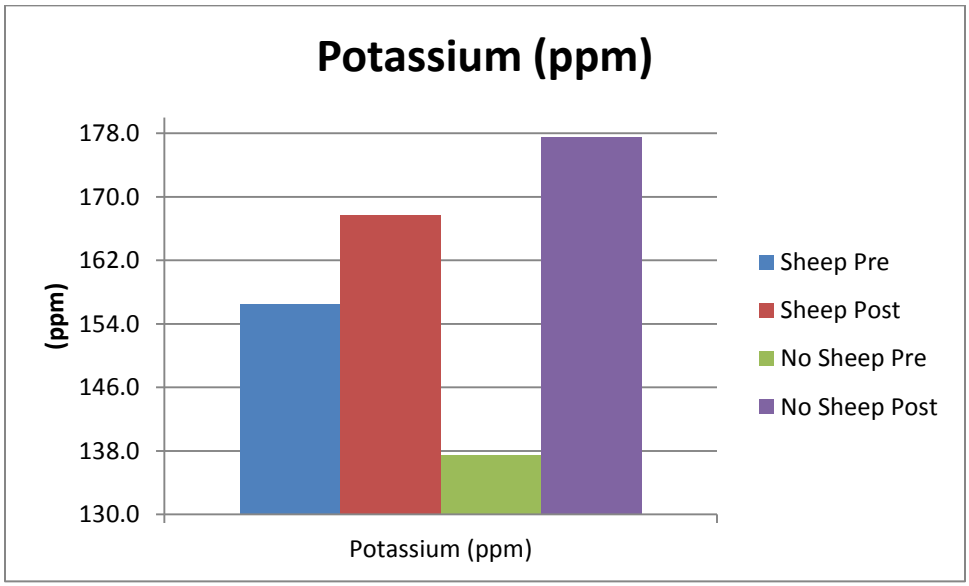
| Treatment | Count | Mean | Homogeneous Groups | |
|---|---|---|---|---|
| Sheep-Post | 16 | 0.448958 | X | a |
| No Sheep | 16 | 0.455733 | X | a |
| Sheep-Pre | 16 | 0.456602 | X | a |

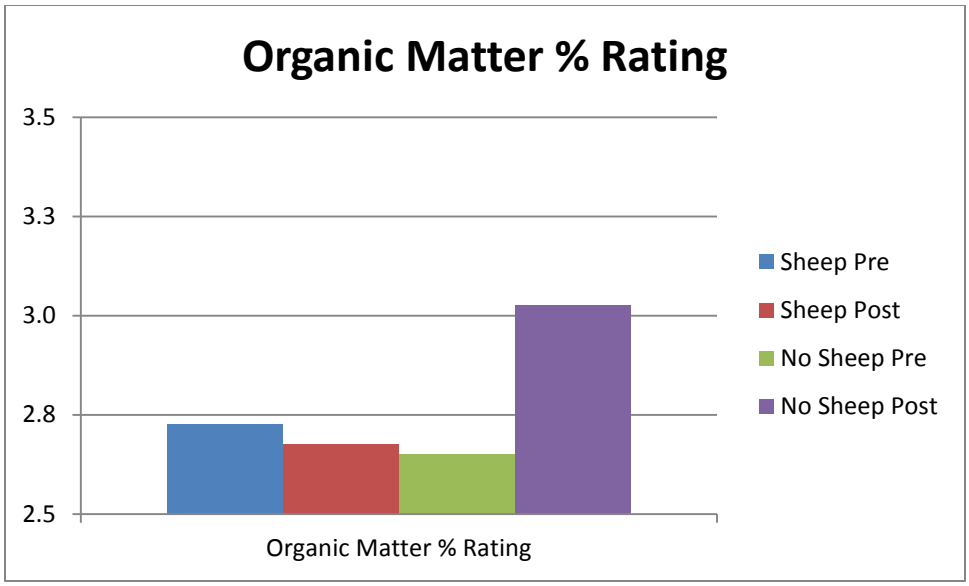
| Contrast | Sig. | Difference |
|---|---|---|
| No Sheep - Sheep-Post | | 0.006775 |
| No Sheep - Sheep-Pre | | -0.00087 |
| Sheep-Post - Sheep-Pre | | -0.00764 |

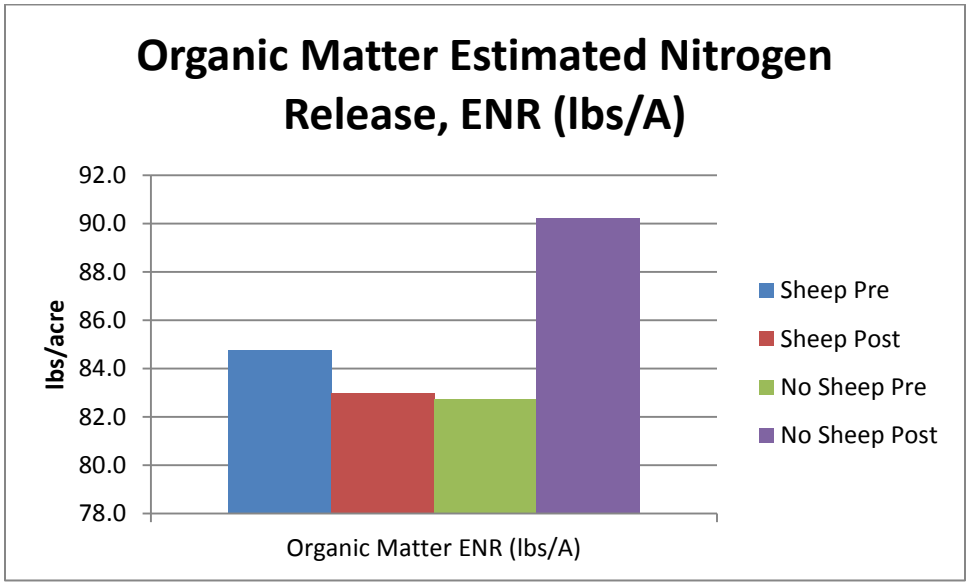
* denotes a statistically significant difference.

