

Brassica Mix Forages

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Strengths of brassica forages

Fast growth rate

High energy

Good protein content

High digestibility

Reduced methane production
during digestion

More palatable as
field snacks for farmers



Drawbacks

Low in fiber can cause health issues unless mixed with other forages

Some concern about effects on milk and meat flavor

Often only suitable for grazing



Questions about brassica forages

Because of low fiber content, it could be useful to grow brassicas in a mix with other fall annual forages like oats and peas.

How does the seeding rate of brassicas, oats, and peas affect yield and forage quality?

Fast brassica growth in the fall and cold weather means that good timing of brassica harvests is needed to maximize yield before winter forage quality declines.

When should brassicas be grazed to get the most out of them?

Recent experiments

6 brassica varieties were planted in mixes with oats and peas

Only brassicas

1/4 oats and peas + 3/4 brassicas

1/2 oats and peas + 1/2 brassicas

3/4 oats and peas + 1/4 brassicas

Only oats and peas

For each mix, the biomass of each forage, total yield, and overall forage quality were measured

Forage quality of the six brassica varieties, as well as oats and peas, was measured in mid-October (before frosts) and in early November (after frosts)



Which forage brassicas?

Appin turnip

Barkant turnip

Barsica colza

Groundhog radish

Pacific Gold mustard

T-Raptor hybrid

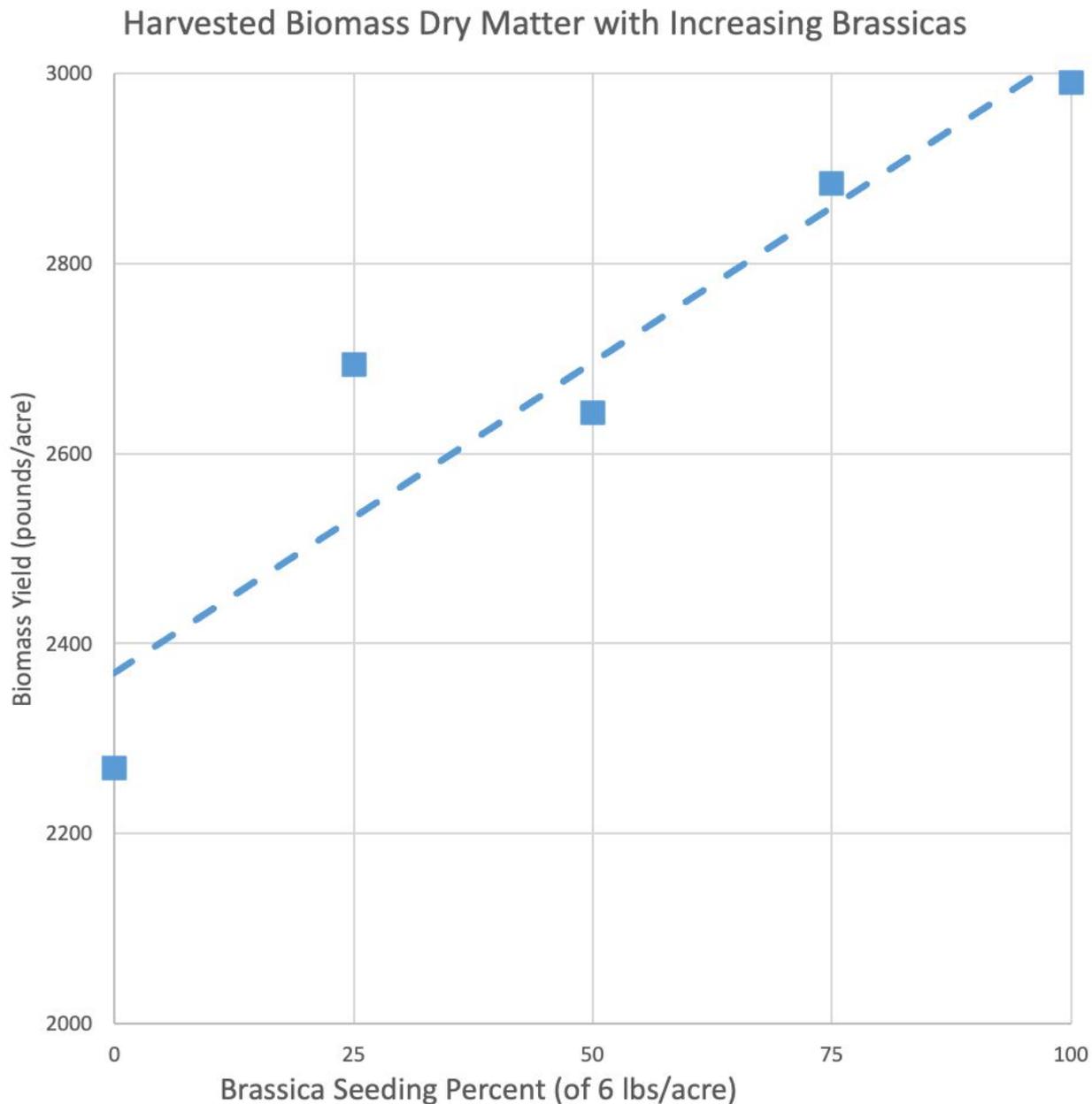
Everleaf oats

4010 peas



Total Yield

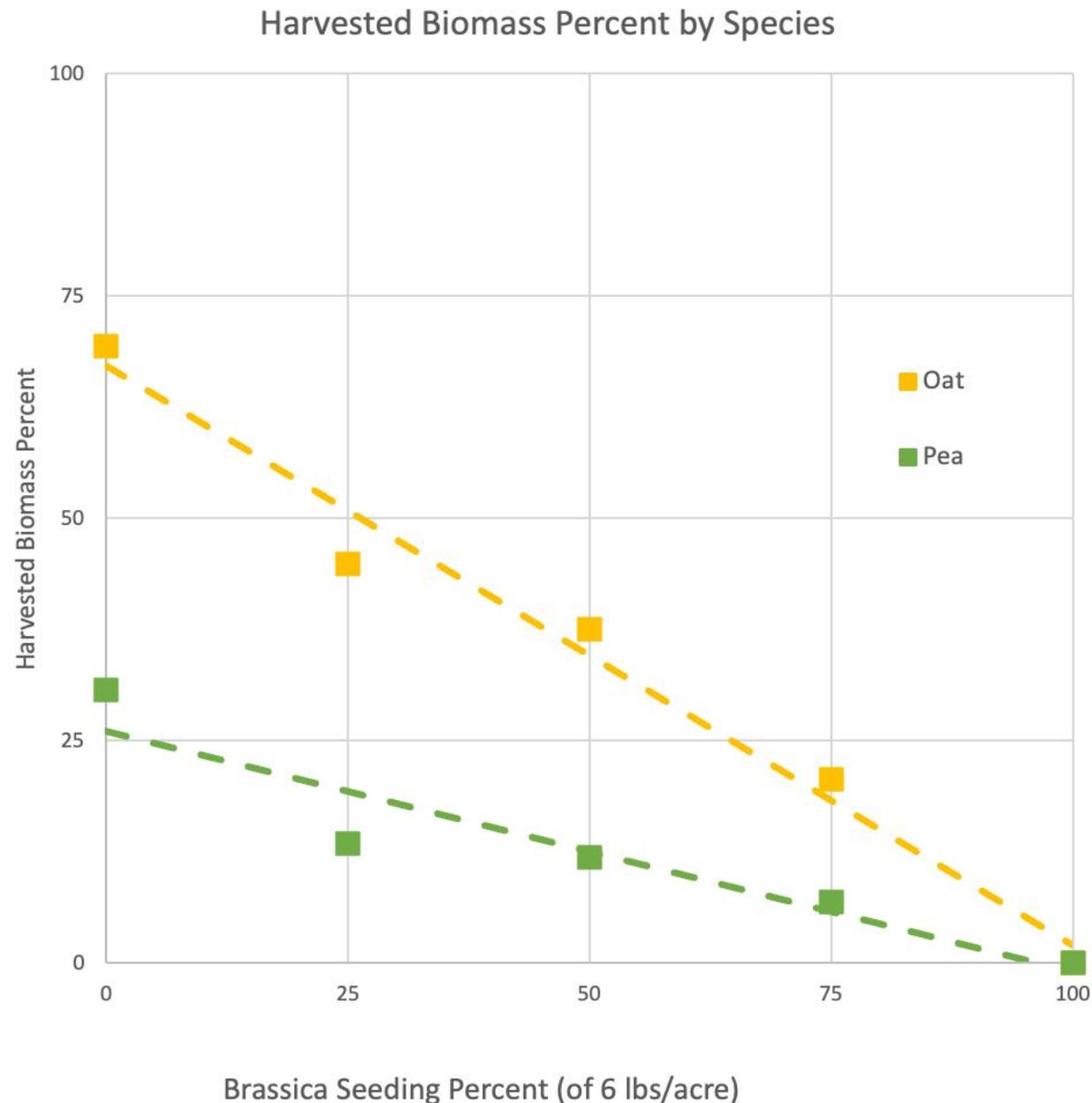
Increasing the amount of brassicas in the seeding mix increases yield after two months



Oats and peas are correspondingly reduced from 150 to 0 lbs/A as brassica seeding rate increases.

