- Attendees: John Wallace (JW), Laurel Wellman (LW), Sjoerd Duiker (SD), Gwen Bagley (GB), Ginny Moore (GM), Victoria Ackroyd (VA), Stephen Mirsky (SM), Mark VanGessel (MVG)

- Victoria: protocol posted on new website https://firstascentstaging.com/neccc/portal/
- JW: Issue: sourcing seed: working w/ seedway, Dave Votypka (neccc board member), seed donated, VNS that seedway sells. Seed shipped to Masoud, Heather, ready to ship to other locations. We can packet rye for you if using cone seeder. Let us know.
- Experimental design: plot size- we have enough seed for each location to do 10x30ft. split plot design.
- Planting dates relative to first frost date. 1st planting date will start sooner up north and be delayed as we move south. 1st planting date should be about 2 weeks prior to 1st frost date (optimum window), space the ~21 days apart

- GB: Stephen wanted 1st planting date to be oct 1st, but this method would push back to oct 7.

- SM: to better represent our area, we'd like to do 3 weeks prior to frost free date. This would be optimal for our area (assuming the first date is supposed to be representative of an optimal date in our area)

- MVG: people in southern area have more flexibility with optimal time. Even 21 days after 1st frost date is not late enough to get into suboptimal. Philosophy of planting with great biomass would be more important concept of good establishment for ideal, then the frost date as standard, and then sometime after where it will be pushing it to get good establishment/biomass in fall rather than just going on 21 days between dates/

- JW: yes, could put larger windows and leave middle date as target for historical average. In PA corn silage is coming off now, easy to get cover crop established. But still several weeks away from grain crops being taken off so we don't have a lot of good info for realistic windows after grain crops. Will be way into oct. before lots of these fields will be harvested. **Want to cover range of windows relative to crop rotations (rather than just optimal dates)**
- No perfect way to do this/synchronizing planting dates. **Best to put wider range for 1st and 3rd dates and allow people to adjust accordingly based on conditions they are in.**
- Seeding rate: originally had no control (just low rate) but if thinking about curve fitting/modeling we could force model to 0 and use additional treatment and use low rate for curve fitting process. But having a no cover check will be good for weed data ie weedy comparison. So right now we have a control rather than low rate. Currently down to 4 seeding rates. How does everyone feel about rate range?

- SM. Might be difficult to fit curve with only 4 rates.

- JW. Would rather have 5 points for curve fitting
- SM: esp because not too many reps.

- JW easy answer is to add another seeding rate treatment, would really just be harvesting weeds in weedy check and not rye, so not a lot extra work.

- MVG: adding extra rate not a big deal in terms of data collection. Fine with adding a low rate as additional treatment for **total of 6 treatments**

- SD: all on research stations? was approached asking for 30lbs/ac seeding rate in area with manure history. Can easily get 2x biomass with manure. Often we don't get same growth farmers achieve on station (due to fertility history)

- JW: also differ in soil type. SM led some work on biomass across nitrogen gradient. This will be complement to that. can add up to 70lbs of N before plateau?

- SM: Gradient of cereal rye performance. N used to create gradient. Investigating can you use early growth indicators to estimate later season biomass. 2) the more N you put out in fall, more loss potential. Always amazed by what 30/40lbs of n did and transformed biomass levels.

- JW: next point, on station: setting up experiment- preference for no-till experiment, but if common practice is minimum tillage in fall, that's ok. Was not planning on doing supplemental fertility. Hoping everyone can pull soil samples at each planting date, dry down, and send to psu for common soil fertility dataset.

- SD: why no fertility across the site? If field was in small grains this year, there will not be a lot of n to support anything. Would make sense to apply a little bit to get it started in fall.

- JW: we want to come in post grain crops as a realistic scenario to simulate what farmers are doing. We have to be prepared to address that when reporting on this experiment. Not in practice of adding fertility in pa.

- SM: In the last shared experiment, had varied N rates due to nature of sites, but if you really want to understand and compare across sites have to control for n. so either we apply N and account for manure sites and go in at a high fertility rate. Or make it a treatment. **This seems more about can you compensate with seeding rates and more about cold dynamic than N.**

- JW: in dairy systems in pa, there are fewer soybeans and higher corn silage w/ higher fertility. Confident that 30-45lbs rye is sufficient in those scenarios. But in grain crop

systems, there may be high fertility, but that was not a factor I was thinking of trying to manipulate.

- SD: reviewing stats on cover crops in pa. A lot of our cover crops have some history of manure, commodity cover crops or otherwise.

- MVG. In conservation district programs in our area, not allowed to use N on cover crop and still get the payments for it except under unique circumstances. We are not fertilizing or grazing cover crops. Most of ours do not get supplemental fertility. We are following corn so will be some residual n. But not actively fertilizing.

