Issue: 2024:30
December 6, 2024

Pest & Crop Newsletter

Purdue Cooperative Extension Service
and USDA-NIFA Extension IPM Grant

PURDUE UNIVERSITY | Extension - Entomology

This work is supported in part by Extension Implementation Grant 2021-70006-35390 / IND90001518G-1027053 from the USDA National Institute of Food and Agriculture and NCR SARE Award GNC20-311

In This Issue

Converting Wet Corn Weight To Dry Corn Weight Alternative Title: Marketing Consequence Of Selling Unusually Dry Grain

(Bob Nielsen)

Corn is often harvested at grain moisture contents higher than the 15% moisture typically desired by grain buyers. Wetter grain obviously weighs more than drier grain and so grain buyers will "shrink" the weight of "wet" grain (greater than 15% moisture) to the equivalent weight of "dry" grain (15% moisture) and then divide that weight by 56 to calculate the market bushels of grain they will purchase from the grower.

The two sources of weight loss due to mechanical drying are 1) the weight of the moisture (water) removed by the drying process and 2) the anticipated weight loss resulting from the loss of dry matter that occurs during the grain drying and handling processes (e.g., broken kernels, fines, foreign materials). An exact value for the handling loss, sometimes called "invisible shrink", is difficult to predict and can vary significantly from one grain buyer to another. For a lengthier discussion on grain weight shrinkage due to mechanical drying, see Hicks and Cloud, 1991.

The simple weight loss due to the removal of grain moisture represents the greatest percentage of the total grain weight shrinkage due to drying and is easily calculated using a handheld calculator or a smartphone calculator app. In general terms, you first convert the "wet" weight (greater than 15% moisture) to absolute dry weight (0% moisture). Then you convert the absolute dry weight back to the market-standard "dry" weight at 15% grain moisture.

Concept:

- The initial percent dry matter content depends on the initial grain moisture content. For example, if the initial grain moisture content is 20%, then the initial percent dry matter content is 80% (e.g., 100% – 20%).
- If the desired ending grain moisture content is 15% (the typical market standard), then the desired ending percent dry matter content is 85% (100% – 15%).
- Multiply the weight of the "wet" grain by the initial percent dry matter content, then divide the result by the desired ending percent dry matter content.

Example:

1. 100,000 lbs of grain at 20% moisture = 80,000 lbs of absolute dry matter (i.e., 100,000 x 0.80).
2. 80,000 lbs of absolute dry matter = 94,118 lbs of grain at 15% moisture (i.e., 80,000 ÷ 0.85).
3. 94,118 lbs of grain at 15% moisture = 1681 bu of grain at 15% moisture (i.e., 94,118 ÷ 56).

Bottom Line

Recognize that the fact that grain buyers purchase corn grain on the basis of 15% grain moisture content means that the grain trade allows you to sell water in the form of grain moisture up to the maximum market-standard 15% grain moisture content (or 14% for long term storage). In the preceding example, the difference in weight between 80,000 lbs of absolute dry matter and 94,118 lbs of grain at 15% moisture content is the weight of

water in the grain you are selling to the buyer.

Unfortunately, grain buyers do not apply “reverse shrink” calculations for grain delivered at moisture contents lower than the market-standard 15%. If you deliver corn to the elevator at grain moisture contents lower than 15%, you will be paid for fewer pounds (i.e., less water weight) than if you were delivering grain at 15% moisture content. In other words, there is an implicit weight penalty to farmers for delivering unusually dry grain to the elevator. Take advantage of this fact and maximize your “marketable” grain weight by delivering corn grain to the elevator at moisture levels no lower than 15% moisture content.

