

NC Cooperative Extension - Hertford County Center

Wheat Planting Considerations

October 25, 2023



Keys to a Successful 2023 Wheat Crop

Below are the average fertilizer prices according different market sources. These prices are subject to change, but currently all fertilizer prices have decreased significantly from prices last year at this time.

	Average 10/3/22		Average 9/15/23	
	\$/ton	\$/ lb basis	\$/ton	\$/ lb basis
DAP	1048	1.14	710	0.77
MAP	910	0.75	742	0.61
Potash	885	0.74	500	0.42
Urea	835	0.91	554	0.6
UAN 32	695	1.13	389	0.63
AMS	610	1.45/N – 1.27/S	415	0.98/N-0.86/S

Crop Budget

Below is an estimated crop budget based on current fertilizer prices. The cost below reflects 140 units of nitrogen, 50 units of P, 75 units of K, and 24 units of sulfur. You may find that some of these figures may need to be adjusted or that there may be additional costs that are not reflected in this budget. Dr. Nick Piggott with the Ag and Resource Economics Department, has also developed a great resource that calculates potential returns based on crop prices after entering all inputs into a spreadsheet. To access this tool, click the link here: [New Crop Comparison Tool](#).

Also find an [NCSU Wheat, 2023 Interactive, High, Mod, & Low Yield Enterprise Budgets](#) to compare.

2023 Estimated Wheat Input Cost Per Acre			
	Amount/Product	lbs/nutrient per acre	Cost/acre
Seed	150 lbs/ac		\$50.00
DAP (18-46-0)	109 lbs/ac	50 lbs p2o5	\$38.50
Potash (0-0-60)	125 lbs/ac	75 lbs k2o	\$31.50
AMS (21-0-0-24)	100 lbs/ac	21 lbs N, 24 lbs S	\$20.00
UAN32%	28 gal/ac	100 lbs N	\$63.00
Herbicides			
Burndown	Glyphosate		\$10.00
Pre-Emerge	AnthemFlex		\$15.00
Topdress	Harmony		\$12.00
Fungicide			\$15.00
Insecticide			\$5.00
Land Rent			\$80.00
Tractor/Machinery			\$30.00
Hauling			\$20.00
Crop Insurance			\$10.00
Total Cost			\$400.00

Wheat Return Based on Price & Yield @ \$400/ac Cost		
Price	Yield (bu/ac)	Net Return\$/acre
5.00	60	-\$100
	70	-\$50
	80	\$0
	90	\$50
6.00	60	-\$40
	70	\$20
	80	\$80
	90	\$140
7.00	60	\$20
	70	\$90
	80	\$160
	90	\$230

Seed Treatments

- Insecticide/Fungicide seed treatments are an added cost but increased germination and protection from early season stress can help offset cost.
- Fungicide seed treatments can help when we have cool/wet early conditions.
- Insecticide seed treatments can help with early planted wheat against hessian fly and can protect against fall aphids that can lead to barley yellow dwarf showing up in mid to late spring.

Fall Fertility

- Best time to correct pH, P, and K indexes will be pre-plant.
- Pre-plant N in the 20-40 lb/acre range will be key along with supplying P and K to develop and feed early tillers.
- If following a high yielding corn crop, applying towards the 40 lb N/ac will be necessary due to excess residue that can tie up N.
- Also staying towards a 10:1 or 8:1 Nitrogen to Sulfur ratio season long will be important.

Weed Control

- Starting clean in the Fall is always important. If Italian ryegrass or annual bluegrass has been a problem in the past, there a couple different options.
- If utilizing no-till, Valor can be applied to provide residual broadleaf and grass control but must be applied at least 7 days ahead of planting.

