

# Winter Lentil Seeding Rate Trial

## Project Goals:

- Assess feasibility and profitability of winter pulse production in NY State
- Identify best agronomic practices

	Research Station	On-Farm
<b>Site</b>	Freeville, NY	Penn Yan, NY
<b>Plot Size</b>	4.5' x 15'	30' x 300' (~0.20 ac)
<b>Replicates</b>	4	1
<b>Seeding Rates</b>	25, 32.5, 40, 47.5, and 55 lbs/ac	
<b>Biculture Crop</b>	None (Year 1), Winter Oat 70 lb/ac (Year 2)	

## Key Results:

- **Use of a winter oat nurse crop allowed successful establishment of winter lentil** in Year 2, while monoculture planting in Year 1 suffered from severe weed competition.
- **Year 2 establishment was strong, with significant differences in spring stand** observed between the highest and lowest seeding rates ( $p < 0.001$ ). However, differences in lentil plant density among seeding rate treatments did not result in significant differences in weed biomass, lentil yield, or oat yield (NS).
- **This experiment did not reveal a definitive ideal seeding rate** for winter lentils, but results suggest that **modest-to-no yield is gained from plant populations greater than ~486,000 plants per acre**, or 30 plants per quarter-meter-squared.
- **This approximate stand count was achieved with 40 lbs/ac lentil seed** in both replicated and unreplicated trials. Additional plant density in the replicated trials did not produce substantially greater yield.



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**Cornell University:** Kristen Loria ([kal52@cornell.edu](mailto:kal52@cornell.edu)), Solveig Hanson ([sh2458@cornell.edu](mailto:sh2458@cornell.edu)), Virginia Moore ([vm377@cornell.edu](mailto:vm377@cornell.edu))  
**Farmer collaborator:** Peter Martens



# Winter Lentil Trait Means by Seeding Rate

## Replicated Trial: Year 2

	Spring Stand (0.25 m <sup>2</sup> ) ***	Weed Biomass Yield (lbs/ac) NS	Lentil Grain Yield (lbs/ac) NS	Oat Grain Yield (lbs/ac) NS
55 lbs/a	63	708	841	2404
40 lbs/a	31	774	815	2052
32.5 lbs/a	26	725	799	2012
47.5 lbs/a	44.2	724	774	1970
25 lbs/a	17.8	720	528	2022

\*\*\*, \*\*, and \* indicate mixed-model ANOVA tests significant at  $p < 0.001$ ,  $p < 0.01$ , and  $p < 0.05$ , respectively. NS indicates no significant difference among varieties. Table sorted by lentil grain yield. Grain yield represents hand harvest of quadrat samples. Pea and oat yield presented at 14% and 13.5% moisture, respectively.

## On-Farm Trial: Year 2

	Fall Stand (0.25 m <sup>2</sup> )	Spring Stand (0.25 m <sup>2</sup> )	Lentil Grain Yield (lbs/ac)
55 lbs/ac	35.7	31	1006
40 lbs/ac	28.0	28	866
32.5 lbs/ac	18.7	14	677
47.5 lbs/ac	27.3	27	629
25 lbs/ac	11.3	10	576

On-farm stand counts calculated as the mean of three subsamples per plot. Table sorted by lentil grain yield. Grain yield represents whole-plot mechanical harvest.



*Left:* Lentil biculture with winter oat at Peter & Hanna Martens Farm

*Right:* Lentil plant ready for harvest. Note brown pods and yellow-green leaves. Pods will shatter if left on plant until leaves are dry.