## Soil Composition



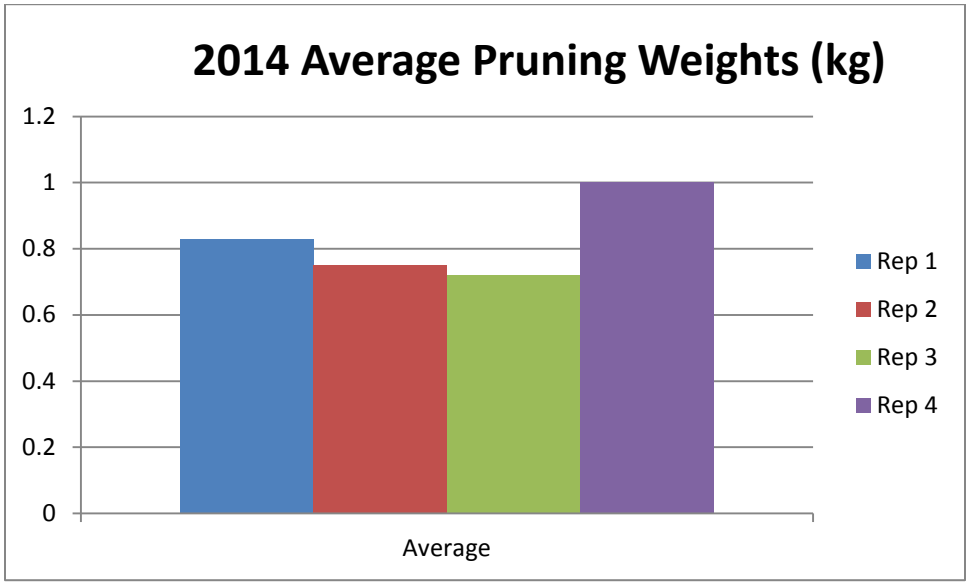




Organic Matter % Rating
3.5
3.3
3.0
2.8
2.5
Organic Matter % Rating
Sheep Pre
Sheep Post
No Sheep Pre
No Sheep Post


Organic Matter Estimated Nitrogen Release, ENR (lbs/A)
lbs/acre
92.0
90.0
88.0
86.0
84.0
82.0
80.0
78.0
Organic Matter ENR (lbs/A)
Sheep Pre
Sheep Post
No Sheep Pre
No Sheep Post

## Harvest and Chemistry Data

We had 80 vines total in our trial to gather harvest and chemistry data from. We took 100 berries from each plot in the trial to determine Brix, pH, Titratable Acidity, and Average Berry Weight. During field harvest we counted the number of clusters per vine and recorded the weight (kg) per vine to get a comparison for each plot. We ran our statistical analysis based on all 4 reps and noted a statistical difference in harvest yields. There was no statistical difference as expected in our lab chemistry. We took a look back at 2014 pruning weights (below) and noted a difference in PW weights between our plots, with rep 4 being significantly different than the other reps. 2015 pruning weights (below) also showed a difference between reps. This could attest to the difference in yields at harvest time as well as the yield to pruning weight ratio.



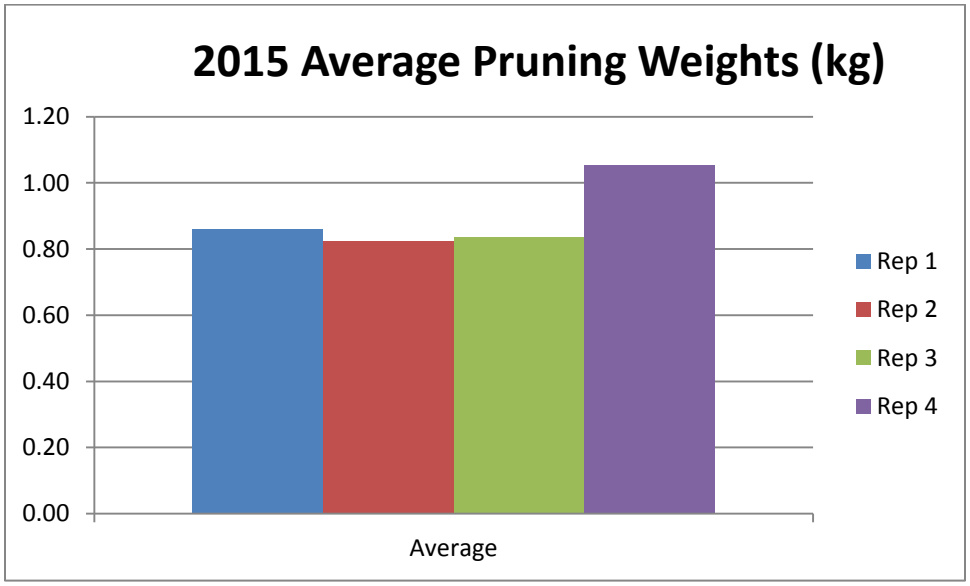

**2014 Multiple Range Tests for Pruning Weight (kg) by Replication**

**Method: 95.0 percent Duncan**

| Replication | Count | Mean | Homogeneous Groups | |
|---|---|---|---|---|
| 3 | 20 | 0.72 | X | a |
| 2 | 20 | 0.75 | X | a |
| 1 | 20 | 0.83 | X | a |
| 4 | 20 | 1 | X | b |

| Contrast | Sig. | Difference |
|---|---|---|
| **1-2** | | 0.08 |
| **1-3** | | 0.11 |
| **1-4** | * | -0.17 |
| **2-3** | | 0.03 |
| **2-4** | * | -0.25 |
| **3-4** | * | -0.28 |

* denotes a statistically significant difference.