Related reading

Glewen, Keith, Paul Jasa, and Jenny Rees. 2020. Plan Harvest to Deliver Soybeans at the Optimum Moisture. Cropwatch, Univ Nebraska Extension. http://cropwatch.unl.edu/2017/plan-harvest-deliver-soybean-optimum-moisture [URL accessed Dec 2024]

Hicks, D.R. and H.A. Cloud. 1991. Calculating Grain Weight Shrinkage in Corn Due to Mechanical Drying. National Corn Handbook Publication NCH-61. https://www.extension.purdue.edu/extmedia/nch/nch-61.html [URL accessed Dec 2024]

Nielsen, RL (Bob). 2021. Grain Test Weight Considerations for Corn. Corny News Network, Purdue Extension. http://www.kingcorn.org/news/timeless/TestWeight.html [URL accessed Dec 2024]

Otte, John. 2008. How Much Grain do You Give Away? Wallace’s Farmer Magazine. https://www.farmprogress.com/farm-business/how-much-grain-do-you-give-away-21048 [URL accessed Dec 2024]

Purdue’s 2025 Crop Management Workshop In-Person & Virtual

(John Obermeyer)

When: January 28 and 30, 2025

How/Where:

In-Person –

Tuesday, January 28: Vincennes University, Green Activities Center, Vincennes, IN

Thursday, January 30: ACRE, Beck Ag Center, W. Lafayette, IN

Virtual –

Thursday, January 30: Livestream

Time: All times listed are Eastern Time

In-Person – 8:30 am to 4:00 pm

Virtual – 8:45 am to 4:00 pm

Registration, click the following link: http://www.purdue.edu/conferences/Crop

In-Person – $90.00 (includes handouts, refreshments, and lunch)

Virtual – $60.00 (unique/active email address required for registration)

Schedule and Topics:

8:30 In-Person Check-in

8:45 Virtual Log-in

9:00 Meeting Begins

(State Chemist Highlights, Weed Management Tips and Tools, Cold Soils and Seed Insecticide Efficacy, Continual Corn Nitrogen Challenges, Field Crop Disease Expectations, Soybean Nitrogen Fixation Competitors, Pesticide Spray Nozzles)

4:00 In-Person and Virtual Meeting Concludes

Credits Awarded:

- Indiana commercial pesticide applicators (CCHs)

In-Person and Virtual*: (Cat 1 = 7, Cat 4 = 2, Cat 11 = 4, and RT = 4)

- Certified Crop Advisors (CEUs)

In-Person and Virtual*: 7.0 (PM 5.0, NM 2.0)

- PARP (private applicator) available for in-person attendance only

*Livestream (i.e., Virtual) meeting may be watched individually, or together in groups. However, if credits (CCHs and/or CEUs) are desired, then each person must register with an individual (unique) email address, attend the entire meeting, and complete/pass an online survey after the meeting. Understand, this is a whole day commitment, your attendance and attention are expected.

Additional Questions:

Purdue Conferences, 866-515-0023, confreg@purdue.edu

Fred Whitford talking at the CMW meeting.

Pest&Crop 2024 Survey

(John Obermeyer)

Dear Pest&Crop Readers:

Hope you have enjoyed the Pest&Crop newsletter this year. The following is a link to a simple, short online survey. Please consider doing this right now, as we need your evaluation of this newsletter. Too, we need to show our funding agencies whether or not this information from Purdue specialists throughout the season is meaningful to you and the industry. Thanks in advance for your support!

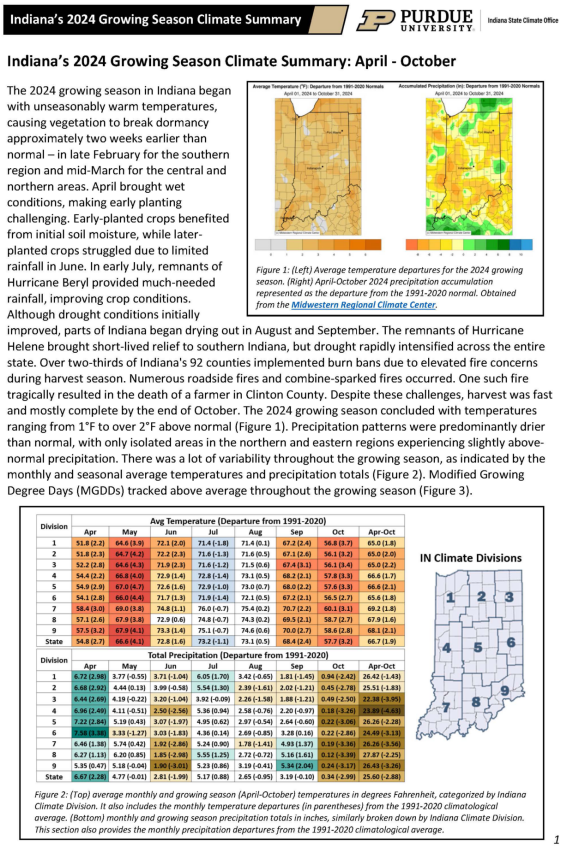
https://purdue.ca1.qualtrics.com/jfe/form/SV_aVSHsox5SftHt9I

