**Field management**

*From Bo: In 2018, we actually irrigated the plots with 25 mm in late May or early June to ‘rescue’ the grass-clover ley.*

**Crop yields**

Need Bo to fill this out

**Vegetation measurements**

Three vegetation measurements were associated with each cover cropping phase. Following the cash crop harvest fall ground cover, fall biomass, and spring weed counts were measured and associated with the 2018 and 2019 cover cropping seasons, respectively.

|  |  |
| --- | --- |
| **Measurement** | **Unit of identification** |
| Fall ground cover (%) | Soil  Cover crop to species (according to treatment)  Other (to species or genus, see supplementary material) why are these to Cirsium species, and spring weed counts are only Cirsium arvense? |
| Fall biomass (g m-2) | Cover crop (according to treatment)  Volunteer (according to previous crop)  Other (all other biomass) |
| Spring weed counts (number m-2) | Cirsium arvense  Equisetum arvense  Dicot  Monocot |

Timing of measurements relative to other field activities is presented in **Figure X1**.

A screenshot of a computer

Description automatically generated

Figure X1. Timeline of field activities and sampling events. Non-inversion tillage consisted of early spring harrowing and chisel plowing, inversion tillage of mold-board plow

**Fall ground cover composition**

Ground cover composition was estimated from digital images taken in the fall (9 November 2018 and 1 November 2019) as done in Melander et al. (2013). A 0.5 m2 quadrat was placed in the plot, and an image was taken from a height of XX above the center of the quadrat. Three images were taken in each plot. Each image was subsequently overlaid with a grid consisting of 17 vertical and 17 horizontal lines, resulting in 289 intersections per image. Each intersection was classified as a soil or plant. Plant intersections were identified to the genus or species level (Table X), and classified as ‘cover crop’ or ‘other’, depending on the plot treatment. For example, a *Lolium perenne* intersection was classified as ‘cover crop’ in plots with an *L. perenne*-*Trifolium repens* cover crop mixture, but as ‘other’ in all other plots. Percent coverage of each category in the quadrat was then calculated by dividing the number of touched intersections in that category by 289 intersections.

**Fall biomass**

**Need details from Bo.**

**Spring weed counts**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Treatment | Cover crop | Seeding rate | Seeding method |  | Description |
| Mix-early | Grass (Lolium perenne) and clover (trifolium repens) | 3 kg ha-1, grass + 8 kg clover ha-1 | Sown in 12.5 cm rows at 1 cm depth |  | Sown shortly after cash crop (is this true?) |
| Mix-mid |  | 3 kg ha-1, grass + 8 kg clover ha-1 |  |  | Sown |
| Radish-mid | Fodder radish (Raphanus sativus) | 14 kg ha-1 | Broadcast into standing crop |  |  |
| Radish-late | Fodder radish (Raphanus sativus) | 14 kg ha-1 | Broadcast into harvested crop stubble |  |  |
| None | - |  | - |  | No cover crop control treatment |

|  |  |
| --- | --- |
| sown at 12.5 cm rows at shallow depth 11 kg/ha (3 kg grass, 8 kg clover) | mix same as early planted, radish broadcast onto soil at 14 kg/ha, mix was planted at the same rate as in the early establishment treatment |