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Estimating Total Crop Acres for the U.S. over 1998-2025

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The March 31st *Prospective Plantings* report from the USDA was much anticipated and indicated that U.S. producers will shift a significant amount of acreage to corn in 2025. An important constraint on shifts in acreage for individual crops is the total size of crop acreage in the U.S. Our previous work shows that total crop acreage fell sharply from 2014 through 2020 (e.g., *farmdoc daily*, June 10, 2021). The purpose of this article is to update our earlier estimates of total crop acreage for the U.S. through 2024 and make a projection for 2025.

Analysis

We have outlined the process of estimating total U.S. cropland acreage in several previous *farmdoc daily* articles (April 4, 2014; April 9, 2014; April 2, 2015; January 21, 2016; June 10, 2021; June 21, 2021). It is no simple matter to account for total crop acreage because of movement in and out of government acreage programs and the fact that available data is from different USDA agencies. We start our estimates in 1998 as this avoids accounting for annual set-aside acreage in earlier years and allows full adjustment to the planting flexibility that began with the 1996 "Freedom to Farm" bill.

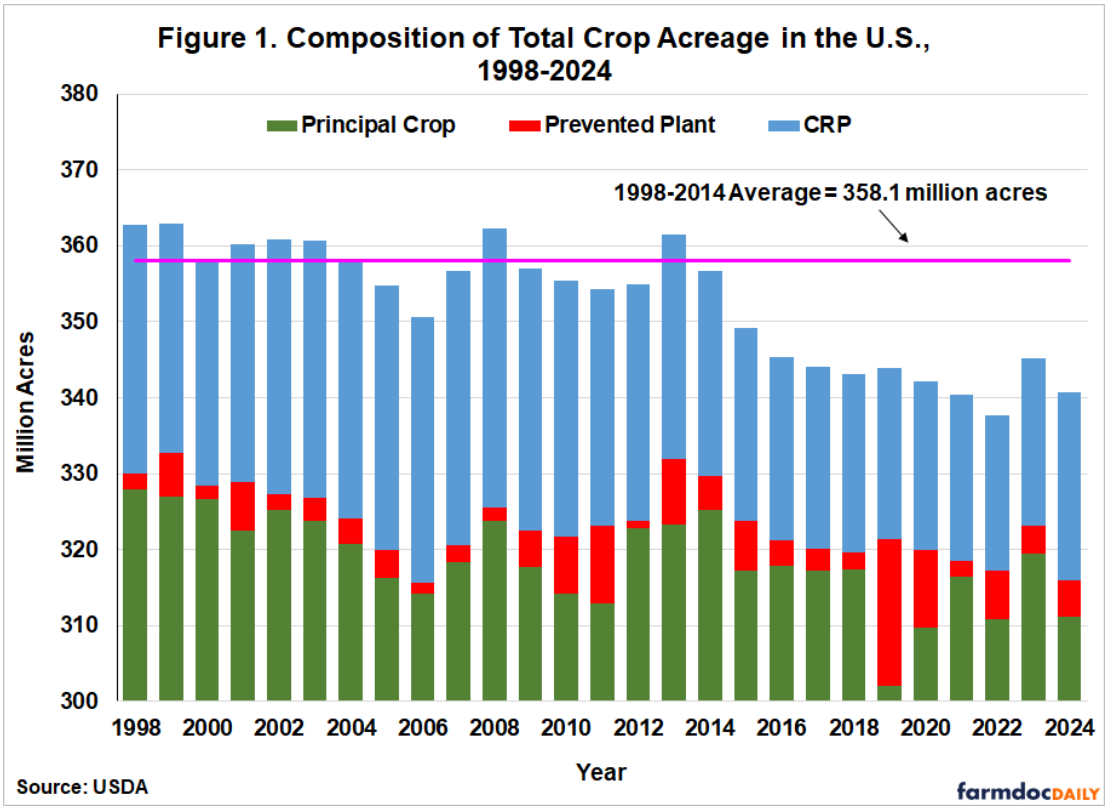
The first component in the accounting of total crop acreage is principal crop acreage. As identified by the USDA in the most recent *Prospective Plantings* report:

> *"Crops included in area planted are corn, sorghum, oats, barley, rye, winter wheat, Durum wheat, other spring wheat, rice, soybeans, peanuts, sunflower, cotton, dry edible beans, chickpeas, potatoes, sugarbeets, canola, and proso millet. Harvested acreage is used for all hay, tobacco, and sugarcane in computing total area planted. Values for 2025 were carried forward from 2024 for potatoes, proso millet, rye, and sugarcane. Includes double cropped acres and unharvested small grains planted as cover crops." [p. 5]*

Note that double-cropped acreage is included in the principal crop acreage totals. In addition, a number of state/crop combinations were dropped from principal crop acreage estimates starting in 2019. In order to make the estimates comparable before and after this change, we identified the missing state/crop combinations in 2019 and subtracted these combinations from total principal crop acreage over 1998 through 2018. This lowered published principal crop acreage by an average of 1.8 million acres across

1998 through 2018. All estimates used here are the latest available for each year as found in the USDA Quick Stats database.