- Anthem Flex is another herbicide that can be applied behind the planter if drilling your wheat that is great at suppressing grass and broadleaf weeds. 0.5 inch of rainfall is needed to activate the herbicide and it is not recommended to apply if 0.25 inches or more of rainfall is expected within 48 hours of planting. Wheat must be planted at least 1 inch deep but not over 1.5 inches.
- Lastly if you were unable to utilize a preemergent, again Anthem Flex or Zidua can be applied to suppress grass and broadleaf weeds that have not emerged when 80% or germinated wheat seeds have a shoot at least ½ inch long until wheat spiking.

Tillage

- Planting behind cotton or full season soybeans, tillage is likely not needed.
- Planting into < 100 bushel/acre corn crop, tillage is likely not needed and no seeding rate increase is needed if planting on time.
- Planting into > 150 bushel/acre corn crop, mowing stalks would likely be needed due to additional residue.
- Planting into > 200 bushel/acre corn crop, mowing stalks and tillage likely necessary due to additional residue. Also increasing seeding rate by around 10% and planting earlier could help with achieving an adequate seeding rate. Another thing to keep in mind with planting behind corn would be selecting a variety that has resistance to head scab.

Seeding Rate & Drill Calibration

- Below are charts from the [2021 North Carolina Small Grains Production Guide](#) to help with seeding rate decisions and drill calibration. It is important to look at your varieties seed per pound carefully. Varieties vary in seed size from year to year and it is easy to make a mistake and under-seed a field if not done properly. If planting on time, 1.3-1.8 million seed is the recommended seeding rate.

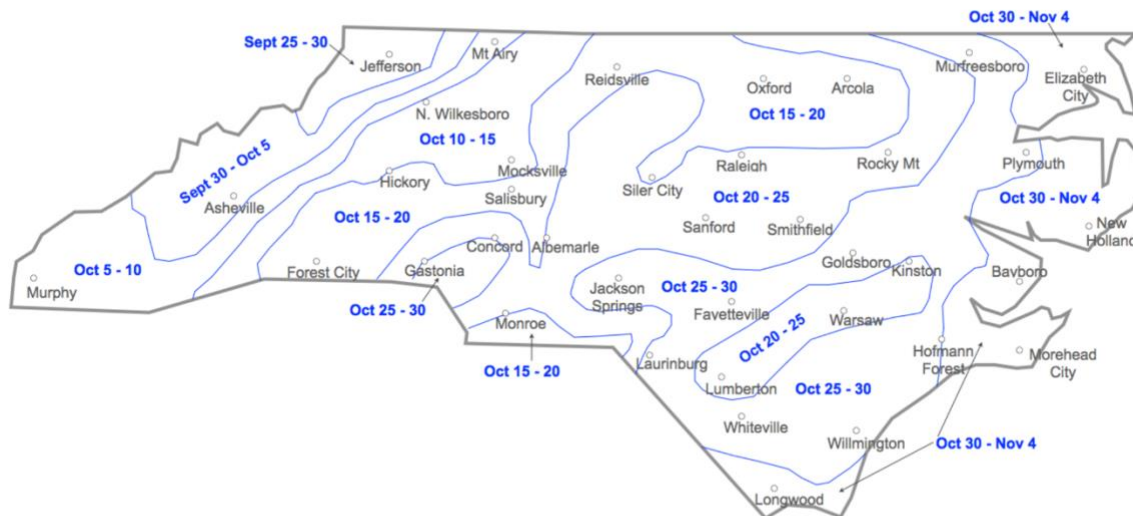


Figure 4.1. The start of wheat planting dates. The dates shown on this map are 7 days earlier than the date when there is a 50% chance of having a freeze.