Yield by Species

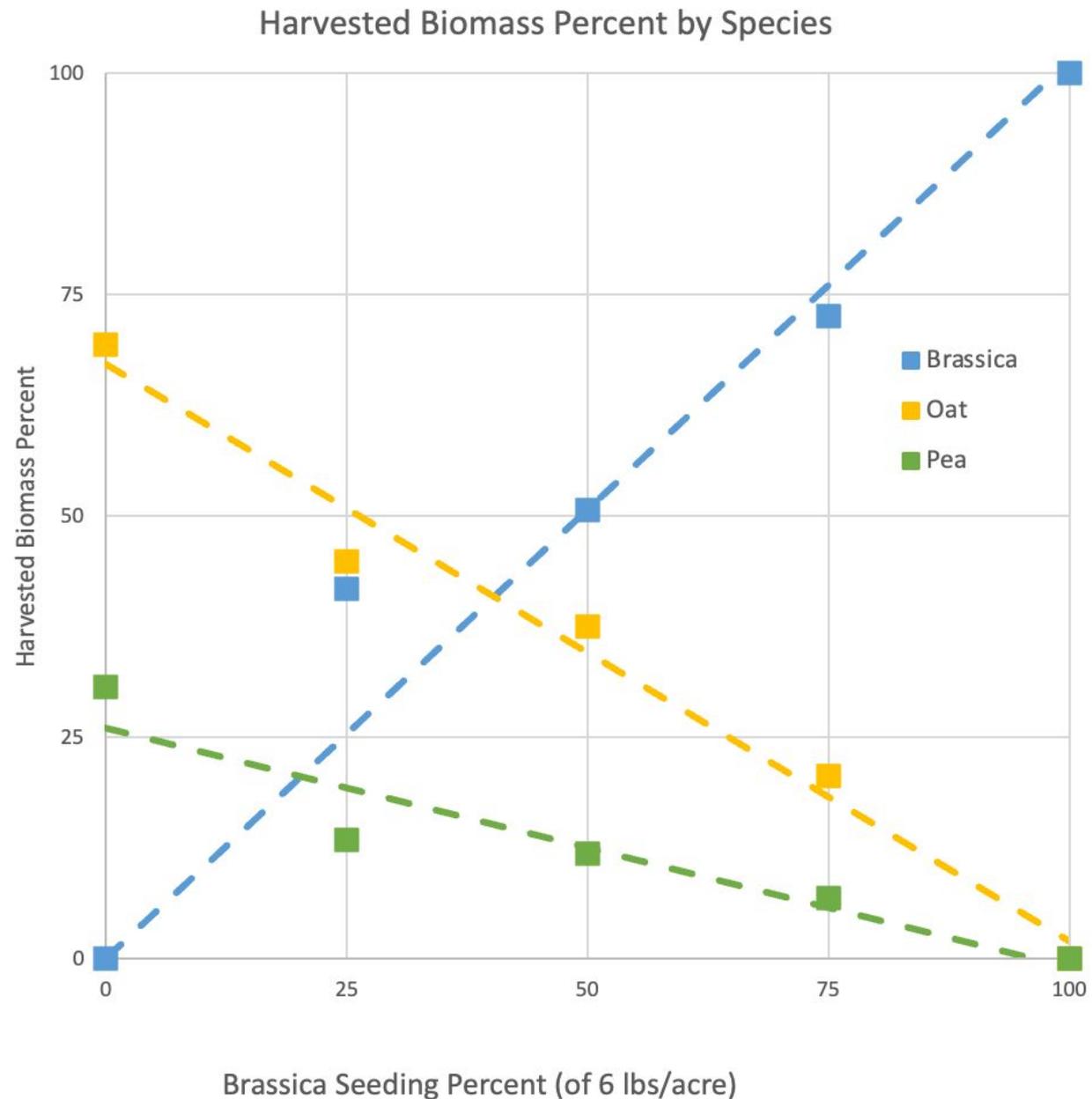
The differences in biomass yield at different seeding rates is roughly proportional to the differences in seeding rates



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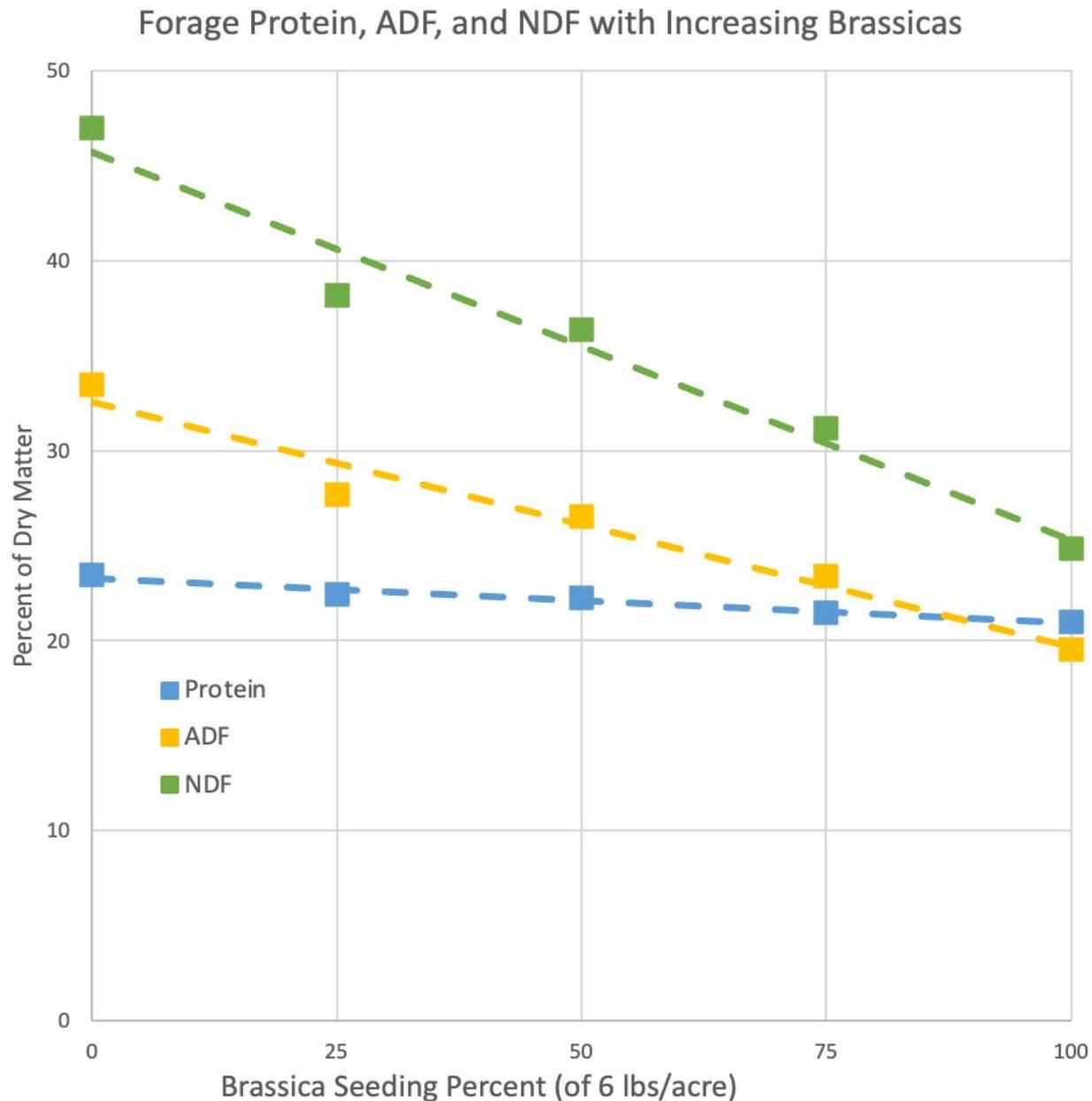