Principal crop acreage for 1998 through 2024 is represented by the green bars in Figure 1. We do not include 2025 for this part of the analysis because the data have not yet been finalized. Projections for 2025 will be considered later. For the 1998 through 2024 period, the principal crop total varied by 28.9 million acres, from 302.1 to 331.0 million acres. The total is clearly correlated with crop prices, as there is a decline into the mid-2000s, an increase into the ethanol-led boom years, a decline and recovery into 2014, and then a decline again. The decline in the principal crop acreage from 2014 to 2024 is particularly notable, with a total drop of 14.0 million acres.



The second component in the accounting of total crop acreage is prevented plant acres. Federal crop insurance programs include a feature in most policies that triggers payments when extreme weather conditions prevent the planting of insured crops. The formal definition of prevented planting provided by the Risk Management Agency (RMA) of the USDA is as follows:

> *"Prevented planting is a failure to plant an insured crop with the proper equipment by the final planting date designated in the insurance policy's Special Provisions or during the late planting period, if applicable. Final planting dates and late planting periods vary by crop and by area."*

The prevented plant acreage data for 1998 through 2006 are collected from the RMA's Cause of Loss Historical Data Files. The remaining years are collected from Crop Acreage Data Files reported by the Farm Service Agency. There may be slight differences in the data from these two sources. The total prevented plant acreage over 1998 through 2024 is represented by the red bars in Figure 1. Naturally, the size of prevented plant acreage varies considerably across time depending on spring weather conditions. In most years, prevented plant acreage across all crops is less than five million acres. However, in years with extremely wet planting conditions, the total can exceed 10 million acres. The peak of 19.3 million acres occurred in 2019.

The third component in the accounting of total crop acreage is acreage enrolled in the Conservation Reserve Program (CRP). A March 2024 fact sheet from the USDA indicates that:

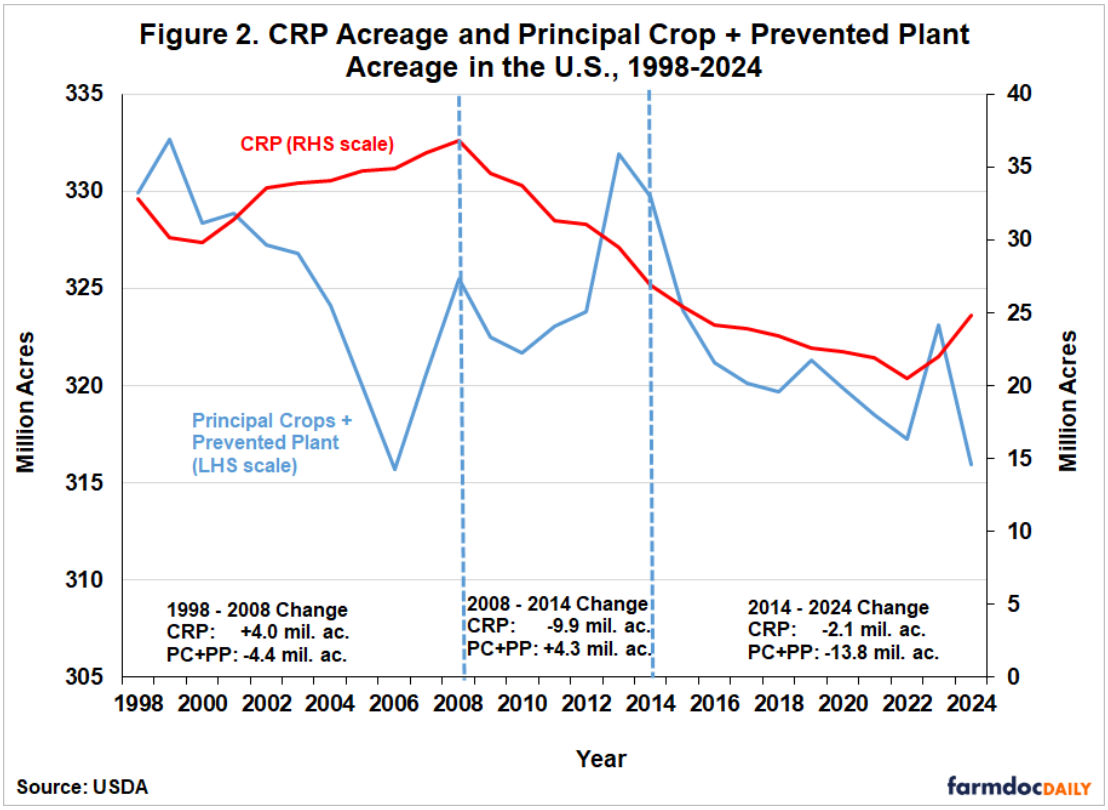
"Both continuous CRP and general CRP require cropland, land to be planted or considered planted to an agricultural commodity for four of six crop years from 2012 to 2017, and be physically and legally capable of being planted (no planting restrictions due to an easement or other legally binding instrument) in a normal manner to an agricultural commodity." [p.2]

