

Agricultural Demonstration of Practices and Technologies (ADOPT)

FINAL REPORT

20150467

FIELD PEAS - IMPROVING YIELDS WITH VARIOUS PRE-SEED BURN-OFF TREATMENTS

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Title: Field Peas - Improving yields with various pre-seed burn-off treatments.



Introduction

Several pre-seeding herbicide options are available for use on peas. Some of these may be having toxicity effects or negatively affecting root health. This demonstration showed these available options to producers and allowed an assessment of any negative effects on plot growth caused by these soil-residual herbicides. The goal is to better equip pea producers to control weeds while not negatively impacting the health of their pea crop.

Materials and Methods

Treatments:

1. Glyphosate / Heat
2. Glyphosate/ Authority Charge
3. Glyphosate / Authority / Liquid Avadex
4. Glyphosate / Authority / Trifluralin
5. Glyphosate / Tribenuron / Edge

This trial was set up in a randomized complete block design with two ranges with two replicates in each. There were five herbicide treatments. Each plot was 20 feet by 40 feet when it was seeded. The trial was prepared on May 3 with granular application of 19 lb/ac Edge on Treatment 5, which was harrowed the same day. The other herbicide treatments were sprayed on May 4 as liquid applications at recommended rates and using only approved tank mixes. The entire plot area was subsequently harrowed so that Treatment 5 was incorporated twice perpendicularly. Glyphosate was applied at 0.7 L/ac equivalent. The entire trial area was seeded with Saffron peas treated with Trilex seed treatment and Nodulator peat inoculant on May 4. The seeding rate was 160 lb/ac and 25 lb/ac actual P was applied in a band below the seed. The size of each plot was 20 feet by 40 feet.

Plant counts were taken in early June by counting 5 meter rows throughout each plot. The plots were sprayed with Viper herbicide on June 10. There was no hand-weeding necessary, as the peas were competitive and weed pressure was low. The plot area was trimmed down to 15 by 35 foot long plots. Biomass samples were harvested from 3 quarter meter quadrats per plot and fresh weight was determined from each on July 6. The full 35 foot length of the plot was harvested for yield with the Wintersteiger combine. Yields are reported in bushels per acre, adjusted for moisture to 12%. The peas were harvested on August 15 under good, dry conditions and the average moisture was 12.7%.

Results

Emergence was good and relatively even (Figure 1). There was no clear trend in the herbicide treatment affecting the plant population. There was also no clear trend in biomass for herbicide treatment (Figure 2). In the field, there was no obvious difference in height, growth, or color of the peas either due to replicate or treatment. In general, the plot of peas was quite uniform.

Pea yields were quite variable and there was no statistically significant difference in yield due to herbicide treatment (MS Excel data analysis). There seemed to be a trend to lower yield for the #2, #3, #4, and #5 residual herbicide treatments relative to Treatment #1 (Glyphosate/Heat) which had minimal residual activity.

Figure 1. Average plant population (plants/m²) for each treatment with four replicates.

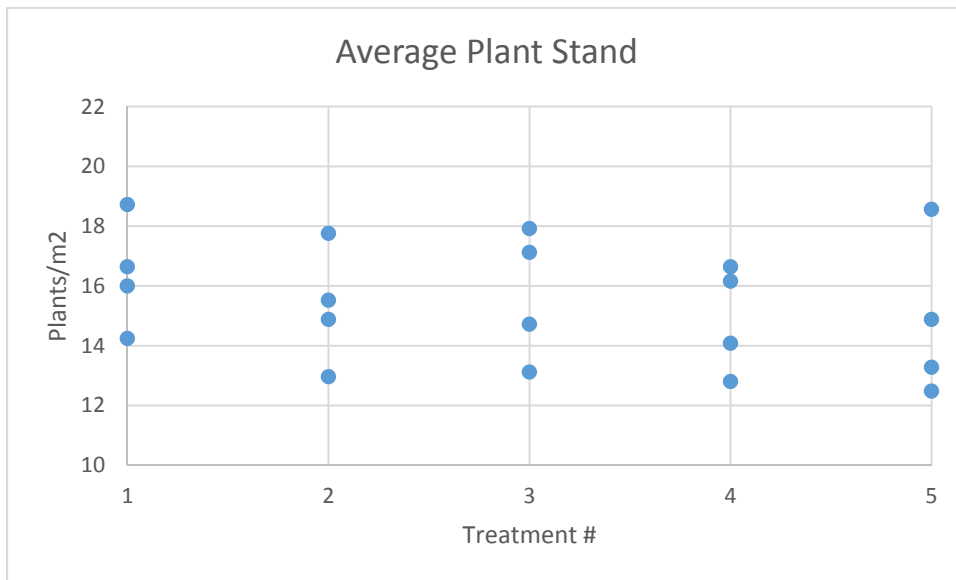


Figure 2. Fresh pea biomass (g/m²) for each treatment with four replicates.