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Fiber and Protein

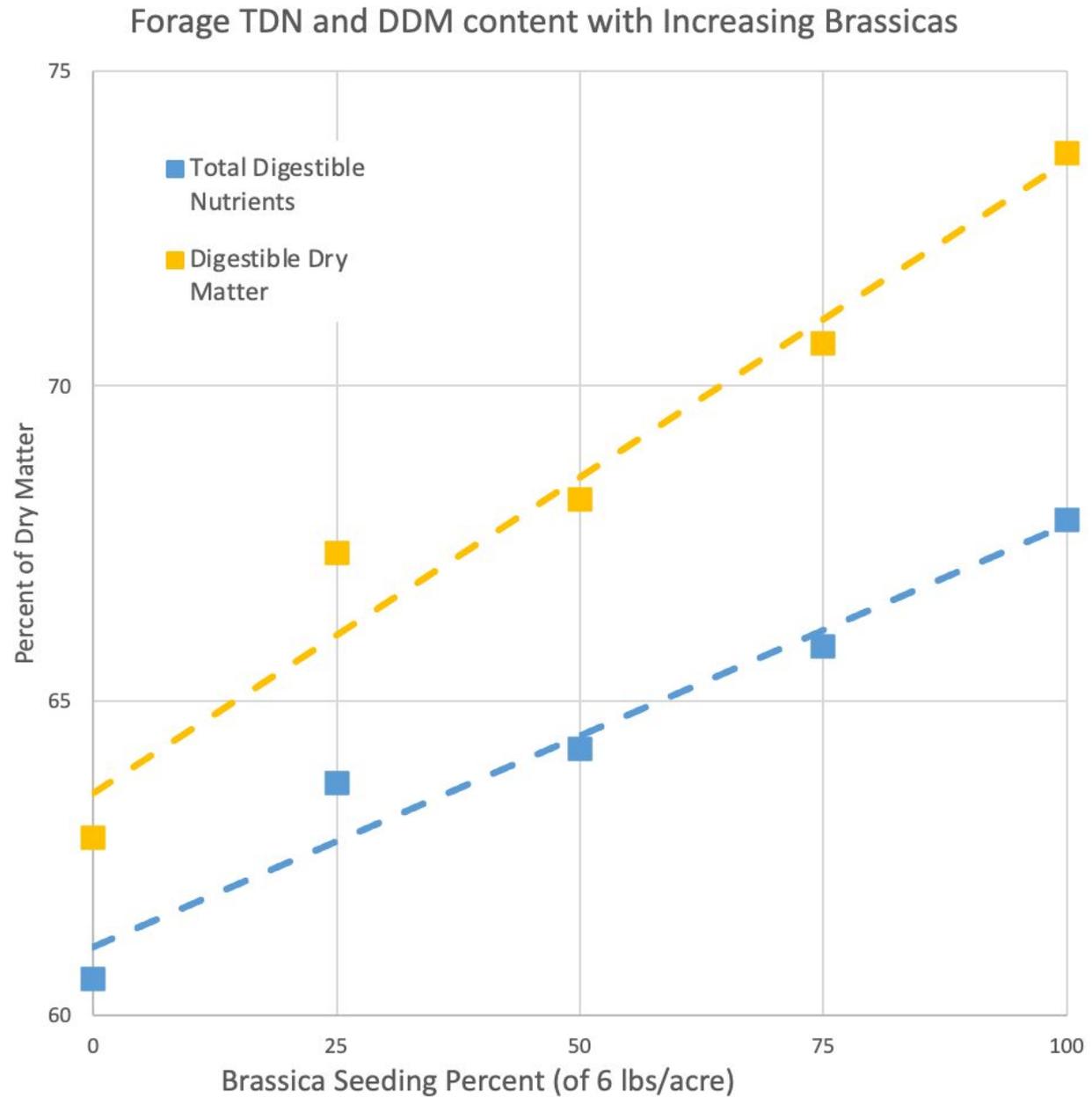
As the amount of brassicas increases the fiber content drops while the protein remains fairly constant



Oats and peas are correspondingly reduced from 150 to 0 lbs/A as brassica seeding rate increases.

Digestibility

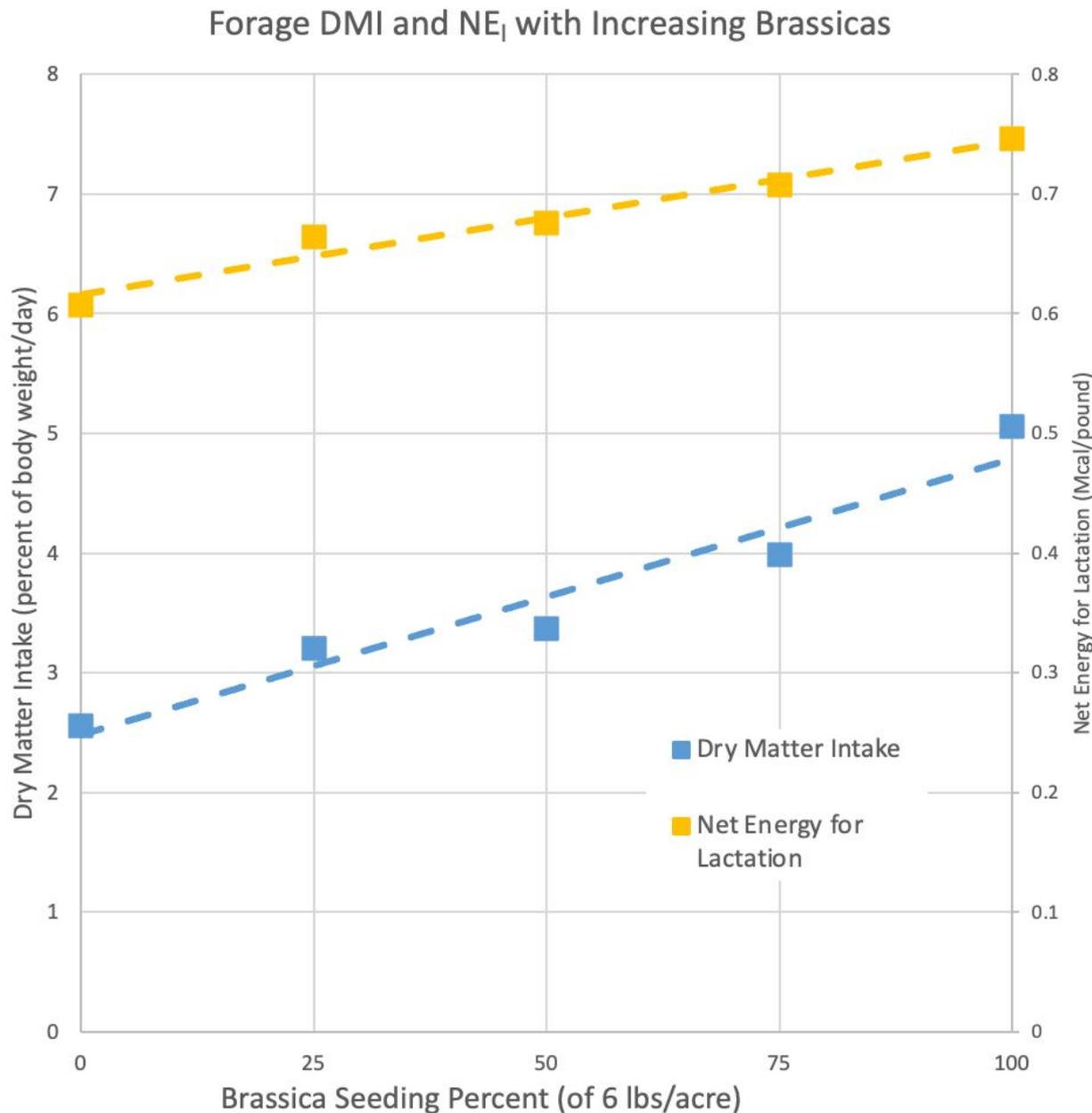
Digestibility of the mixed forage increases as the proportion of brassicas gets higher



Oats and peas are correspondingly reduced from 150 to 0 lbs/A as brassica seeding rate increases.

