Interseeding Cover Crops into Soybean
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Table 1. Mean fall cover crop biomass yield in Fargo and Prosper.

Cover Crop	Fargo 2016		Prosper 2016		Fargo 2017		Prosper 2017	
	R4	R6	R4	R6	R4	R6	R4	R6
	lb/acre							
Camelina	-	-	-	-	-	1163 cd	1038 cd	-
Winter pea	1820 bc	1423 bc	1893 b	1410 bc	-	1352 bc	891 cd	1247 bc
Radish	517 d	1201 c	909 cd	2711 a	-	728 cd	1138 cd	642 cd
Winter rye	1361 bc	508 d	866 cd	904 cd	-	967 cd	1435 bc	392 d
Mix	1374 bc	853 cd	1388 bc	1359 bc	-	929 cd	1809 bc	840 cd
LSD (0.5)	0.74							

Table 2. Soybean and spring wheat yield from Fargo and Prosper.

Cover crop	Soybean yield†	Spring wheat yield††
	bu/acre	
Camelina	43.6	31.8 b
Winter pea	44.7	40.2 a
Radish	44.9	41.8 a
Winter rye	44.9	32.2 b
Mix	43.9	40.0 a
Check	43.2	39.9 a
LSD	NS	5.0

† Soybean yield form 2016 and 2017 combined.
†† Wheat yield from 2017 and 2018 combined.

Key Points

In Table 1 radish can produce a large amount of biomass if conditions are suitable whereas, winter pea shows to do fairly well across all locations and seeding dates. Camelina is very dependent on rain.

In Table 2 soybean yield was unaffected by cover crops interseeded at the R4 and R6, unlike spring wheat yield, which shows a yield decrease where winter rye and camelina were the previous year. The decrease in yield could be explained by water use in the spring time when rye and camelina resume growth.

Cover crops were able to significantly reduce residual soil nitrate levels compared with the check. Cover crop had an average of 24 lb NO_3-N/ac, and the check had an average of 42 lb NO_3-N/acre. In the following spring, what was taken by cover crops was not given back to the soil for the spring wheat.

Table 3. Fall and spring soil cover and spring cover crop biomass of interseeded cover crops into standing soybean of different maturity groups at Casselton and NW22, ND

Cover crop	Canopeo		Biomass
	Fall 2016-2017	Spring 2017-2018	Spring 2017-2018
	----------%----------		----lb/acre----
Camelina100	7.0 c	4.0 b	261 b
Camelina75	6.4 c	3.7 b	255 b
Rye100	16.2 a	16.1 a	456 a
Rye75	12.7 b	15.5 a	439 a
Check	0.0 d	0.0 c	0 c
LSD	2.1	2.1	24
Soybean Variety			
AG04	14.4	11.2	304
AG05	12.4	10.1	273
AG08	10.9	10.3	290
AG09	8.9	8.8	263

Table 4. Soybean and spring wheat yield after interseeded cover crops into standing soybean of different maturity groups at Casselton and NW 22, ND.

Cover crop	Soybean yield	Spring wheat
	Fall 2016-2017	Spring 2017-2018
	----------bu/acre----------	
Camelina100	39.9 b	49.5 a
Camelina75	39.4 b	49.9 a
Rye100	39.9 b	43.1 b
Rye75	39.9 b	44.4 b
Check	40.9 a	49.7 a
LSD	0.5	1.8
Soybean Variety		
AG04	37.3 d	48.4 a
AG05	39.0 c	47.0 a
AG08	41.1 b	47.3 a
AG09	42.6 a	46.6 b
LSD	0.7	1.7

Key points

Table 3. Rye produced the highest amount of cover and biomass at the higher seeding rate Rye100 or 60 lb/ac. A longer maturing variety of soybean will likely lead to a decrease in cover crop biomass yield due to light and water competition. However, the % in cover only improves about 5 percentage points in best case scenarios.

Table 4. Soybean yield was decreased by all the cover crop rates compared with the check, but if looked at the maturity yields the early maturing variety yielded the lowest. Spring wheat yield was lowest when planted after rye.

Planting an early maturing variety may get a yield increase for cover crop biomass but does not compensate for losing close to 5 bu/acre when planting the later maturing soybean. Don't plant an early maturing variety Even if your goals is cover crop growth the soil coverage did not increase enough to justify losing 5 bu/acre.