**2015 Multiple Range Tests for Pruning Weight (kg) by Replication**

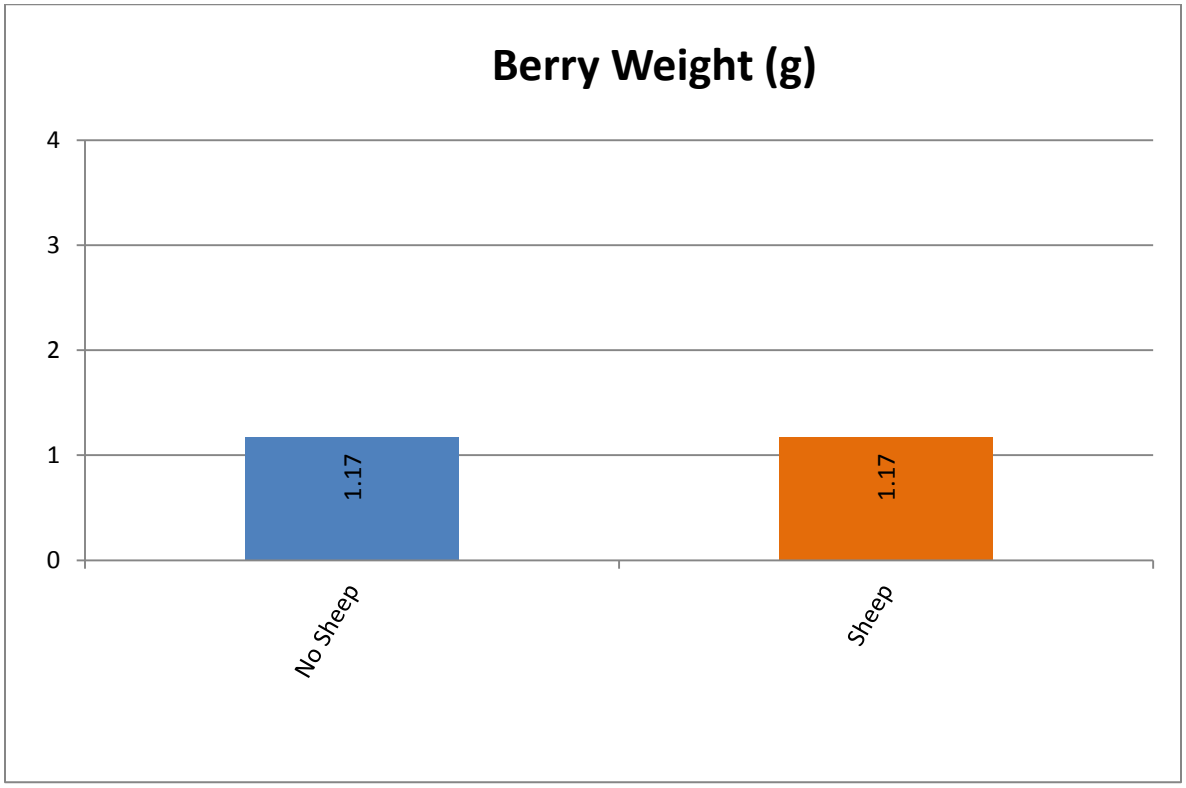
**Method: 95.0 percent Duncan**

| Replication | Count | Mean | Homogeneous Groups | |
|---|---|---|---|---|
| 2 | 20 | 0.8235 | X | a |
| 3 | 20 | 0.836 | X | a |
| 1 | 20 | 0.86 | X | a |
| 4 | 20 | 1.055 | X | b |

| Contrast | Sig. | Difference |
|---|---|---|
| 1-2 | | 0.0365 |
| 1-3 | | 0.024 |
| 1-4 | * | -0.195 |
| 2-3 | | -0.0125 |
| 2-4 | * | -0.2315 |
| 3-4 | * | -0.219 |

* denotes a statistically significant difference.

