

GrasslandOregon

Blog

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Inter-seeding cover crops? Frosty and FIXatioN stand out in Midwest trials!

Inter-seeding Cover Crops Requires Long Range Weather Forecasting

By Jerry Hall

Lately you may have been hearing a lot about inter-seeding as a means to get cover crops started early or where otherwise, due to late corn harvest, they might not get planted at all.

While inter-seeding into corn has been fairly successful, I have yet to hear of much success when seeding into soybeans. As with anything there are risks and it seems that drought is one of the biggest when it comes to successfully establishing an inter-seeded crop into corn.

When we first heard of inter-seeding we thought we would try it on our SE Iowa research farm. The first year it worked well. I was nervous our annual clovers or annual ryegrass would quickly go to seed. However, it appears the shade from corn is enough to defeat the photoperiod maturity aspect of these species. The only spots where we saw any flowering was along the edge of the field, something that is easily adjusted for. Our second year we planted later than I would have liked and it got too dry before we could get much size on the cover crops. As a result, most did not make it and we didn't have much of a stand when the corn crop started to dry down. The one variety that did perform the best was our Frosty Berseem clover, which has better drought tolerance than the other species.

Later we tried to duplicate our trial on a nearby farm but pre-emergent herbicide residual kept anything from establishing. If you are going to try inter-seeding you will want to limit your use of pre-emergent herbicide or test germinate some quick germinating seed in an area where you can watch and water it regularly. If it doesn't live where you baby it, don't bother seeding across the rest of the field.

We felt that we had learned enough that when we were approached by Dr. Ryan Haden of Ohio State to help fund his inter-seeded cover crop trial we were happy to do so. Below is the data from his first year of the trial.

Interseeding Cover Crops into Corn at V6

Research Site: OARDC, Schafter Farm, Wooster, OH

An experiment was established using a randomized complete block design with 4 replicates and 5 interseeding treatments (Table 1). Each plot was 10ft x 30ft. In 2015 a glyphosate resistant corn variety (106 d RM) was planted at a population of 32,000 plants per acre on 5/21/15 following chisel tillage. Cover crops were interseeded with a high clearance drill at the V6 corn growth stage in 3 rows spaced at 7.5 inches between the 30 in corn rows. Glyphosate was sprayed to control weeds within 1 day of cover crop interseeding. To determine if the cover crop would cause a carryover effect on corn yields in the following year corn was planted on 6/15/16. The late planting date was due to poor conditions for germination and the need to replant.

Cover crop biomass was measured using 0.25 m² quadrates in late November of 2015 prior to the first killing frost and in mid-April of 2016 just prior to termination with herbicide. Cover crop biomass is reported on a dry weight basis. In both 2015 and 2016, grain yields at harvest were measured based on a 15.5% moisture content for corn grain. Data from this trial are reported in Tables 2.

Table 1. Cover crop treatments and seeding methods.

Cover Crop Treatment	Seeding Method
Corn-Only Control	None
Corn x Radish	Drill-seeded at V6 @ 10 lbs/a
Corn x Annual Ryegrass	Drill-seeded at V6 @ 20 lbs/a
Corn x Red Clover	Drill-seeded at V6 @10 lbs/a
Corn x Balansa Clover (v. FlXatioN)	Drill-seeded at V6 @10 lbs/a



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Table 2. Grain yield and cover crop biomass in 2015 and 2016 from an interseeded cover cropping trial in Wooster, Ohio.

Cover Crop Treatment	Corn Grain Yield 2015	Cover Crop Biomass Nov. 2015	Cover Crop Biomass Apr. 2016	Corn Grain Yield 2016
	bu /a	lbs / a	lbs / a	bu /a
Corn-Only Control	133 a	0 a	0 a	149 a
Radish	143 a	651 b	0 a	157 ab
Annual Ryegrass	141 a	535 b	962 b	158 abc
Red Clover	133 a	642 b	1184 b	167 bc
Balansa Clover (v. FlXatioN)	145 a	580 b	1435 b	169 bc

*Parameter values followed by the same letter are not significantly different at P = 0.05.



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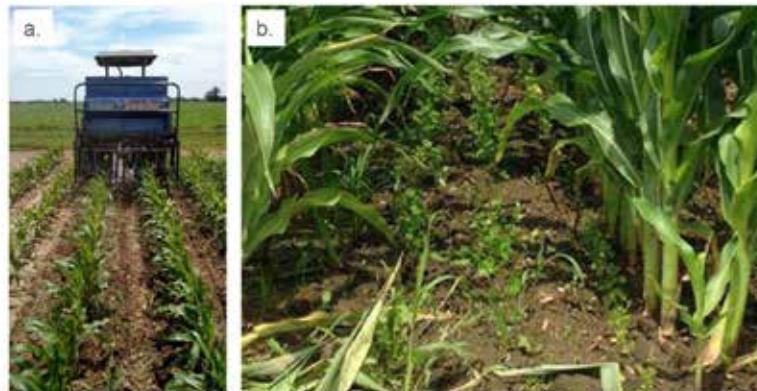
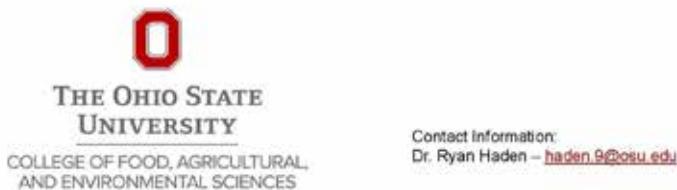


Figure 1. Interseeding cover crops at V6 stage in corn with a high clearance drill (a). Emergence of balansa clover in 3 rows 20 days after interseeding (b).



I feel that inter-seeding will work, but you need to pay attention to the long-range forecast. Since the Ohio State data doesn't show a lot of biomass, I doubt that the increase in yield in 2015, the establishment year, had much to do with biological Nitrogen fixed by the clovers. I believe what we are seeing in this trial must do more with the soil conditioning properties of the cover crops and the biological responses in the soil. The 2016 data would be in response to the nitrogen produced by the clover in addition to the biological soil improvement. There is a lot left to learn when it comes to inter-seeding and we will be sharing more data as it comes along.