

Two stories frame the 2019 season: the total number of acres planted, and the uncertain performance of the 20-30 million acres that were planted in June. Yield estimates are down. In bushels per acre, Indigo forecasts the **end-of-season corn yield to be 154.7**, down 2.9% from 159.4 in July, while **soy is estimated to be 45.3**, down 4.8% from 47.6 bushels per acre in July. Corn production has nudged down from 12.4 to 12.0 bn bushels and soy moved significantly downward from 4.2 to 3.7. Recent satellite analysis identified 10.2 mn acres of fallow land, which have reduced total soy area planted. Our best estimate of soy area decreased from 89.3mn acres to 82.9, while corn remained at 85.4 albeit with a narrower range. Significant uncertainty remains before crops reach maturity. Of particular concern are dry weather, which will be especially harmful to crops with shallow rooting, and the risk of an early freeze for late-planted crops.

Production – Billion bushels

Indigo’s production estimates combine Indigo’s yield forecast with an estimated area harvested. To determine area harvested, the USDA’s June 11th ratio of area planted to area harvested was applied to Indigo’s best-estimate area planted.

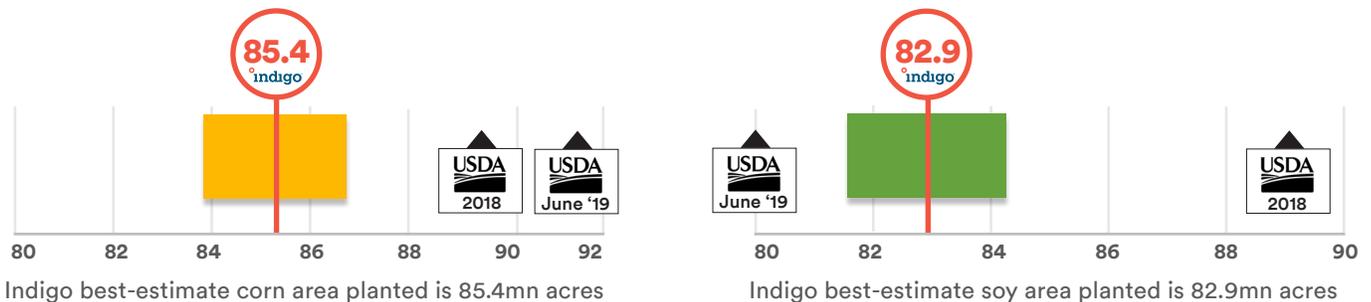


Yield – Bushels per acre



Indigo’s yield forecasts are generated by machine learning models which combine daily satellite imagery, weather, and crop condition reports to project yield. These models automatically update each week. As the condition of the crops improves or deteriorates, the models will adjust accordingly. Indigo’s models are trained upon and predict the USDA’s end-of-season yield closeout number and do not reflect the USDA’s monthly yield projections.

Area planted forecast – Million acres



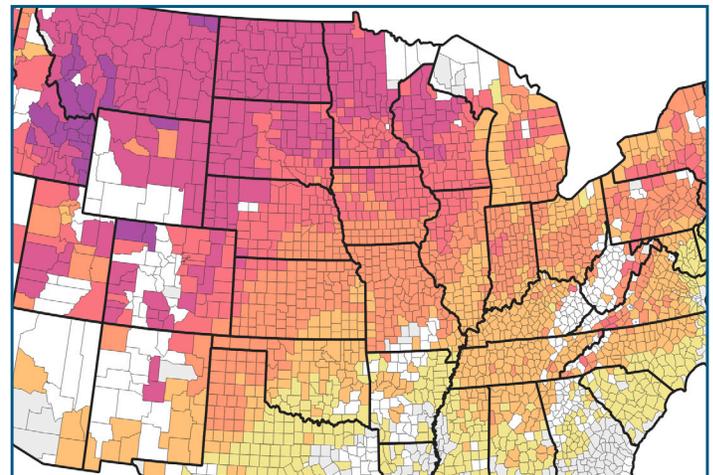
Selected State Yield Forecast - Corn



	August	% Change from July	Avg acres 2014-18, mn
NEBRASKA	178.9	-1%	9.5
IOWA	177.6	-3%	13.5
MINNESOTA	161.5	-7%	8.1
WISCONSIN	159.4	1%	4.0
ILLINOIS	152.0	-13%	11.5
INDIANA	151.3	-11%	5.6
OHIO	134.8	-14%	3.5
KANSAS	131.8	-6%	4.9
MISSOURI	131.4	8%	3.5
MICHIGAN	130.4	-9%	2.4
NORTH DAKOTA	129.7	4%	3.1
TEXAS	124.3	-6%	2.4
SOUTH DAKOTA	122.2	-13%	5.6

Hard Freeze Risk

50% Date of first hard freeze (28°F)



Map shows the latest occurring killing freeze that was recorded in at least one location in each county in 5 of the past 10 years (2009-18).

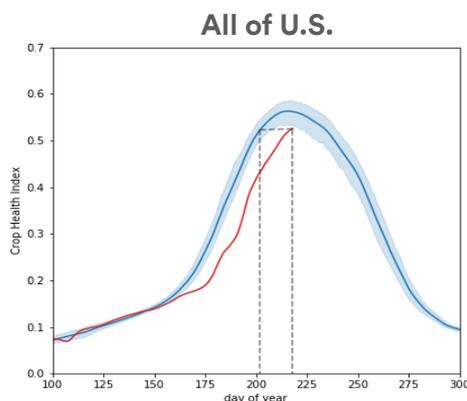
Crop Health Index - Corn



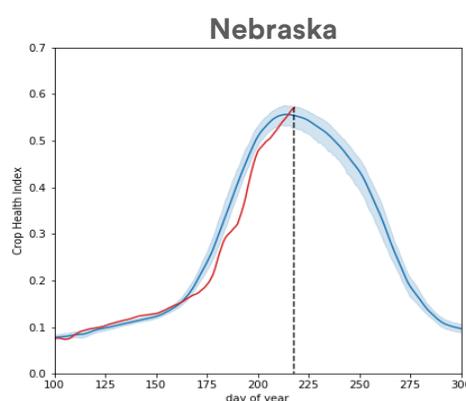
— 10-Year Mean
— 2019

At this point in the season, crop health index (CHI) curves reveal two critical yield factors: CHI days behind and approach of peak CHI. T

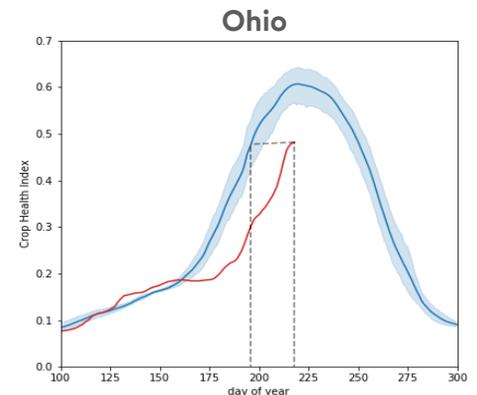
Indigo's proprietary CHI uses daily satellite imagery derived reading of the intensity of greenness and chlorophyll content contained in a crop's canopy.



U.S. corn CHI is 16 days behind and 7% below 10-year mean CHI level; slope 8 days behind and tapering, indicating peak CHI will be below 10-year historical median.



Nebraska CHI is above of the 10-year median, approaching the 80th percentile, because slope is 8 days behind, CHI is increasing when it would typically taper off, indicating further potential.



Ohio CHI is 22 days behind and 21% below 10-year mean; slope is only 2 days behind indicating very limited scope for improvement.



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