## Chemistry Charts



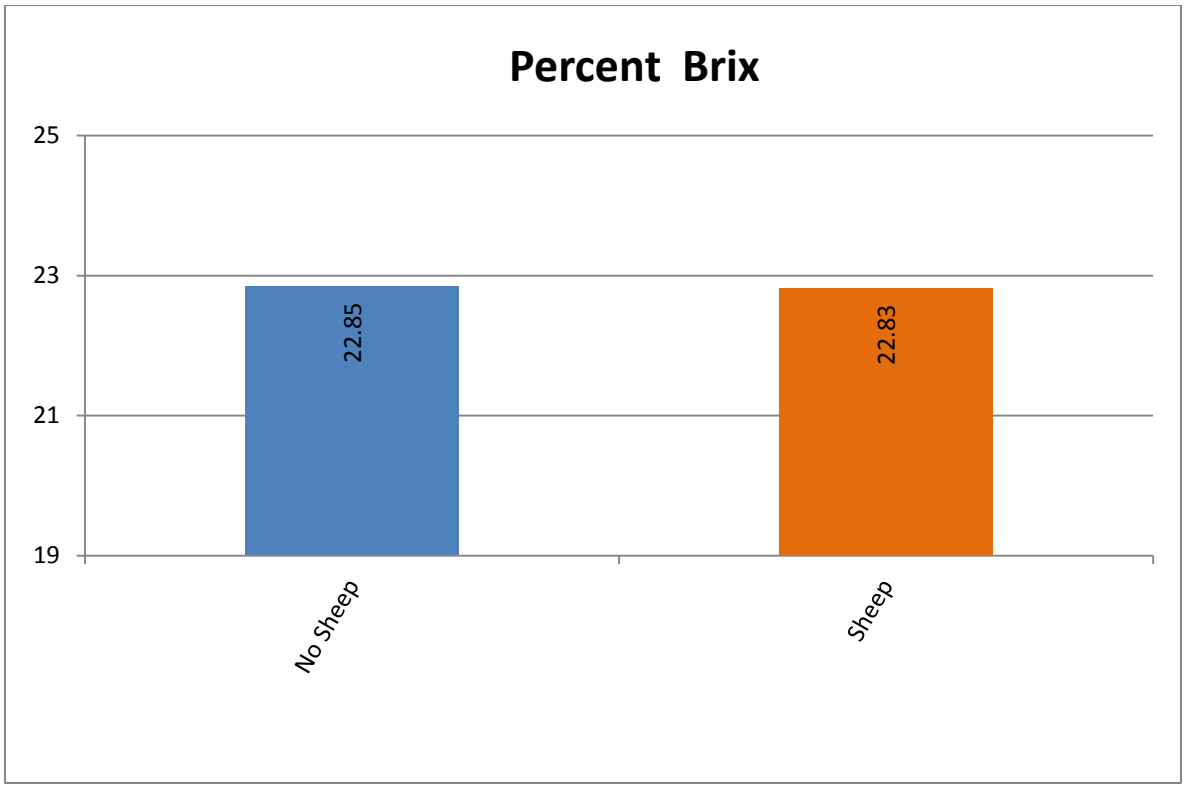

**Multiple Range Tests for Berry Weight (g) by Treatment**

**Method: 95.0 percent Duncan**

| Treatment | Count | Mean | Homogeneous Groups | |
|---|---|---|---|---|
| **No Sheep** | 4 | 1.17 | X | a |
| **Sheep** | 4 | 1.17 | X | a |

| Contrast | Sig. | Difference |
|---|---|---|
| **No Sheep - Sheep** | | 0 |

* denotes a statistically significant difference.



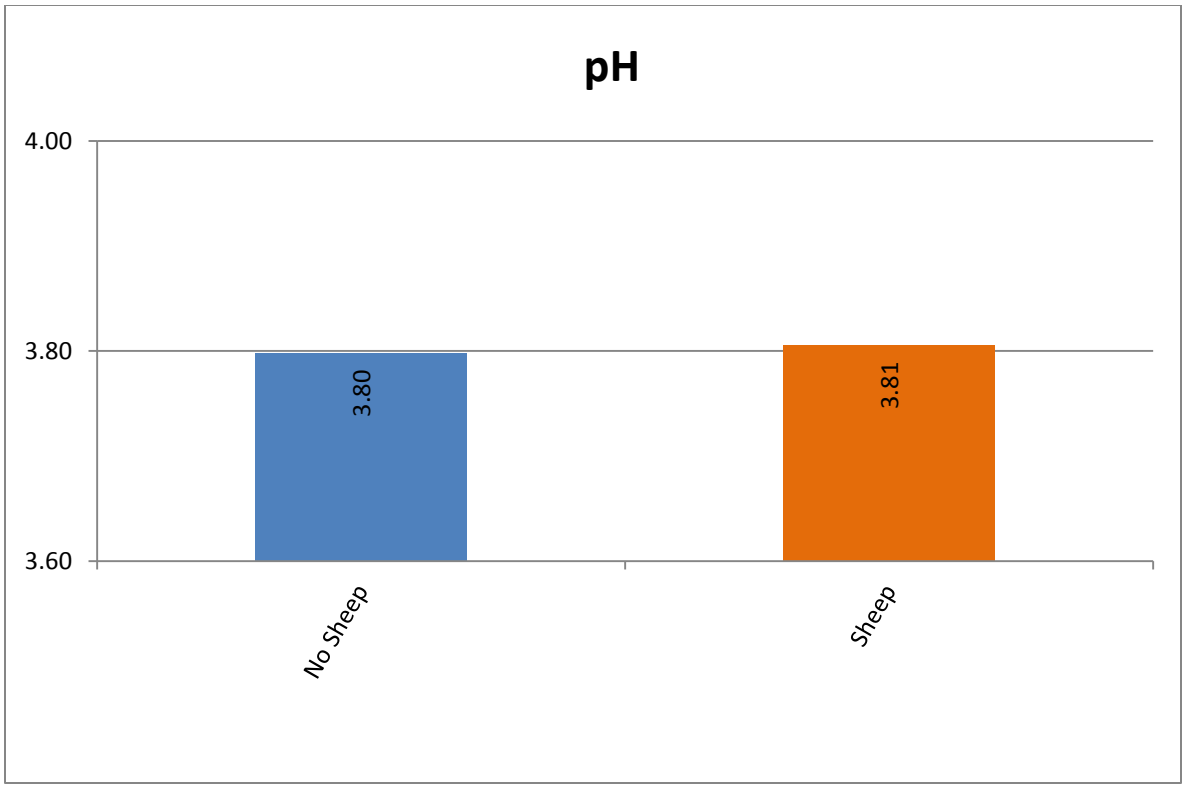

**Multiple Range Tests for Percent Brix by Treatment**

**Method: 95.0 percent Duncan**

| Treatment | Count | Mean | Homogeneous Groups | |
|---|---|---|---|---|
| **Sheep** | 4 | 22.825 | X | a |
| **No Sheep** | 4 | 22.85 | X | a |

| Contrast | Sig. | Difference |
|---|---|---|
| **No Sheep - Sheep** | | 0.025 |