- VA: how familiar with Bradford county, PA? NRCS guy-struggles to get good cover crop in wet soils esp. with no nutrient, urea doesn't really work, manure better. NRCS leery of telling people to apply nutrient with cover crops. Sounds like folks in pa are still struggling even with things like rye (w/o added fertility)

- JW: Ginny-what is biggest knowledge gap/what conditions are you simulating in ny?

- Ginny: Would like Matt's input, but enough dairy production here that we would be looking at high fertility situations.

- MVG: are we expecting a fertility by planting date interaction when it comes to the parameters were looking at? overthinking? **Base fertility is important, but what we are really looking at seeding date based on planting rate**.

- JW: We suspect that at different locations higher residual N fertility will result in greater ground cover and higher biomass threshold. Not interested in maximizing biomass potential w/ soil fertility, but rather the compensatory effects of seeding rates with later planting dates

- MVG: sounds like planting date is bigger issue

- SM. There is probably some potential interaction. We know tiller density is driven in fall by n levels. Tiller density is directly correlated to biomass production. Using biomass as metric, not necessarily targeting max biomass.

- JW: on-farm strip trial could have addressed this, but we didn't plan enough. Some on dairy and some on grain farms, ect. w/ diff. soils types. Great complement to this study. Be we didn't make that happen yet.

- SM: the power of this is the cone seeder so we can study these rates.

- JW: my feeling is that we need to measure what's going on with soil fertility, but not sure we want to manipulate that. We can sit on that, but I think that's how we should move forward here.

- data collection:

- At each planting date (ie 3 times): pre-plant burndown, pulling soil samples, seeding plots.
- 3 weeks after each date, some kind of snapshot of establishment. Lots of opinions here on how painful rye stand counts are. Idea is to do early stand count to capture establishment. Perform in small plot, permanently mark these plots. Return to those same quadrats at green up. Take the pictures of the quadrats and send just the photos, Laurel will process.

- LW: We will return to the permanently marked quadrats and do a 2-image method using the quadrat as standardization. Be sure to mark the plot # and photo # on the whiteboard placed outside the quadrat, but in the photo frame. Take 1 photo, weed in quadrat, take 2nd photo. Upload to shared folder, I will be cropping images to fit the quadrat and then running through canopeo.

- JW: Interested in groundcover for weed suppression benefit, this protocol really shows that
- Stand count and groundcover in same plots.
- Destructive biomass harvest in adjacent quadrats
- Now put this on everyone, but we will come back to the same plots where we weeded and did ground cover, and do weed density count 4 weeks after we terminate cover crop to answer: is groundcover useful for summer annual weed recruitment? If interested in taking data, we will be doing that at PSU.

- Gwen: do you intend for these plots to go into summer grain crop? Will there be burndown at planting?

- JW: treating this as non-crop trial, would be done in June and terminate experiment and could be planted into whatever. We are doing pretty small plots and use 5ft drill cone seeder. Easier to treat as non-crop trial.

- GB: sounds like whatever herbicide used for next crop would interfere with next crop/summer annual

- JW: Burndown at heading right after collect biomass data. This would eliminate winter annual and early summer annual, in our scenario we could be controlling winter annual. We will still get good measure of cc effect on summer annual weeds

- GB. Intend to go into grain crop, but time to think about end of season details.

- JW: these are our metrics, think it will be nice data set? Thoughts?

- GM: planting: how important is no-till? We have reserved chuck in non no-till field.

- JW: probably not big deal. Fall tillage is more common in ny so that's fine. Masoud might be going into minimum tillage situation too, Heather may as well. Won't impact what we're trying to measure too much.

- Ginny: assume we will still do weed management in strips prior to planting.

- JW: will have tillage done already, spacing planting dates out 5-6 weeks, might be clean for 1st planting date and might not need burndown for 1st date, but be prepared to do burndown for later dates. Important to start in clean field, recruitment timing is important.
- MVG: we will have vertical tillage pass. Standard opp at farm and commercially here. Minimum till. Winter annual weeds assessment/ground cover w/ and w/o weeds? Suggest strip plots w/ harmony extra instead of weeding each quadrat? Taking images side by side in strips rather than 2 photos in each quadrat. You may sacrifice something by pulling if a lot of weeds. Using selective herbicide may be easier.
- JW: chemical weeding rather than mechanical.
- End here Will work getting updates back on website, also email updates protocol. Be in touch individually about shipping seed.

Summary:
-consider wider window of planting dates centered around 1st frost date for middle planting date
-likely no fertility added
-burndown, soil sample, and seeding all on one date
-data collection: fall seedling counts w/permanently marked quadrat, return to same quadrat in spring for imaging. Some discussion on mechanical vs. chemical weeding. Destructive biomass harvest in nearby quadrat. Option return to permanent quadrat for June weeds assessment.
-no-till encouraged, but not necessary
-updates to protocols will go up on website (link above) and email
-contact PSU if interested in white board and premade cone seeder packets