Intake and Energy

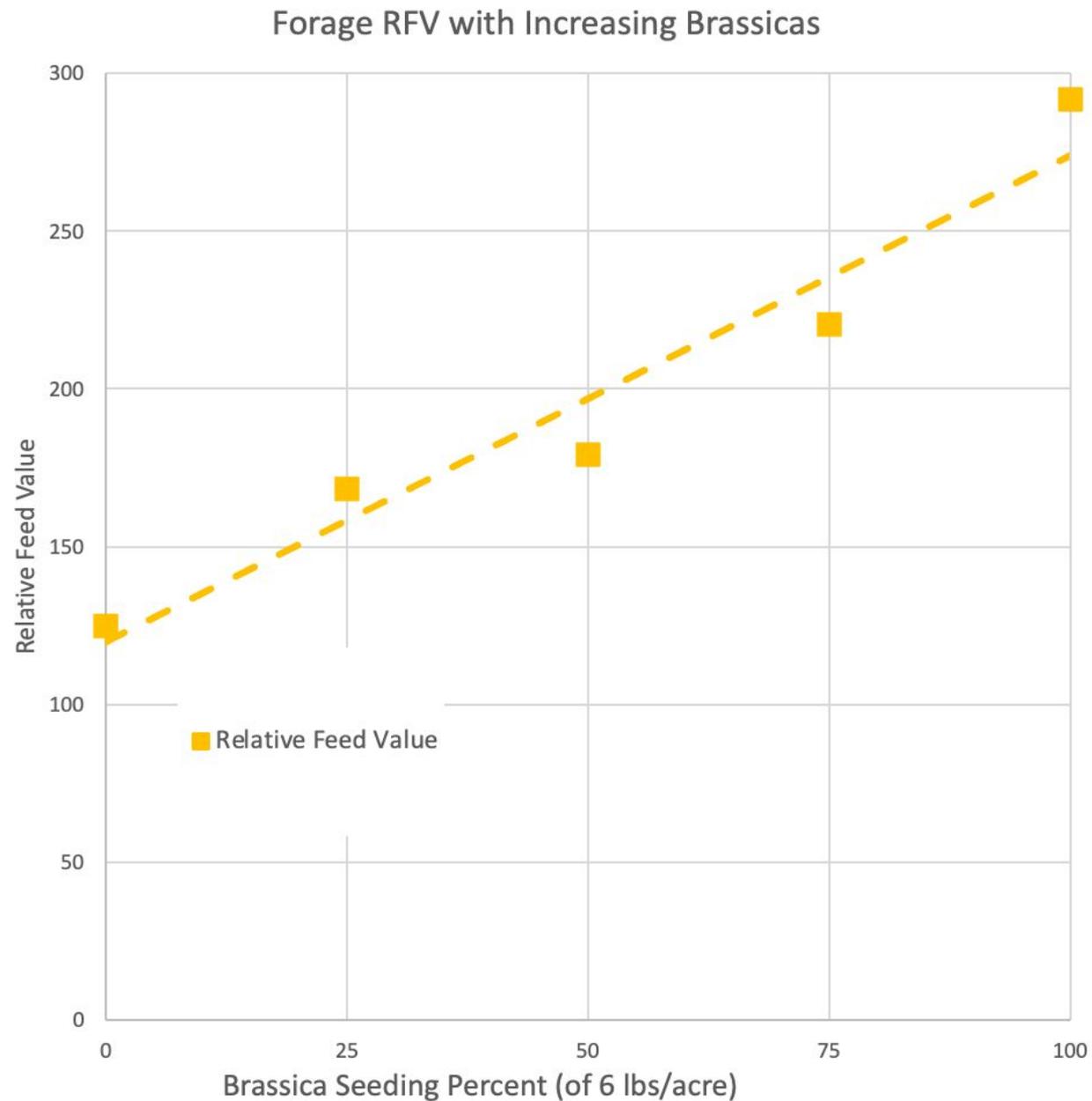
Dry matter intake and the energy available from the forage is also higher when brassicas are included



Oats and peas are proportionally reduced from 150 to 0 lbs/A as brassica seeding rate increases.

Relative Feed Value

While oats and peas are great forage on their own, the overall forage quality is much higher when brassicas are included in fall mixes



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Questions about brassica forages

How does the seeding rate of brassicas, oats, and peas affect yield and forage quality?

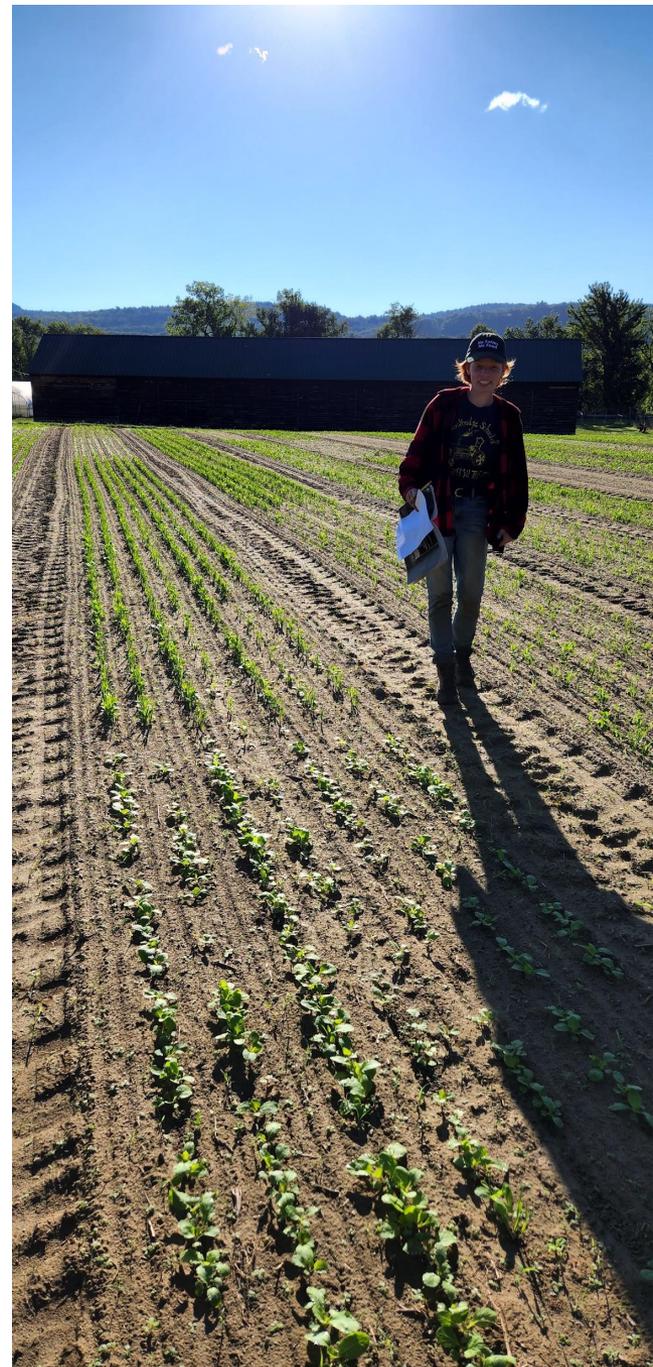
Fall mixes which are mainly brassicas are a great source of very high quality forage for grazing animals which outperforms oat and pea mixes.