* denotes a statistically significant difference.



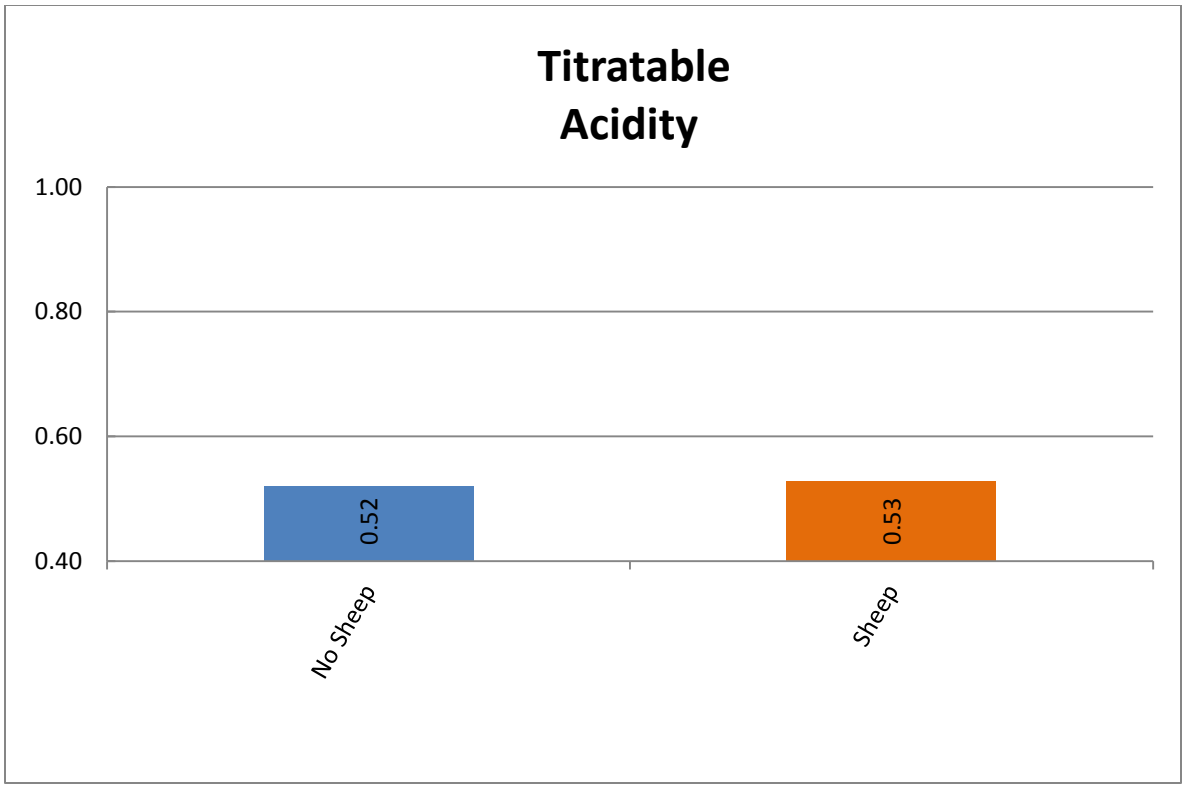

**Multiple Range Tests for pH by Treatment**

**Method: 95.0 percent Duncan**

| Treatment | Count | Mean | Homogeneous Groups |
|---|---|---|---|
| **No Sheep** | 4 | 3.7975 | X a |
| **Sheep** | 4 | 3.805 | X a |

| Contrast | Sig. | Difference |
|---|---|---|
| **No Sheep - Sheep** | | -0.0075 |

* denotes a statistically significant difference.