Pounds per acre = Target Population / Seeds per pound

Bushels per acre can be calculated from here using this formula:

Bushels per acre = Pounds per acre / 60

Target Population (M)		1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0
Seeds/ft ²		23	25	28	30	32	34	37	39	41	44	46
Seeds/lb	10,000	115	127	138	150	161	173	184	196	207	219	230
	11,000	105	115	125	136	146	157	167	178	188	199	209
	12,000	96	105	115	125	134	144	153	163	173	182	192
	13,000	88	97	106	115	124	133	142	150	159	168	177
	14,000	82	90	99	107	115	123	131	140	148	156	164
	15,000	77	84	92	100	107	115	123	130	138	146	153

Table 4.2. Pounds per acre values calculated using target population (Seeds/acre or Seeds/ft²) and the seed size (Seeds/lb). The recommended seeding rate range for wheat is highlighted in green. The seeding rates shown above assume 85% germination.

Certified seed in North Carolina requires a minimum 85% germination. Table 4.2 assumes 85% germination rate in calculating a final pounds per acre seeding rate. If your seed has a germination rate lower than 85%,

Seed germination	Increase seeding rates in Table 4.2
80%	5%
75%	10%
70%	15%
65%	20%



Yield Optimizing Tip:
Use certified seed with
≥85% germination rates.
Do not use seed with less
than 65% germination

Table 4.3. Increase in seeding rates required for lower germination seed.

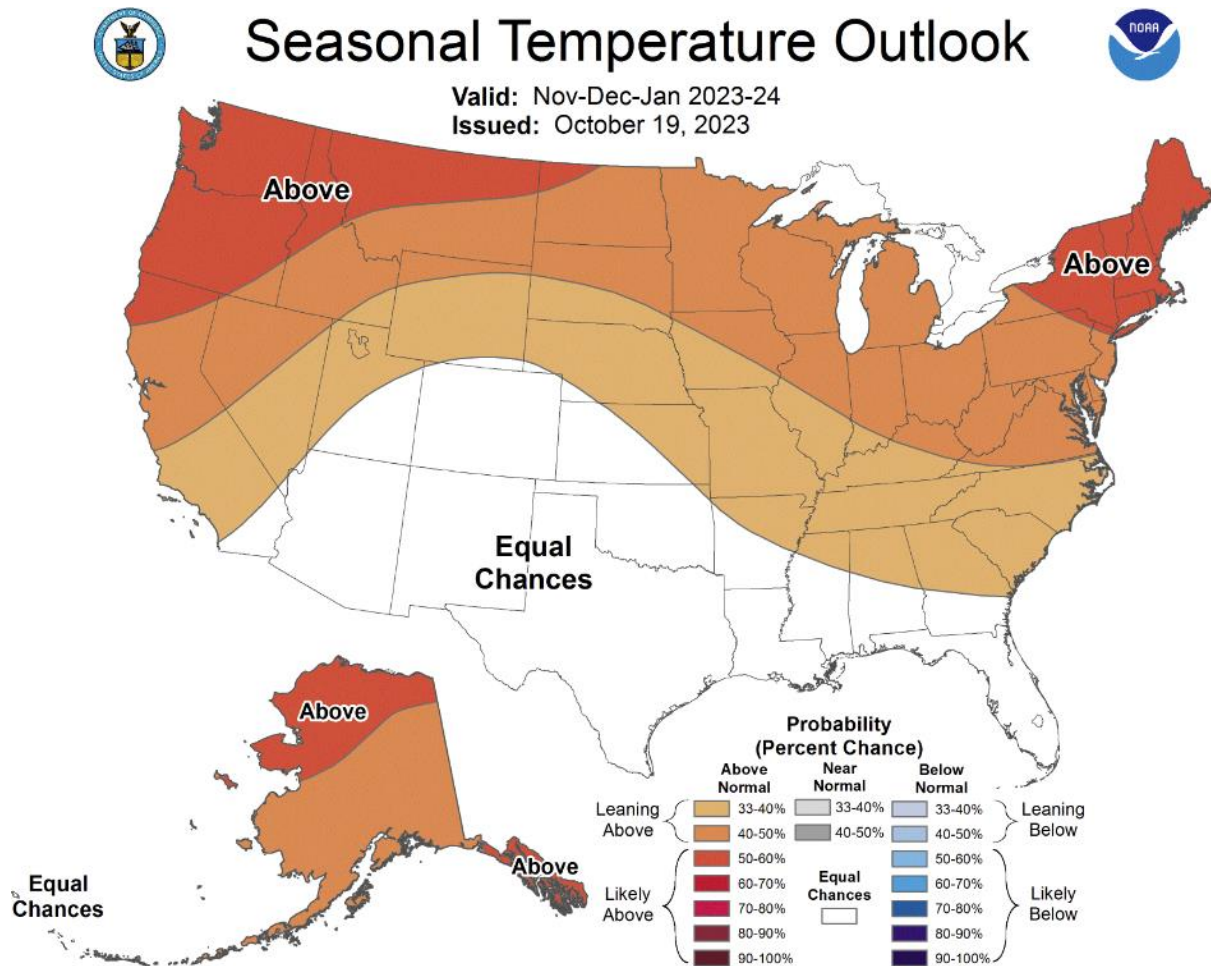
Target Population (M)		1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0
Seeds/ft ²		23.0	25.0	27.5	30.0	32.0	34.0	37.0	39.0	41.0	44.0	46.0
Row Spacing	6.0	11	12	14	15	16	17	18	19	20	22	23
	6.5	12	13	15	16	17	18	20	21	22	23	25
	7.0	14	15	17	18	19	20	22	23	25	26	28
	7.5	15	16	17	19	20	22	23	25	26	28	29