Indiana's 2024 Growing Season Climate Summary Is Now Available

(Austin Pearson)

The 2024 growing season in Indiana started with unseasonably warm temperatures, leading to early vegetation dormancy break—late February in the south and mid-March in the central and northern areas. April's wet conditions posed challenges for early planting, but crops sown early benefited from good soil moisture, while later plantings suffered from limited rainfall in June. In early July, remnants of Hurricane Beryl provided much-needed rain, improving conditions briefly. However, drought re-emerged in August and September, with significant impacts across over two-thirds of counties, leading to burn bans and several fires, including a tragic incident resulting in a farmer's death in Clinton County. Despite these difficulties, harvest was mostly complete by late October. The season ended with temperatures 1°F to over 2°F above normal and predominantly drier precipitation patterns, although some northern and eastern areas saw slightly above-normal rainfall. Variability in weather was evident in the monthly and seasonal averages, with Modified Growing Degree Days tracking above average throughout.

READ FULL SUMMARY



Indiana's 2024 Growing Season Climate Summary | PURDUE UNIVERSITY | Indiana State Climate Office

Indiana's 2024 Growing Season Climate Summary: April - October

The 2024 growing season in Indiana began with unseasonably warm temperatures, causing vegetation to break dormancy approximately two weeks earlier than normal – in late February for the southern region and mid-March for the central and northern areas. April brought wet conditions, making early planting challenging. Early-planted crops benefited from initial soil moisture, while later-planted crops struggled due to limited rainfall in June. In early July, remnants of Hurricane Beryl provided much-needed rainfall, improving crop conditions. Although drought conditions initially improved, parts of Indiana began drying out in August and September. The remnants of Hurricane Helene brought short-lived relief to southern Indiana, but drought rapidly intensified across the entire state. Over two-thirds of Indiana's 92 counties implemented burn bans due to elevated fire concerns during harvest season. Numerous roadside fires and combine-sparked fires occurred. One such fire tragically resulted in the death of a farmer in Clinton County. Despite these challenges, harvest was fast and mostly complete by the end of October. The 2024 growing season concluded with temperatures ranging from 1°F to over 2°F above normal (Figure 1). Precipitation patterns were predominantly drier than normal, with only isolated areas in the northern and eastern regions experiencing slightly above-normal precipitation. There was a lot of variability throughout the growing season, as indicated by the monthly and seasonal average temperatures and precipitation totals (Figure 2). Modified Growing Degree Days (MGDDs) tracked above average throughout the growing season (Figure 3).

Figure 1: (Left) Average temperature departures for the 2024 growing season. (Right) April-October 2024 precipitation accumulation represented as the departure from the 1991-2020 normal. Obtained from the Midwestern Regional Climate Center.