**Multiple Range Tests for Total Acidity by Treatment**

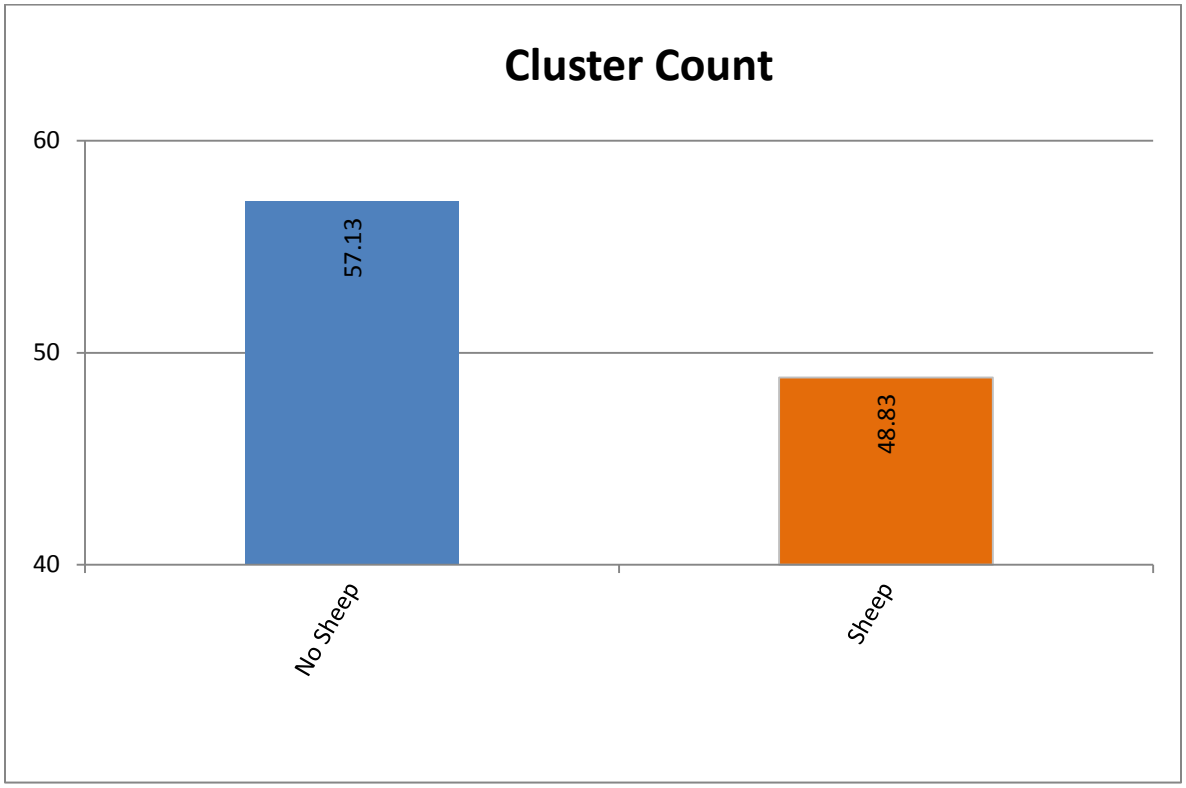
**Method: 95.0 percent Duncan**

| Treatment | Count | Mean | Homogeneous Groups | |
|---|---|---|---|---|
| **No Sheep** | 4 | 0.52 | X | a |
| **Sheep** | 4 | 0.5275 | X | a |

| Contrast | Sig. | Difference |
|---|---|---|
| **No Sheep - Sheep** | | -0.0075 |

* denotes a statistically significant difference.

## Harvest Charts



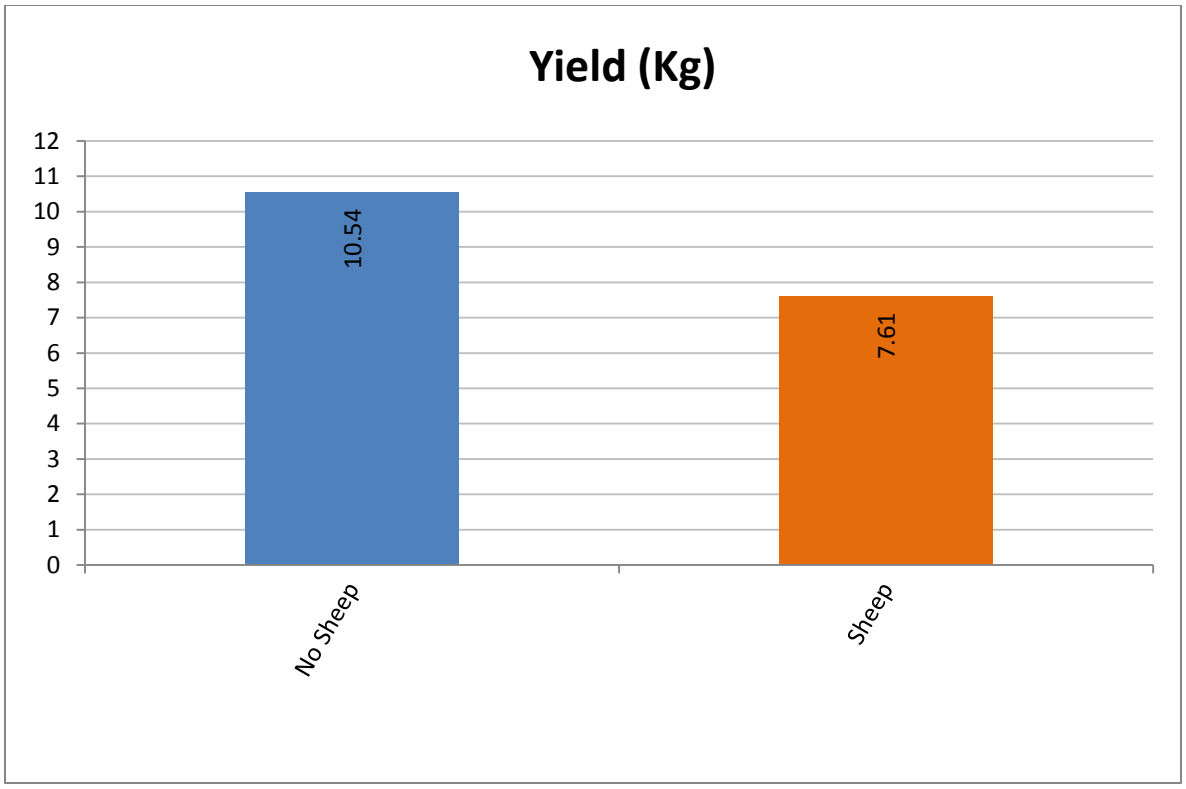

**Multiple Range Tests for Cluster Count by Treatment**

**Method: 95.0 percent Duncan**

| Treatment | Count | Mean | Homogeneous Groups | |
|---|---|---|---|---|
| **Sheep** | 40 | 48.825 | X | a |
| **No Sheep** | 40 | 57.125 | X | b |

| Contrast | Sig. | Difference |
|---|---|---|
| **No Sheep - Sheep** | * | 8.3 |

* denotes a statistically significant difference.