When should brassicas be grazed to get the most out of them?

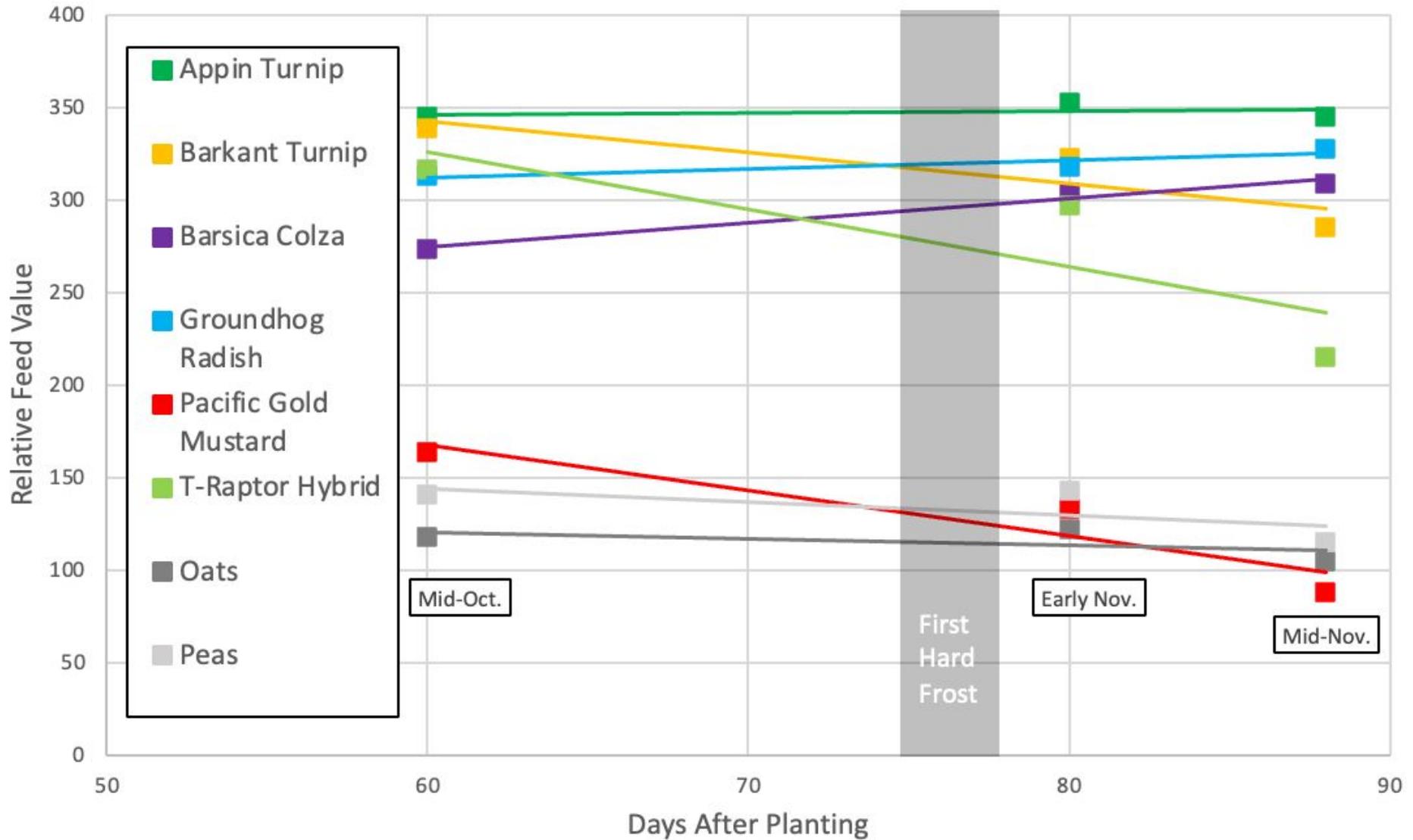


Brassica Management

- Brassicas are planted in August in Massachusetts and harvested after two to three months
- 6 lbs/acre alone or less in a mix
- Small seeds mean it's important not to put them too deep
- If small seeds are impractical, larger seeded radishes are a great option
- Harvest between 60 and 90 days after planting
- Choose appropriate varieties