Table 4.4. Number of seeds per row foot calculated using target planting population (Seeds/acre or Seeds/ft²) and row spacing. The recommended seeding rate range for wheat is highlighted in green.

Weather Report

According to [NOAA forecast predictions](#), the temperature outlook is leaning towards above average for November-January but potentially lower temperatures than last fall. This should help with getting fall tillers established. For precipitation, we are leaning above normal for chances of average for rainfall.

It is key to be certain of the maturity of the varieties that you are planting. Start with your late maturities and finish with the early lines to ensure that your crop will be safe if we receive a late spring freeze.



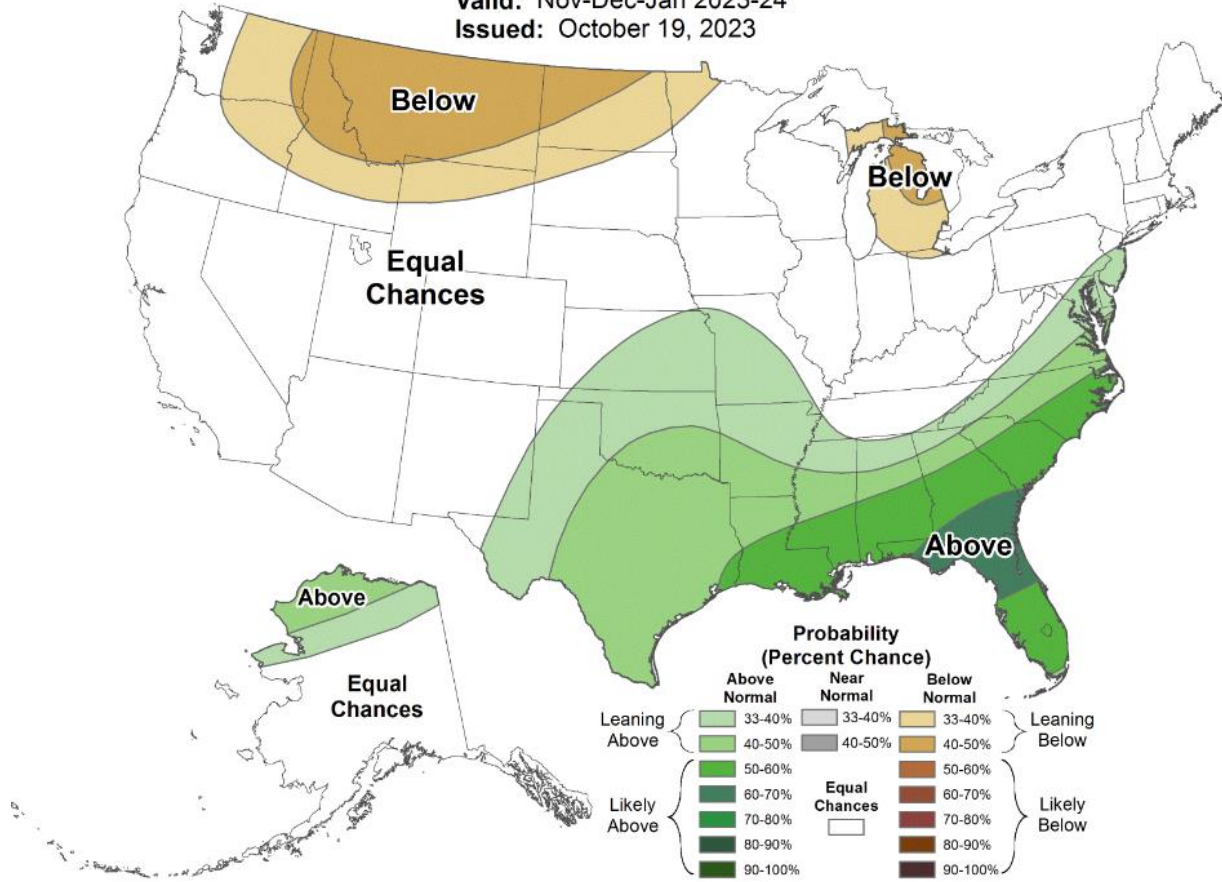


Seasonal Precipitation Outlook



Valid: Nov-Dec-Jan 2023-24

Issued: October 19, 2023



Local Extension Variety Data

2022-2023 Northeast Ag Expo Wheat Variety Trials @															
County	Company/Brand	Variety	Chowan		Currituck		Gates		Pasquotank		Perquimans		Overall Average*		
			Yield bu/a	Rank	Yield bu/a	Rank	Yield bu/a	Rank	Yield bu/a	Rank	Yield bu/a	Rank	T Wt lbs/bu	Yield bu/a	Rank
	Southern Harvest	SH 7222	118.2	3	89.8	7	120.2	15	105.7	2	132.1	2	59.4	113.2	1
	Southern Harvest	SH 9520	125.5	1	105.8	1	126.4	7	85.1	13	122.8	5	57.5	113.1	2
	AgriPro	GP 381	105.4	21	101.4	4	118.5	19	107.4	1	116.2	15	56.3	109.8	3
	Inspire	Inspire 855	116.8	5	83.9	16	118.9	17	90.7	9	133.7	1	57.4	108.8	4
