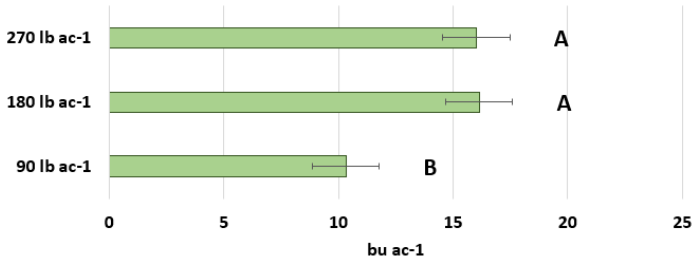
WEED SUPPRESSION IN FIELD PEA USING INTERCROPPING AFTER HERBICIDE GROUP II APPLICATION

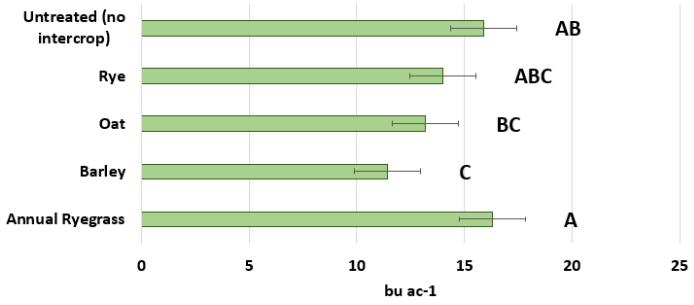
Field pea is a poor competitor crop. As a temporal solution to control faster growing weeds and alleviate competition, fields are sprayed with Group II herbicides which have shown to cause herbicide weed resistance. It is hypothesized that if the seeding rate is increased, yield will be compensated despite weed competition. In addition, if field pea is intersown with cover crops, there is greater weed suppression. This is an economic advantage as it removes the necessity for herbicide application and inclusion of cover crops supply additional organic matter to the soil. This two-year split block experiment consisted of a Group II herbicide (in this case REFINE SG) application to spring wheat. Plots were either sprayed with the herbicide at 12 g ac-1 or left untreated. The following year, field pea was sown at three different seeding rates (90, 180 and 270 lb ac-1). Each of these rates were either sown alone or intersown with either annual ryegrass, barley (Hordeum vulgare L.), oat (Avena sativa L.) and rye at 5, 35, 35, and 17 lb ac-1. Weeds were counted using 25 cm quadrats every two weeks and grouped as either broadleaf or grass.

Yield in field pea was affected by the presence of accompanying crop (rye, ryegrass, barley, oat and unseeded control) (P=0.0172) and by the seeding rate (90, 180 and 270 lb ac-1) (P=0.00042). There was no effect from the herbicide application a year prior (P=0.1068). As such, field pea sown with annual rye yielded as high as those sown with ryegrass and the pea monocrop control, whereas lower yields were reported in field peas grown with oat and barley. Moreover, seeding rates of 180 and 270 lb ac-1 produced greater yields that those yields obtained from plots seeded at 90 lb ac-1. Interactions between herbicide and accompanying crop, herbicide and seeding rate, accompanying crop and seeding rate and interaction of all these three effects had no impact on field pea yield (P=0.1779, 0.9717, 0.7113 and 0.4163, respectively). Yields in barley and oat were not affected by herbicide (P=0.5616 and 0.8873, respectively), field pea seeding rate (P=0.0754 and 0.4017, respectively) as well as the interaction between herbicide applications and seeding rate (P=0.3369 and 0.5495, respectively). From the first growing season we can affirm the hypothesis that greater seeding rates lead to greater yields. Moreover, annual ryegrass and rye are great alternatives for intercropping with field pea. This is also advantageous because there is no need to collect seed from either of these cover crops and there is less risk for the ground to be fallow over the fall and winter.

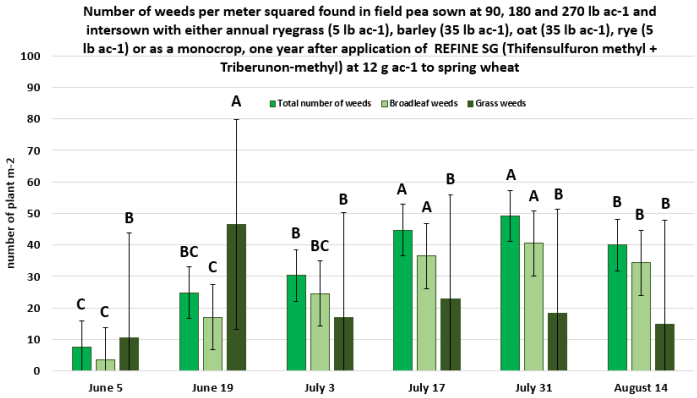
Field pea yield intersown with annual ryegrass (5 lb ac-1), barley (35 lb ac-1), oat (35lb ac-1) and rye (17 lb ac-1) at different seeding rates, one year after applications of REFINE SG (Thifensulfuron methyl + Triberunon-methyl) at 12 g ac-1 to spring wheat



Yield of field pea intersown with different cereals at 90, 180 and 270 lb ac-1, one year after applications of triberunon-methyl at 12 g ac-1 to spring wheat



Number of weeds per meter squared found in field pea sown at 90, 180 and 270 lb ac-1 and intersown with either annual ryegrass (5 lb ac-1), barley (35 lb ac-1), oat (35 lb ac-1), rye (5 lb ac-1) or as a monocrop, one year after application of REFINE SG (Thifensulfuron methyl + Triberunon-methyl) at 12 g ac-1 to spring wheat



Number of broadleaf (<0.0001), grass (<0.0001) and total weeds (<0.0001) was significant as time passed. Highest number of broadleaf weeds was found in the third and fourth week of July compared to lower number at the beginning of the growing season. Grasses on the contrary, peaked mid-June and then number dropped onward. This is likely due to the heat and dry period experienced in June, which may have caused high levels of stress in cool season grasses.