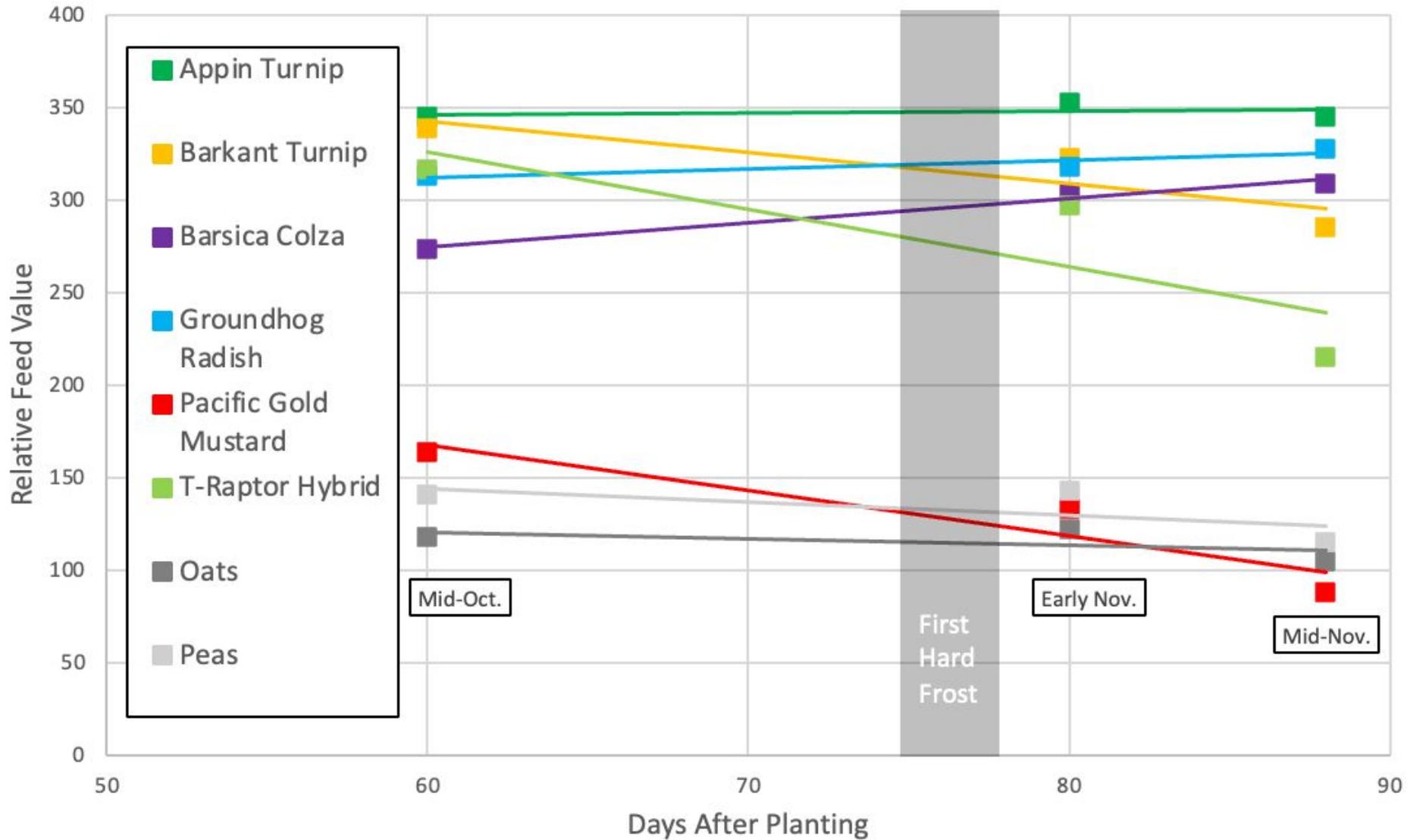


Relative Feed Value Over Fall Harvest Window

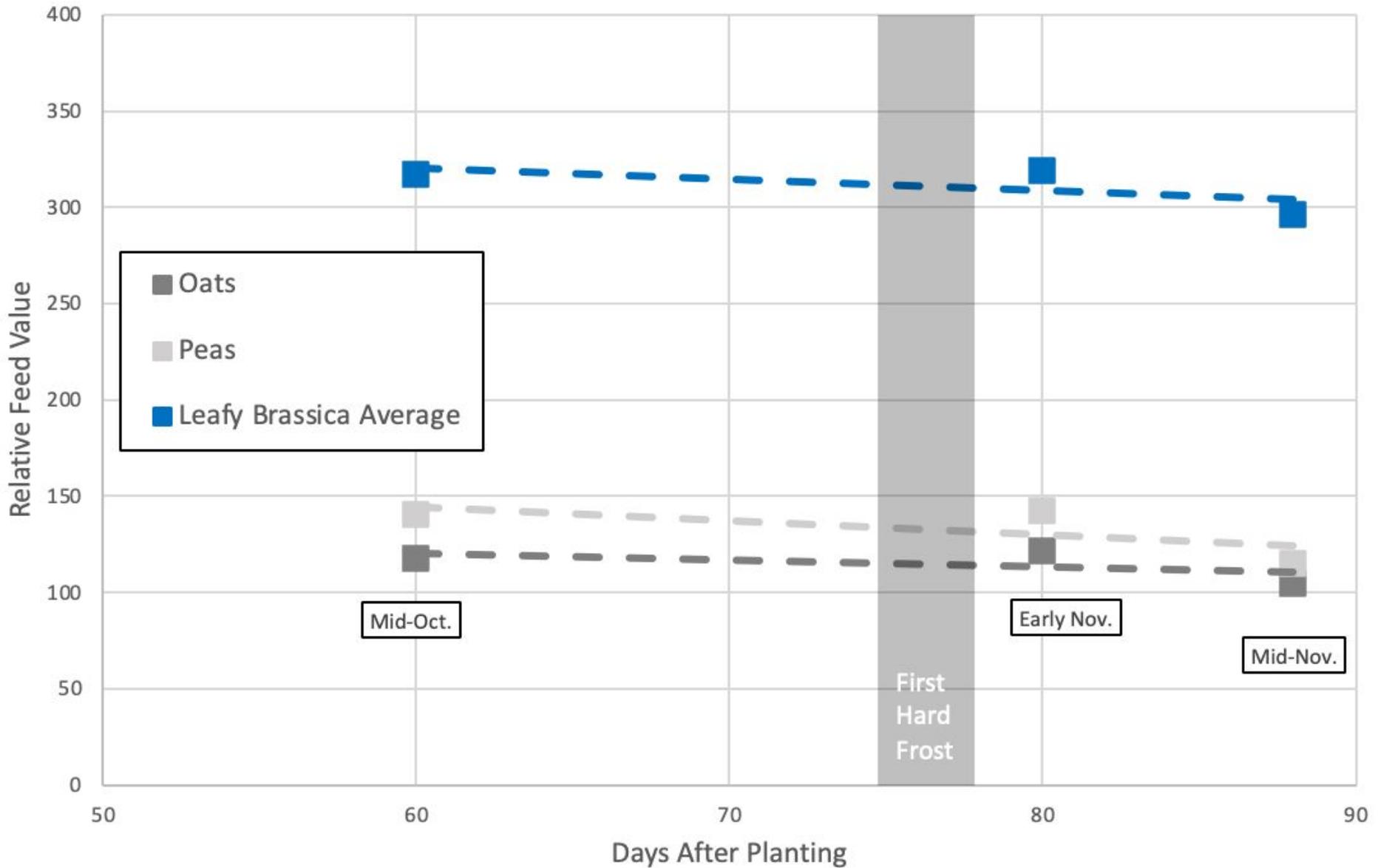




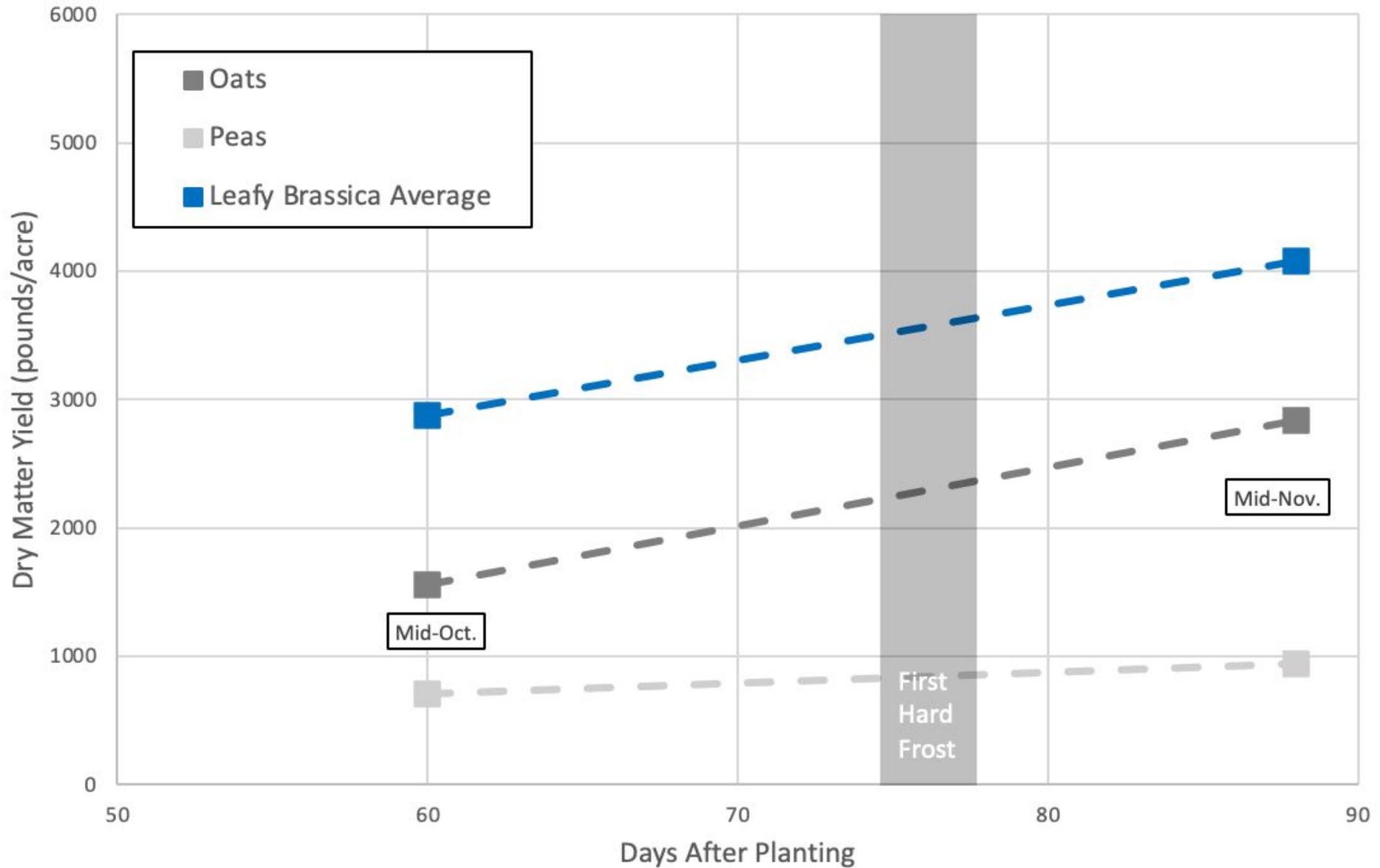
Relative Feed Value Over Fall Harvest Window