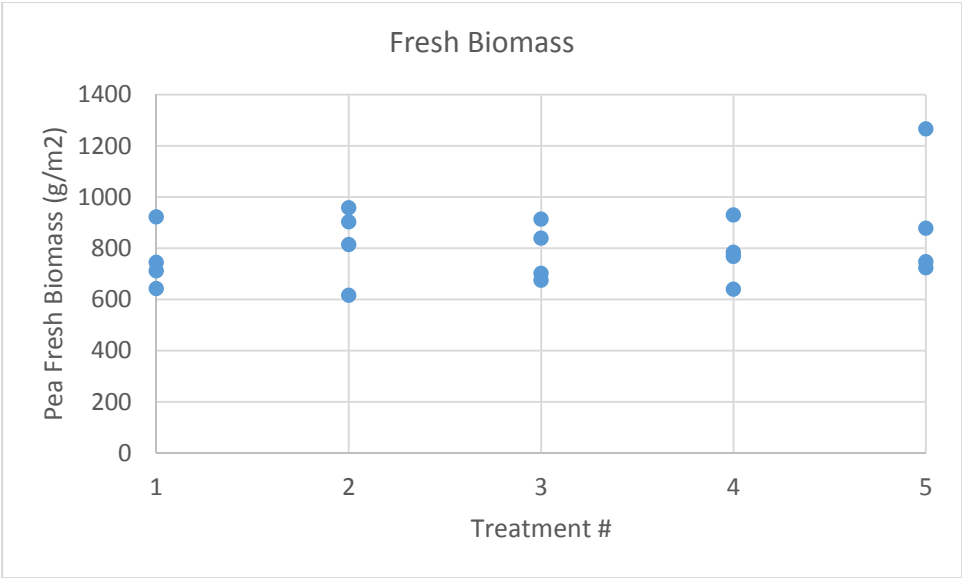


Figure 3. Pea yield for five herbicide treatments and four replicates.

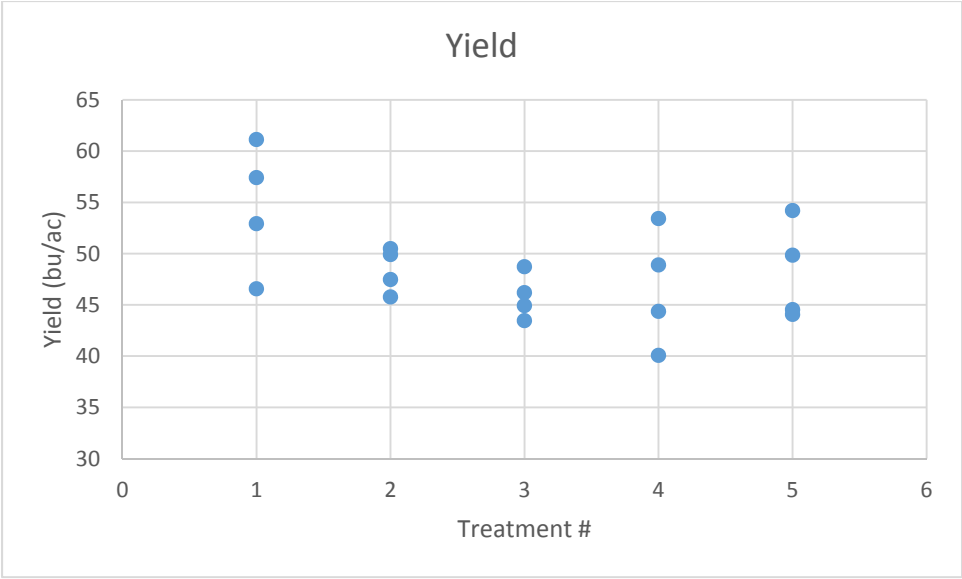
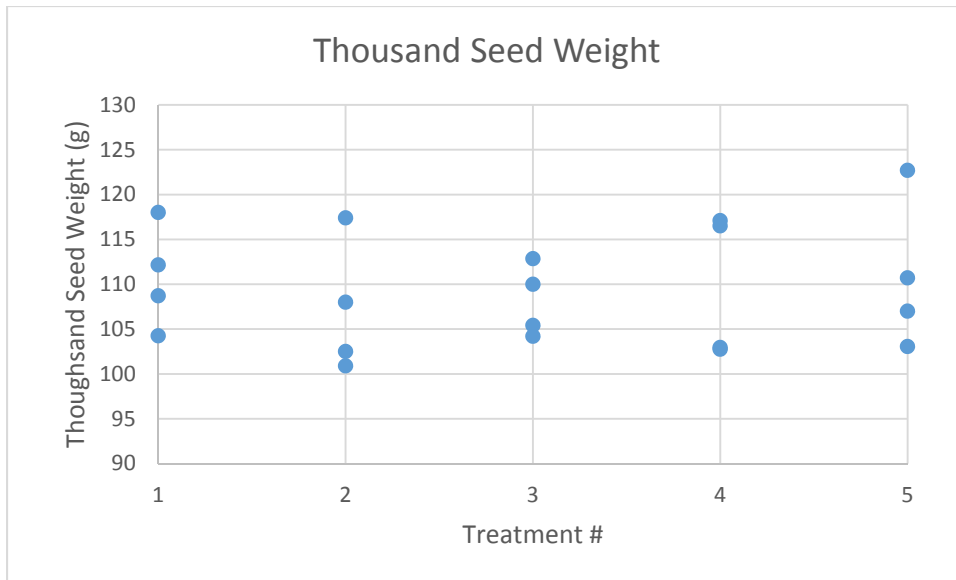


Figure 4. Thousand seed weight for five herbicide treatments and four replicates.



Discussion and Conclusions

This demonstration showed that approved residual herbicides are generally safe on the crop and did not result in consistent yield losses due to poor root growth. Growth was similar between all the treatments and there were no large differences in weed pressure. Choice of residual herbicide may well depend on the presence of problem resistant weeds like Kochia. Herbicides like Authority and Edge are good for control of Group-2 resistant kochia. These results suggest that these are good options for pea producers needing better control.

Extension

This demonstration was included in the SERF Annual Field Day on July 20th. It was attended by about 70 participants and featured many pulse trials. Results will be included in the SERF Annual Report printed in April 2017.