The eligibility criteria make it clear that in order to be enrolled in the CRP agricultural land must have been used in crop production for a sustained period in the recent past. The total acreage enrolled in the CRP over 1998 through 2024 is represented by the blue bars in Figure 1. These annual totals reflect acreage enrolled as of November 1 in the previous calendar year (as reported by the USDA's Farm Service Agency (FSA). Enrollment has declined steadily from a peak of 36.8 million acres in 2008 to a low of 20.5 million acres in 2022.

The net result of adding principal crop acres, prevented plant acres, and CRP acres is an estimate of total cropland for the U.S. This is represented by the top of the bars found in Figure 1. The total was relatively stable over 1998 through 2014, varying by roughly +/- 5 million acres from the average of 358.1 million. It is especially interesting to observe that total crop acreage was essentially fixed during the ethanol boom years of 2007 through 2012. This makes the decline in total crop acreage after 2014 even more interesting. Total acreage declined from 356.7 million in 2014 to a low of 337.8 million in 2022, a decline of 18.9 million acres. Acreage appears to have stabilized in recent years near 340 million acres. Nonetheless, the crop acreage base for the U.S. has contracted significantly since 2014 and it is important to understand what has been driving it.

In trying to understand the decline in total crop acres since 2014, it is useful to begin by comparing changes in CRP and principal crop plus prevented plant acreage. Given a relatively fixed total acreage base, the expectation is that the two series will move in opposite directions. That is, when acres go into the CRP this reduces the total for the other two components of crop acreage, and vice versa. As shown in Figure 2, this is what happened between 1998 and 2008 when CRP increased by 4.0 million and the sum of principal crop and prevented plant decreased by 4.0 million. Just the opposite happened between 2008 and 2013, when CRP decreased by 9.9 million and the sum of principal crop and prevented plant increased by 4.3 million. During these two periods, the CRP roughly functioned as an acreage "buffer stock," with acreage going into the CRP during the low grain price period and acreage coming out during the high grain price period.