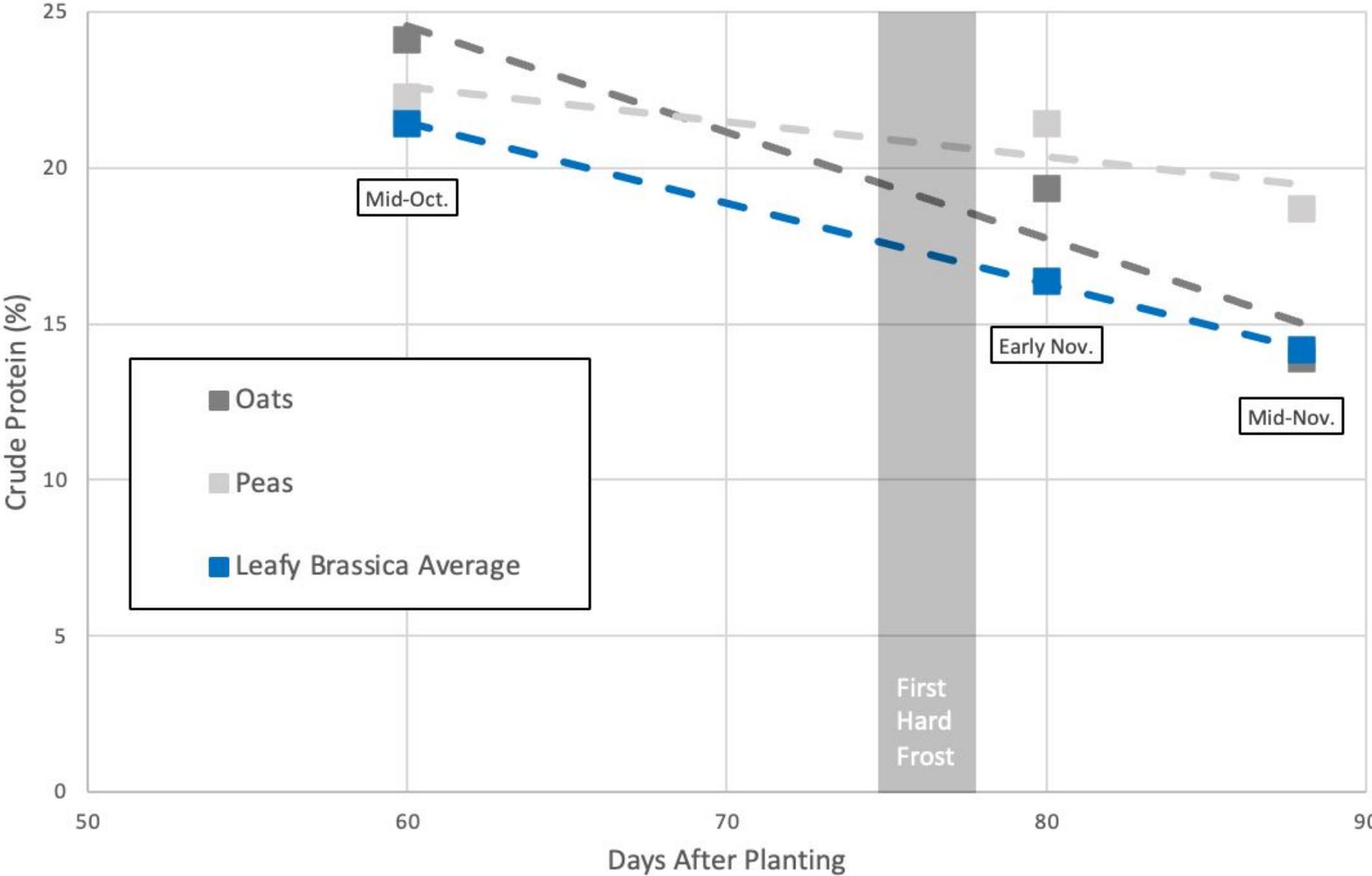
Relative Feed Value Over Fall Harvest Window



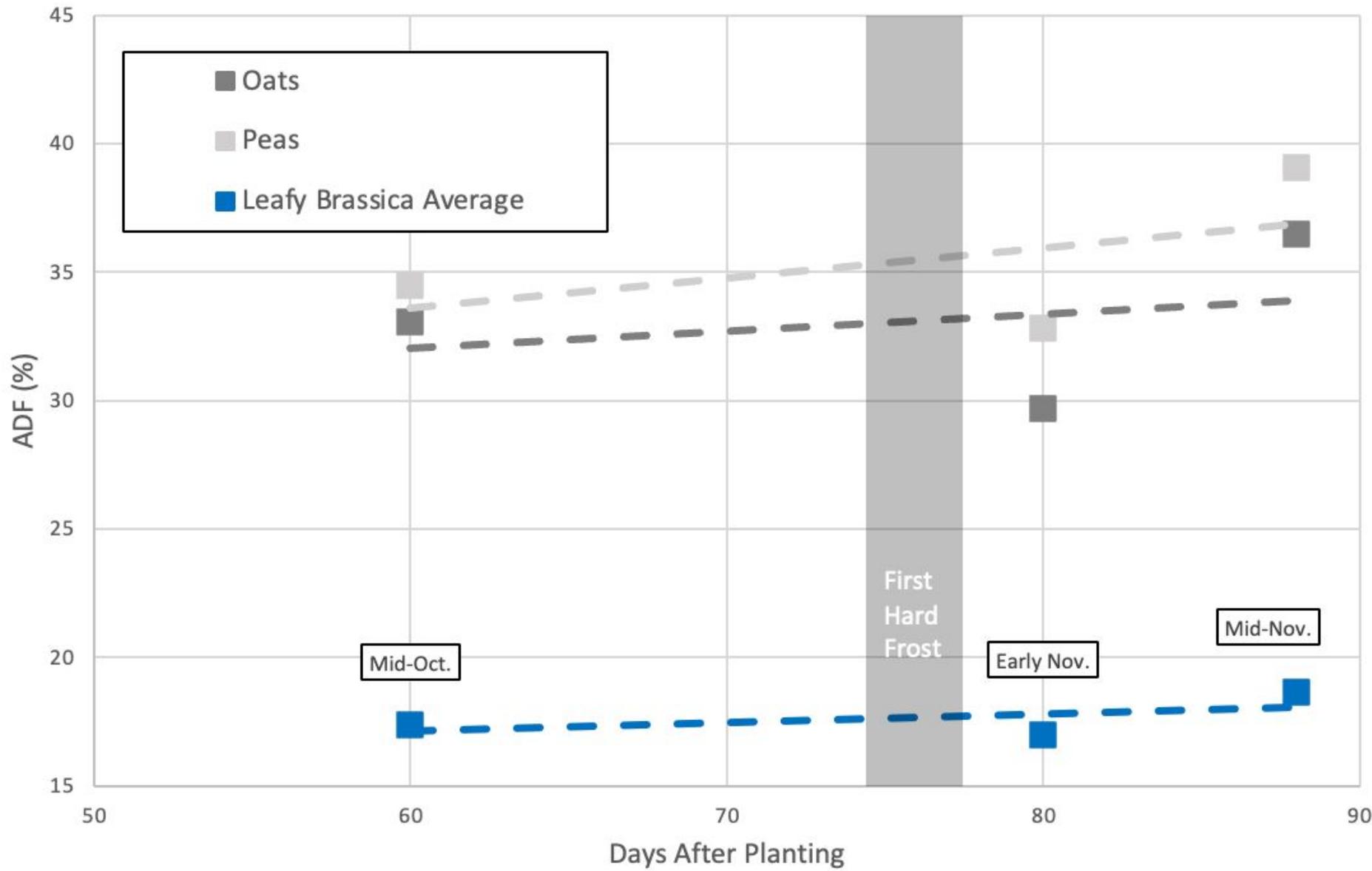
Yield of Brassicas, Oats, and Peas Over Fall Harvest Window