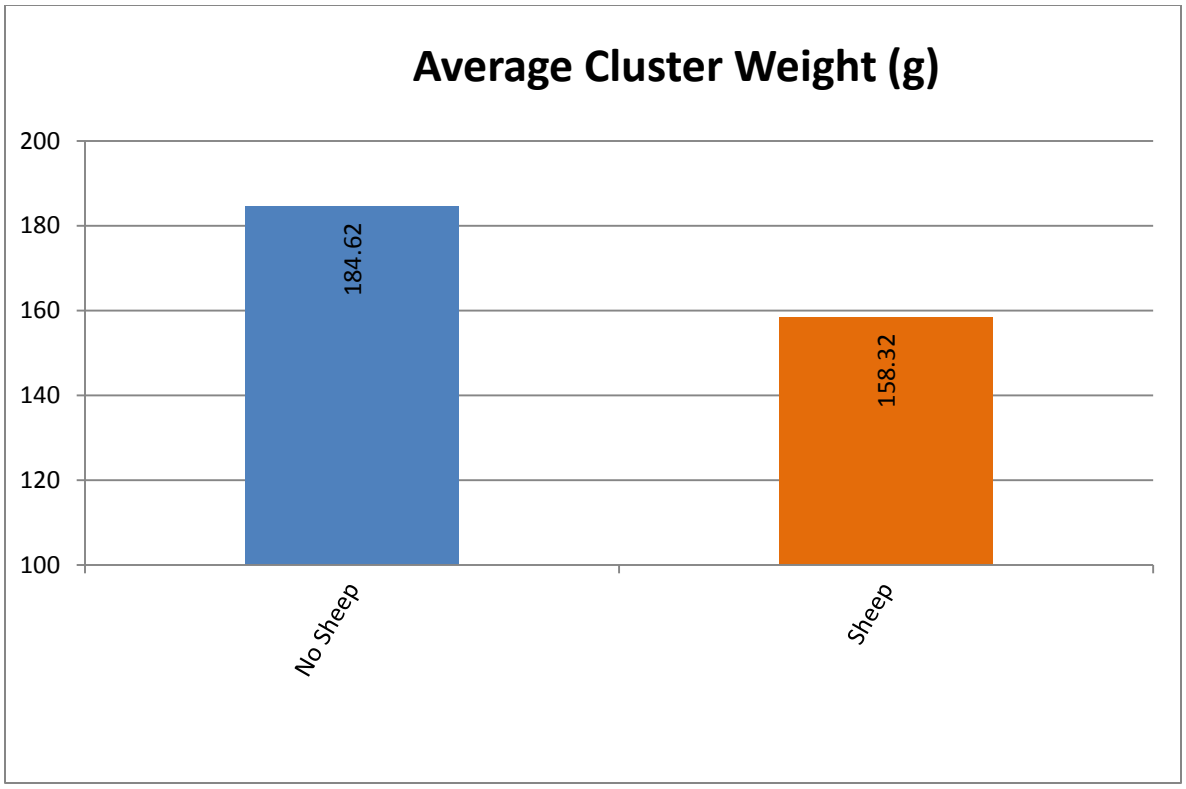

**Multiple Range Tests for Yield (Kg) by Treatment**

**Method: 95.0 percent Duncan**

| Treatment | Count | Mean | Homogeneous Groups | |
|---|---|---|---|---|
| **Sheep** | 40 | 7.6085 | X | a |
| **No Sheep** | 40 | 10.54 | X | b |

| Contrast | Sig. | Difference |
|---|---|---|
| **No Sheep - Sheep** | * | 2.9315 |

* denotes a statistically significant difference.