	AG South Genetics	AGS 4023	113.1	10	102.1	3	103.1	24	97.4	4	126.0	4	58.4	108.4	5
	Dyna-Gro	9120	112.5	11	76.8	21	125.5	8	92.4	8	127.4	3	58.7	106.9	6
	Pioneer	26R59	113.5	9	94.4	5	131.4	1	81.5	18	112.3	17	56.3	106.6	7
	AgriPro	GP 747	111.3	12	84.0	14	129.2	3	89.2	11	118.8	11	55.6	106.5	8
	AGSouth Genetics	AGS 3026	107.2	17	102.1	2	118.6	18	83.1	15	117.2	12	56.7	105.6	9
	UniSouth Genetics	USG 3352	114.1	7	87.5	10	124.0	9	89.8	10	112.2	18	54.4	105.5	10
	AxIs	TWS 2722	113.9	8	89.0	8	122.0	10	79.1	21	122.4	6	55.0	105.3	11
	AgriMAXX	AgriMAXX 513	106.9	18	85.6	12	116.9	21	93.4	7	122.2	8	57.9	105.0	12
	AgriMAXX	AgriMAXX 516	107.8	16	84.2	13	128.1	4	82.9	16	120.9	9	55.8	104.8	13
	Dyna Gro	9862	117.0	4	90.3	6	115.3	22	95.2	6	105.8	20	57.7	104.7	14
	UniSouth Genetics	USG 3472	106.2	19	84.0	15	129.9	2	80.6	20	122.4	7	55.6	104.6	15
	Southern Harvest	SH 4222	111.0	13	87.2	11	119.9	16	83.8	14	116.4	14	55.2	103.7	16
	Dyna-Gro	9172	115.6	6	78.7	20	126.5	6	76	24	115.4	16	57.1	102.4	17
	Pioneer	26R33	105.6	20	88.6	9	118.3	20	81.2	19	110.0	19	57.0	100.7	18
	AgriMAXX	AgriMAXX 505	109.1	14	83.2	17	104.8	23	82.1	17	117.2	13	56.1	99.3	19
	AxIs	TWS 2920	109.0	15	69.4	24	121.9	11	76.8	22	118.8	10	56.5	99.2	20
	AG South Genetics	AGS 4043	93.5	24	80.0	19	120.5	14	97.4	4	96.7	21	58.7	97.6	21
	AgriPro	GP 348	100.2	23	73.8	23	121.7	13	101.3	3	90.6	23	57.0	97.5	22
	Inspire	Inspire 745	100.4	22	80.5	18	121.8	12	76.3	23	95.1	22	55.1	94.9	23
	Pioneer	26R45	123.4	2	74.3	22	127.3	5	89.1	12	16.4	24	56.9	86.1	24
		Avg within locations	110.7		87		121		88.2		112.0				

