## Soil chemical properties at planting

| Treatment | Total N | P | S | K | Zn | Mg | Ca | pH | CEC | Organic matter | EC (dS/m) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Sum | 6.0 | 21.5 | 5.1 | 118.7 | 2.1 | 305.7 | 2616 | 6.3 | 16.5 | 4.2 | 0.2 |
| No Sum | 6.4 | 28.7 | 5.0 | 118.1 | 3.6 | 388.4 | 3846 | 6.6 | 21.1 | 4.7 | 0.3 |

## Soil chemical properties at the end of the season

| Treatment | Concentration in ppm | | | | | | | pH | CEC | Organic matter |
|---|---|---|---|---|---|---|---|---|---|---|
| | Total N | P | S | K | Zn | Mg | Ca | | | |
| Sum | 9.2$^{ns}$ | 18.6$^{ns}$ | 5.3$^{ns}$ | 112.0$^{ns}$ | 2.6$^{ns}$ | 376.1$^{ns}$ | 3375.5$^{ns}$ | 6.3$^{ns}$ | 19.5$^{ns}$ | 4.4$^{ns}$ |
| No Sum | 11.9 | 28.9 | 5.5 | 122.3 | 2.6 | 406.2 | 4656.3 | 6.7 | 24.8 | 4.5 |

Mean separation using least significant difference method ($P \leq 0.05$).
ns= no significant difference.

| Treatment | Cereal rye biomass | |
|---|---|---|
| | in kg | in lbs |
| Sum | 3,396 | 7,471 |
| No Sum | 2,370 | 5,213 |

*Cereal rye biomass on dry weight basis. Data collected using two 0.25 $m^2$ quadrats per treatment. Each treatment has four replications.
Mean separation using least significant difference method (P≤0.05).
ns= no significant difference.

## Plant biomass, SPAD and root nodule count (mid-season)

| Treatment | Plant biomass* (per plant; g) | SPAD | Nodule count per plant |
|---|---|---|---|
| Sum | 12.5$^{ns}$ | 33.3$^{ns}$ | 43$^{ns}$ |
| No Sum | 10.4 | 33.9 | 37 |

*Plant biomass on dry weight basis. SPAD data collected from five plants with five data points on each plant.
Mean separation using least significant difference method (P≤0.05).
ns= no significant difference.

## Plant biomass and pod characteristics at harvest

| Treatment | Total biomass* (per plant; g) | Pod biomass (Per plant; g) | Total no. of pods per plant | Pods with one bean | Pods with two bean | Pods with three bean | Pods with four bean |
|---|---|---|---|---|---|---|---|
| Sum | 32.7$^{ns}$ | 15.6$^{ns}$ | 50$^{ns}$ | 16$^{ns}$ | 20$^{ns}$ | 13$^{ns}$ | 1$^{ns}$ |
| No Sum | 33.6 | 17.1 | 48 | 12 | 20 | 15 | 1 |

*Plant biomass on dry weight basis. Mean separation using least significant difference method (P≤0.05).
ns= no significant difference.

## Yield (bu/acre)

| Treatment | Yield (bu/acre) |
|---|---|
| Sum | 48.9$^{ns}$ |
| No Sum | 41.8 |

Mean separation using least significant difference method (P≤0.05).
ns= no significant difference.