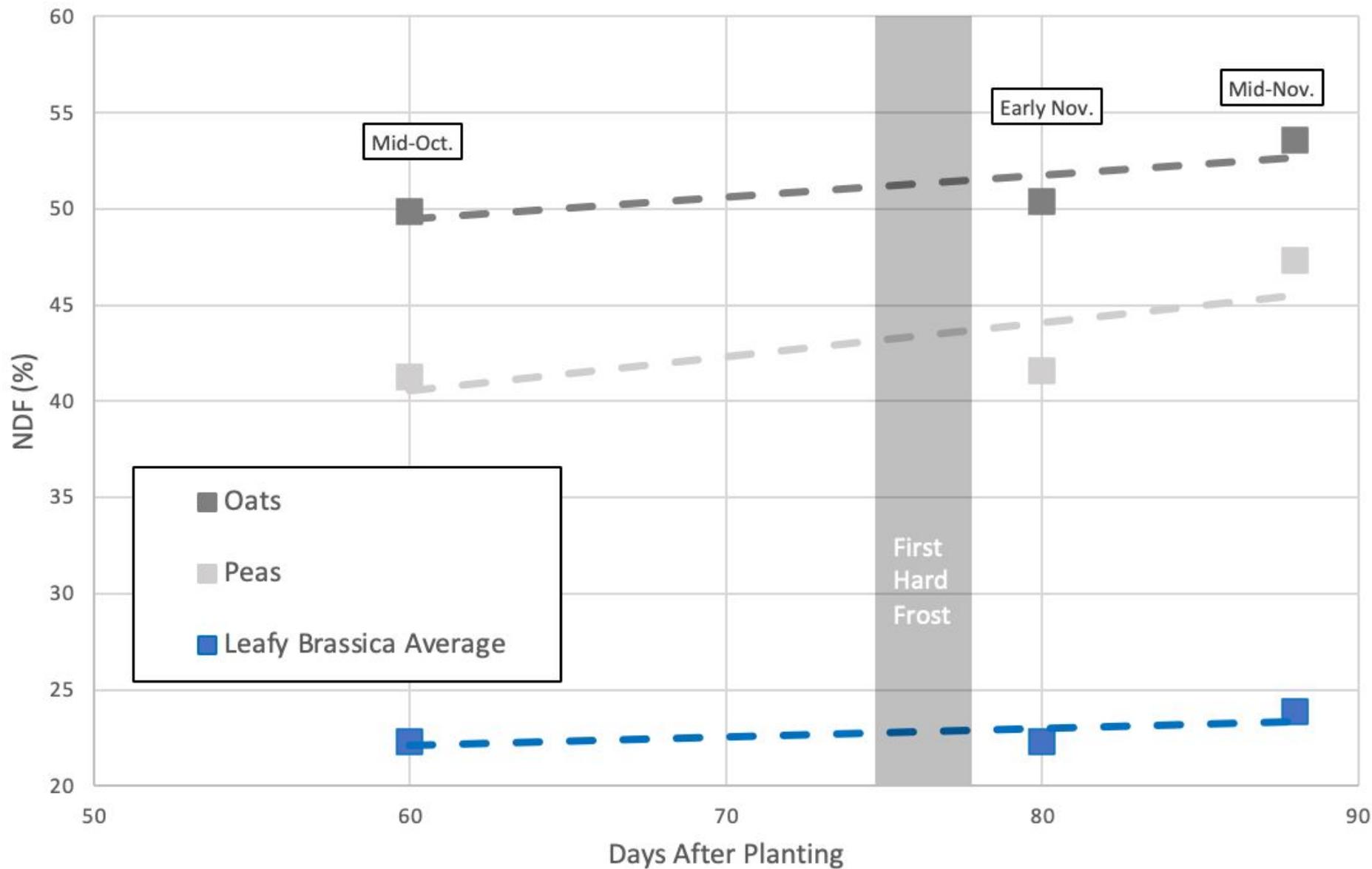
Crude Protein Over Fall Harvest Window



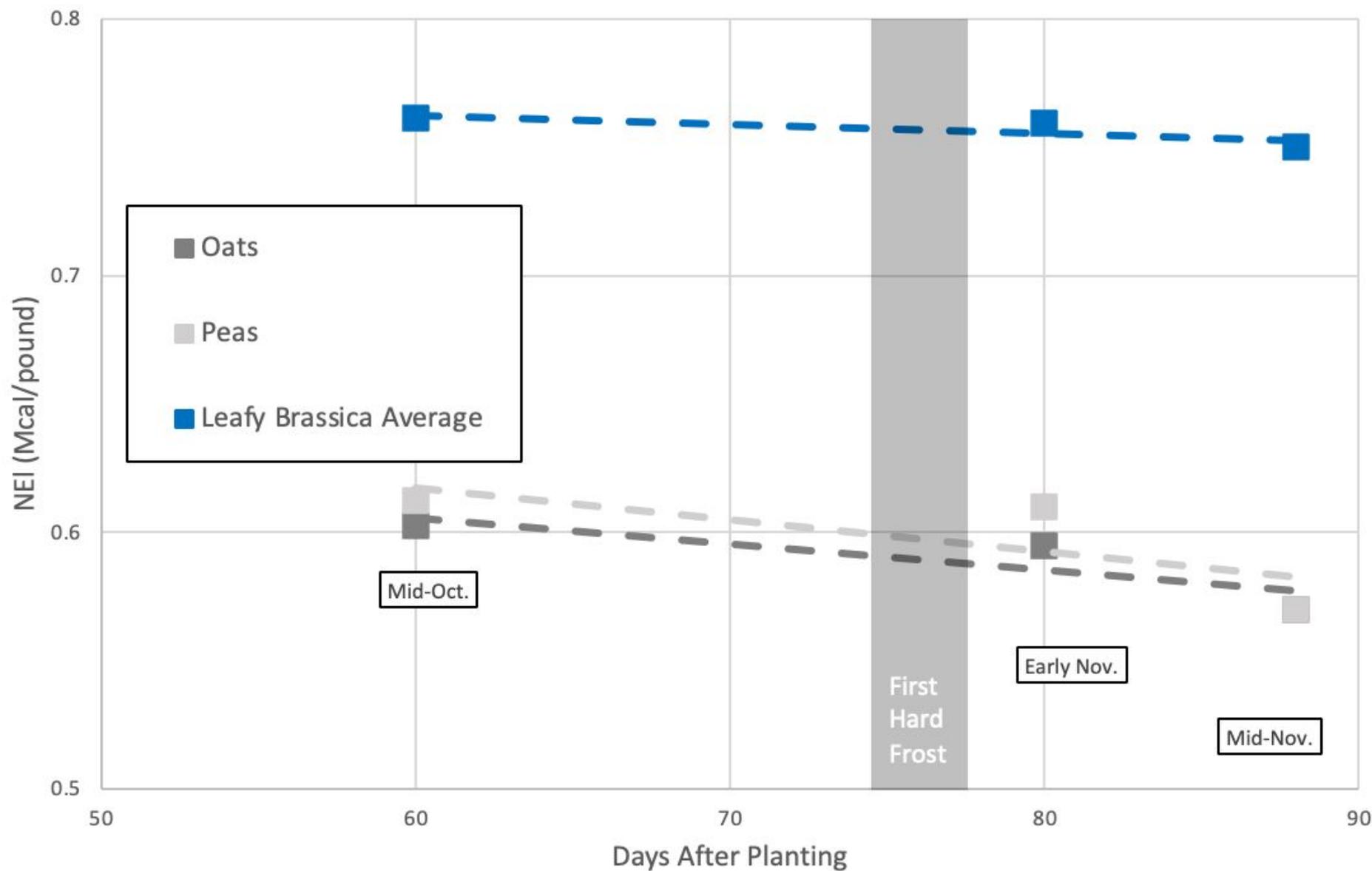
ADF Over Fall Harvest Window



NDF Over Fall Harvest Window



Net Energy for Lactation Over Fall Harvest Window



Harvest Timing

Brassica crops can grow substantially through the fall.

Forage quality remains high through the onset of cold weather

However, protein content declines over the fall

Oats and peas also hold their quality and the three crops can be grown together into November in Massachusetts



Variety Selection

Differences between leafy brassica crops which we grew were minimal

Radishes, turnips, colza, and forage hybrids all had similar low fiber content and high energy, digestibility, and relative feed value

Flowering mustard was more like oats or peas than leafy brassicas



Characteristics of Fall Brassica Forages

Brassicas can provide flexible high-quality forage for grazing livestock

Including oats and peas in brassica forages can provide needed fiber when seeded together

Leafy brassicas hold their forage quality well into fall

3000-4000 pounds/acre dry matter after 60-90 days

Double the dry matter intake and relative feed value of oats and peas

Cold tolerance means there is a wide harvest window for good quality forage



Thank you!

Masoud Hashemi

Jasper Cowley

Alexeya O'Brien

Jim Cronk

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