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Plant Chat

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Varieties and Seeding Rates for Conservation Plantings

Plant species, varieties, and seeding rates are important components of a conservation planting. When it comes down to finding the right combinations for successful plantings, it is important to understand the background on how NRCS established the list of specific species, varieties and rates that are included in the Field office Technical Guide (FOTG) for each state. These topics continue to be the subjects of discussions that surface on a regular basis.

Selection of Approved Species and Varieties- Plant species and varieties that demonstrate consistent long term performance in various conservation practices within a particular state or region are considered. Based on proven history, they are adapted to the area, are most commonly available, and are usually cost-effective. Approved named releases have been further tested by their releasing agencies, including Bismarck PMC releases. One can be confident in selecting those that are listed in the FOTG.

'Tomahawk' Indiangrass (left) is adapted to climatic and site conditions. 'Rumsey' Indiangrass is not adapted to the site as it did not survive the winter.

Seeding Rates are often a subject of discussion with growers and agency personnel. There is ongoing dialogue on optimum seeding rates, yet, based on actual field evidence, little has changed with seeding rate recommendations. There is considerable time and effort expended on determining optimum seeding rates for herbaceous plantings. Rates listed in the FOTG are the result of considerable field evaluation and review by technical committees in each state. Based on these field reviews and grower input, these rates have been determined to be reliable and cost-effective for successful establishment.

Seeding rate affects the plants per square foot growing in the field.

Why are desired seeds per Sq. Ft so variable between species? Again, years of field reviews and research provide an indication on what a desired population should be. Seeding rates are adjusted to provide the optimum amount of seed needed to reach that goal. There are many variables that have to be considered such as weather, seeding dates, seeding equipment, soils, and weed history. Thus, rates are adjusted higher than what they would have to be if all conditions were perfect. Rates are often listed in PLS (pure live seeds) Lbs. /acre, but are based on PLS seeds/Ft^2. These rates are also based on the approximate (or known) number of seeds per Lb. of each variety or species in the mix. In the annual cropping world, some of the larger seeded species (corn, sunflower, soybean) are sold based on actual number of seeds in each bag. This is not the case for most perennial

grass, forb, and legume seed, so NRCS bases rates on what has been calculated as average number of seeds per Lb. for each particular variety or species. The following table illustrates the extreme variability for different species:

Species	Approximate Seeds per Lb.	Desired Seeds per Sq. Ft.	Seeding Rate in Lbs. per Acre
Corn	1,960	0.9	20.0
Soybean	2,800	2.9	45.0
Stiff sunflower	85,000	5.0	2.5
Intermediate wheatgrass	88,000	20.0	10.0
Western Yarrow	2,800,000	25.0	0.4
Wheat	12,000	25.0	90.0
Blue grama	750,000	40.0	2.5
Creeping foxtail	750,000	60.0	3.5

Listed rates are for drills with a row spacing of 12" or less. If seed is broadcast, seeding rates are usually increased to 150% of the full rate.

If planting seed for seed production, growers often utilize a row spacing greater than 12", and seeding rates are adjusted downward to maintain the same number of seeds/linear ft. in the row. Wide row spacing allows for cultivation between rows.

Seed size is used to determine seeding rate. Generally, smaller seeded species have lower seeding rates.

How are these rates calculated? The following formulas can be used to determine seeding rates in Lbs. per acre and seeds per Ft. of row:

Seeding rate in Lbs./acre	**Desired seeds per Sq. Ft. X 43560 / Seeds per Lb.**
	Example: 30 X 43560 / 175,000 = 7.46 Lbs./acre
Seeds per ft. of row	**Lbs./acre X Seeds per Lb. / 43560 X (Row Spacing in inches /12)**
	Example: 7.5 X 175000 /43560 X (6/12) = 15 seeds per foot of row

Once the seeding rate information (Lbs. /acre) is known, seed mixes can be calculated by multiplying that rate by the percentage of that species to be included in the mix, with the total of all species adding up to 100%.

Congratulations Rachel!

THE PLANT MATERIALS MERITORIOUS SERVICE AWARD

Plant Materials Program

is presented to

Rachel Bergsagel

February 2017

Rachel is recognized for over 37 years of service to NRCS and the Plant Materials Program. Rachel has excelled organizing study data, maintaining seed and plant inventory, preparing technical documents, and providing daily support for PMC operations. She has been involved in nearly every new product developed by the PMC for over three decades. Rachel's service and dedication has been instrumental to the success of the Bismarck Plant Materials Center and the Plant Materials Program.

John M. Englert
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