Division	Avg Temperature (Departure from 1991-2020)							
	Apr	May	Jun	Jul	Aug	Sep	Oct	Apr-Oct
1	51.8 (2.2)	64.6 (3.9)	72.1 (2.0)	71.4 (-1.8)	71.4 (0.1)	67.2 (2.4)	56.8 (3.7)	65.0 (1.8)
2	51.8 (2.3)	64.7 (4.2)	72.2 (2.3)	71.6 (-1.3)	71.6 (0.5)	67.1 (2.6)	56.1 (3.2)	65.0 (2.0)
3	52.2 (2.8)	64.6 (4.3)	71.9 (2.3)	71.6 (-1.2)	71.5 (0.6)	67.4 (3.1)	56.1 (3.4)	65.0 (2.2)
4	54.4 (2.2)	66.8 (4.0)	72.9 (1.4)	72.8 (-1.4)	73.1 (0.5)	68.2 (2.1)	57.8 (3.3)	66.6 (1.7)
5	54.9 (2.9)	67.0 (4.7)	72.6 (1.6)	72.9 (-1.0)	73.0 (0.7)	68.0 (2.2)	57.6 (3.3)	66.6 (2.1)
6	54.1 (2.8)	66.0 (4.4)	71.7 (1.3)	71.9 (-1.4)	72.1 (0.5)	67.2 (2.1)	56.5 (2.7)	65.6 (1.8)
7	58.4 (3.0)	69.0 (3.8)	74.8 (1.1)	76.0 (-0.7)	75.4 (0.2)	70.7 (2.2)	60.1 (3.1)	69.2 (1.8)
8	57.1 (2.6)	67.9 (3.8)	72.9 (0.6)	74.8 (-0.7)	74.3 (0.2)	69.5 (2.1)	58.7 (2.7)	67.9 (1.6)
9	57.5 (3.2)	67.9 (4.1)	73.3 (1.4)	75.1 (-0.7)	74.6 (0.6)	70.0 (2.7)	58.6 (2.8)	68.1 (2.1)
State	54.8 (2.7)	66.6 (4.1)	72.8 (1.6)	73.2 (-1.1)	73.1 (0.5)	68.4 (2.4)	57.7 (3.2)	66.7 (1.9)

Division	Total Precipitation (Departure from 1991-2020)							
	Apr	May	Jun	Jul	Aug	Sep	Oct	Apr-Oct
1	6.72 (2.98)	3.77 (-0.55)	3.71 (-1.04)	6.05 (1.70)	3.42 (-0.65)	1.81 (-1.45)	0.94 (-2.42)	26.42 (-1.43)
2	6.68 (2.92)	4.44 (0.13)	3.99 (-0.58)	5.54 (1.30)	2.39 (-1.61)	2.02 (-1.21)	0.45 (-2.78)	25.51 (-1.83)
3	6.44 (2.66)	4.19 (-0.22)	3.20 (-1.04)	3.92 (-0.09)	2.26 (-1.58)	1.88 (-1.21)	0.49 (-2.50)	22.38 (-3.95)
4	6.96 (2.49)	4.11 (-0.51)	2.50 (-2.56)	5.36 (0.94)	2.58 (-0.76)	2.20 (-0.97)	0.18 (-3.26)	23.89 (-4.63)
5	7.22 (2.84)	5.19 (0.43)	3.07 (-1.97)	4.95 (0.62)	2.97 (-0.54)	2.64 (-0.60)	0.22 (-3.06)	26.26 (-2.28)
6	7.58 (3.38)	3.33 (-1.27)	3.03 (-1.83)	4.36 (0.14)	2.69 (-0.85)	3.28 (0.16)	0.22 (-2.86)	24.49 (-3.13)
7	6.46 (1.38)	5.74 (0.42)	1.92 (-2.86)	5.24 (0.90)	1.78 (-1.41)	4.93 (1.37)	0.19 (-3.36)	26.25 (-3.56)
8	6.27 (1.13)	6.20 (0.85)	1.85 (-2.98)	5.55 (1.25)	2.72 (-0.72)	5.16 (1.61)	0.12 (-3.39)	27.87 (-2.25)
9	5.35 (0.47)	5.18 (-0.04)	1.80 (-3.01)	5.23 (0.86)	3.19 (-0.41)	5.34 (2.04)	0.24 (-3.17)	26.43 (-3.26)
State	6.67 (2.28)	4.77 (-0.01)	2.81 (-1.99)	5.17 (0.88)	2.65 (-0.95)	3.19 (-0.10)	0.34 (-2.99)	25.60 (-2.88)

Figure 2: (Top) average monthly and growing season (April-October) temperatures in degrees Fahrenheit, categorized by Indiana Climate Division. It also includes the monthly temperature departures (in parentheses) from the 1991-2020 climatological average. (Bottom) monthly and growing season precipitation totals in inches, similarly broken down by Indiana Climate Division. This section also provides the monthly precipitation departures from the 1991-2020 climatological average.

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