@ Varieties are listed in descending order according to average yield across locations (i.e. 1 (highest yield) to 24 (lowest yield)). Within locations, the varieties are ranked in descending order according to yield from highest (1) to lowest yielding variety (24). The top 3 yielding varieties within locations and across locations have their ranking marked as follows: 1 (blue), 2 (red), and 3 (yellow).

* The average for five locations includes the Chowan, Currituck, Gates, Pasquotank, and Perquimans sites. Pasquotank site was replicated and yield was an average of the replications.

2022-2023 Northeast Ag Expo Wheat Variety Trial Production Information					
	Chowan	Currituck	Gates	Pasquotank	Perquimans
Cooperator	Parrish Farms	Racy and Clay Farms Inc.	White Oak Farms	Mercer & Sons	Thomas Roach
Planting Date	10/24/2024	11/14/2023	10/28/2023	11/7/2022	10/20/2022
Harvest Date	6/9/2023	6/20/2023	6/19/2023	6/16/2023	6/12/2023
Soil Type	Roanoke silt loam	Conetoe loamy sand	Craven silt loam	Chapanoke silt loam Perquimans silt loam	Augusta Fine Sandy Loam
Previous Crop	peanut	soybean	cotton	corn	cotton
Seeding Rate	1.75 million	2 million	1.75	1.8 million	1.75 million
Total Rainfall in inches (Climate Fieldview)	20.7	18.1	24.4	20.6	22.6

For wheat variety information, follow the link below to the NC State Variety Section Tool or contact Dylan Lilley.

[Official Variety Selection Tool](#)

Also for additional questions, contact Dylan Lilley, Field Crops Extension Agent at 252-358-7822 or by email at dylan_lilley@ncsu.edu.

[Read more NC Cooperative Extension Wheat Information >>](#)

[Read more NC Cooperative Extension News >>](#)

North Carolina State University and North Carolina A&T State University commit themselves to positive action to secure equal opportunity regardless of race, color creed, national origin, religion, sex, age, veteran status or disability. In addition, the two Universities welcome all persons without regard to sexual orientation.



N.C. Cooperative Extension - Hertford County Center, 301 W Tryon St. Winton, NC 27986, United States