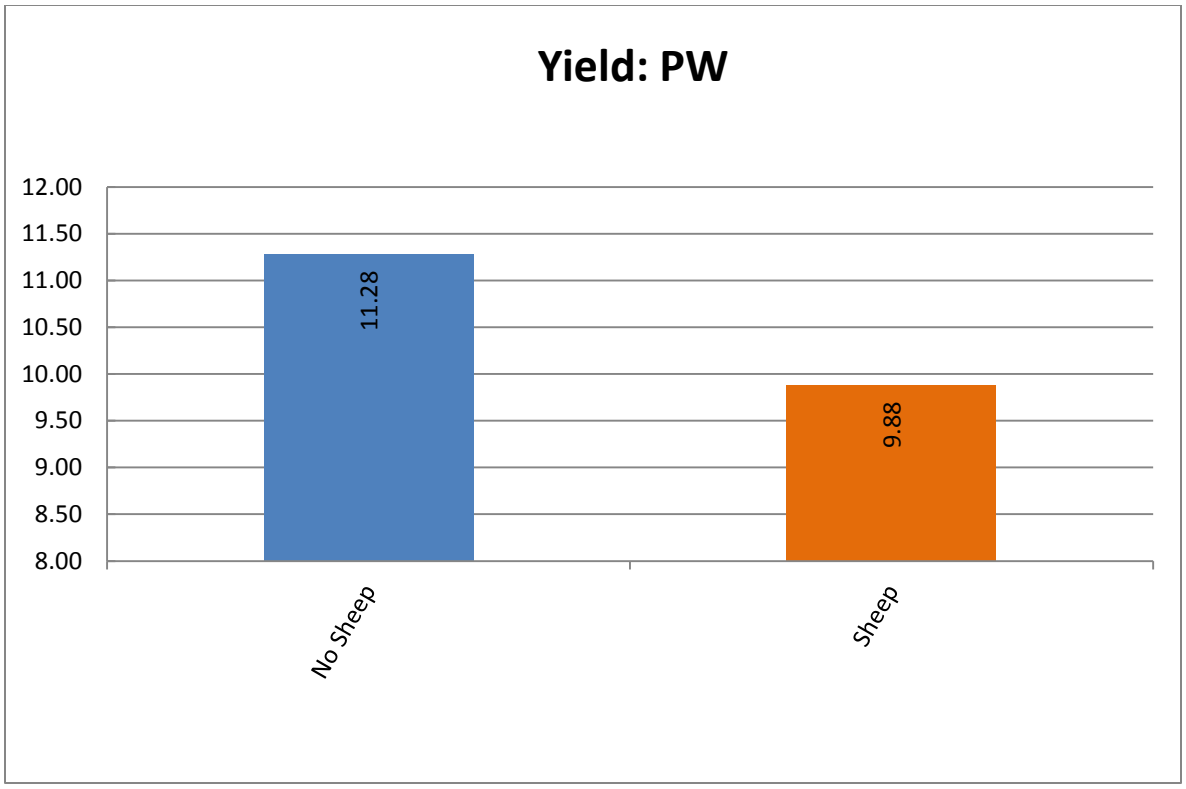

**Multiple Range Tests for Av Cl Wt (g) by Treatment**

**Method: 95.0 percent Duncan**

| Treatment | Count | Mean | Homogeneous Groups | |
|---|---|---|---|---|
| **Sheep** | 40 | 158.32 | X | a |
| **No Sheep** | 40 | 184.624 | X | b |

| Contrast | Sig. | Difference |
|---|---|---|
| **No Sheep - Sheep** | * | 26.3035 |

* denotes a statistically significant difference.




**Multiple Range Tests for Yield : PW by Treatment**

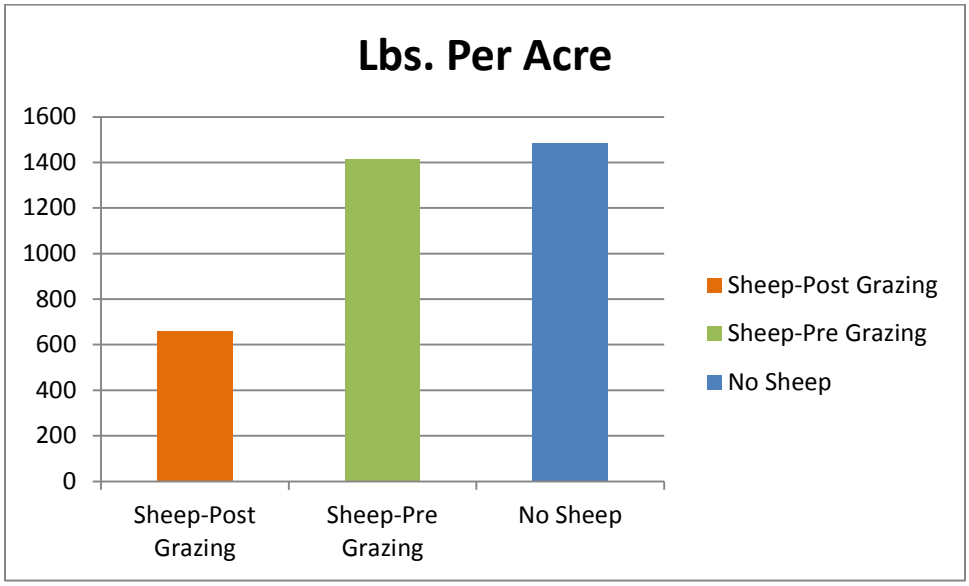
**Method: 95.0 percent Duncan**

| Treatment | Count | Mean | Homogeneous Groups | |
|---|---|---|---|---|
| **Sheep** | 40 | 9.881 | X | a |
| **No Sheep** | 40 | 11.2785 | X | b |

| Contrast | Sig. | Difference |
|---|---|---|
| **No Sheep - Sheep** | * | 1.3975 |

* denotes a statistically significant difference.

## Vegetation Analysis




| **Multiple Range Tests for Pounds per Acre by Treatment** | | | | |
|---|---|---|---|---|
| | | | | |
| **Method: 95.0 percent Duncan** | | | | |
| **Treatment** | **Count** | **Mean** | **Homogeneous Groups** | |
| Sheep-Post Grazing | 4 | 657.982 | X | a |
| Sheep-Pre Grazing | 4 | 1413.81 | X | b |
| No Sheep | 4 | 1484.42 | X | b |
| | | | | |
| **Contrast** | **Sig.** | **Difference** | | |
| No Sheep - Sheep-Post Grazing | * | 826.434 | | |
| No Sheep - Sheep-Pre Grazing | | 70.6035 | | |
| Sheep-Post Grazing - Sheep-Pre Grazing | * | -755.83 | | |