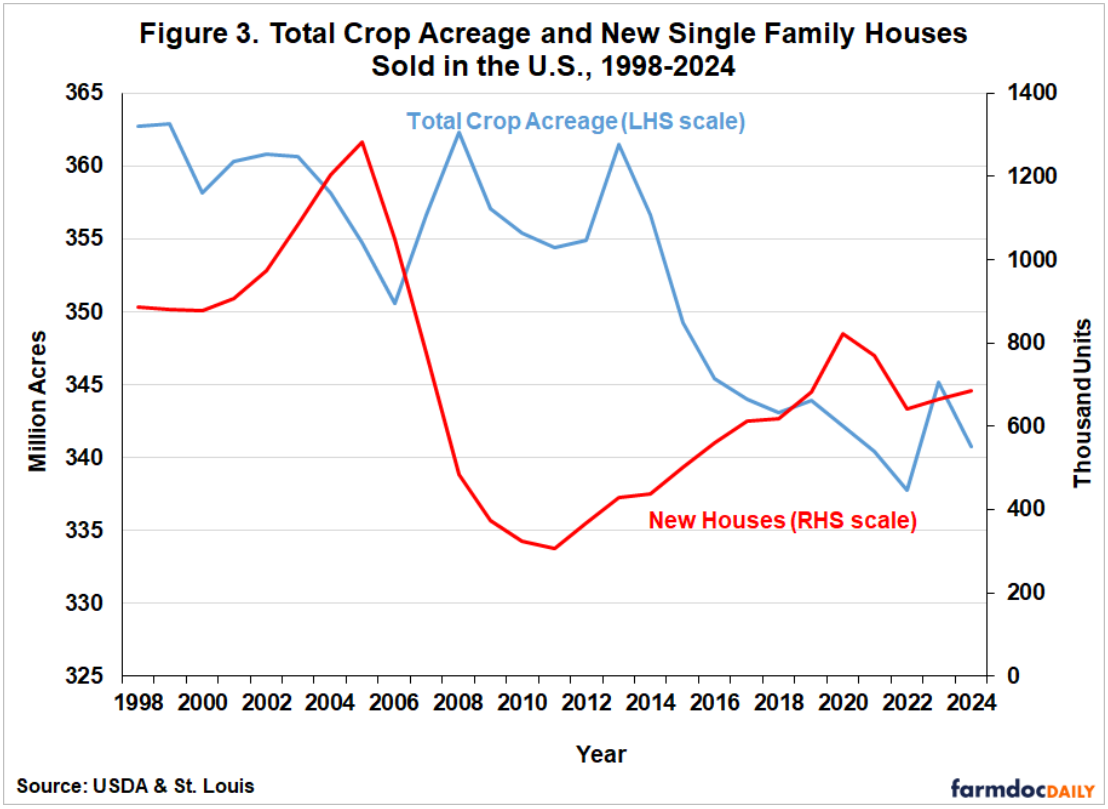
Figure 2. CRP Acreage and Principal Crop + Prevented Plant Acreage in the U.S., 1998-2024



It is interesting to observe in Figure 2 that both CRP and principal crops plus prevented plant acreage declined from 2014 through 2024. It should be noted that the decline in CRP, 2.1 million acres, was much smaller than the decline in principal crops plus prevented plant, 13.8 million acres. Nonetheless, this seems to suggest that the inverse relationship between the two series has broken down. Fortunately, the USDA tracked the subsequent use of the 7.6 million acres enrolled in the CRP that had contracts expire in 2013-2016 (Bigelow et. al, 2020). Of the acreage that was not re-enrolled in the CRP, 79 percent went back into annual crops, perennial forage crops, or perennial specialty crops. While this study only partially overlapped with the 2014-2024 period, it suggests that the bulk of the land coming out of the CRP since 2014 returned to annual or perennial crops and forage. If this is in fact the case, it implies that the decline in principal crop plus prevented plant acreage over 2014-2024 was so large that it swamped the positive impact of acreage coming out of the CRP. In other words, the reason that total crop acreage declined after 2014 was an unusually sharp decline in principal crop plus prevented plant acreage, not a change in the "buffer stock" nature of CRP acreage.

So, what does explain the nearly 20 million acre decline in total crop acres after 2014? The first thing to consider is the fact that the data used in Figure 1 to measure total crop acreage is inexact. As indicated above, data for each component is collected by different agencies within the USDA and each agency uses somewhat different methods and definitions. A single process that imposes an "adding up" constraint is not used by the USDA. Furthermore, each component is subject to sampling and non-sampling errors (e.g., *farmdoc daily*, April 4, 2014; April 9, 2014; June 10, 2021). Nonetheless, it is unlikely that measurement errors have changed substantially over time, which means this is not likely to be helpful in explaining the sharp decline in total crop acres after 2014.

A popular explanation for the decline in total crop acres is urban sprawl (e.g., Rowsey, 2022). The expansion of suburban housing into prime cropland is highly visible and clearly encroaches on agricultural production near metro areas. The question is whether this is large enough to explain the loss of nearly 20 million acres of cropland after 2014. Some evidence in that regard is provided in Figure 3, which plots total crop acreage from Figure 1 along with the total number of new single family houses sold in the U.S. on an annual basis over 1998 through 2024. There is no obvious relationship between the two series over the full sample. The lack of relationship is borne out by a correlation coefficient between the two series of only 0.14, which is also statistically insignificant. However, there is an inverse relationship after 2014, which raises the possibility that urban sprawl contributed to the sharp decline in total crop acres. However, this possibility has to taken with a grain of salt given that the massive decline in new houses sold during the Great Recession of 2008-2010 is associated with an increase in total crop acreage. It is difficult to reconcile fewer new houses with greater availability of cropland. The best that can be said at this point is that urban sprawl is likely driving some of the decline in total crop acreage after 2014, but the magnitude is very much open to debate.

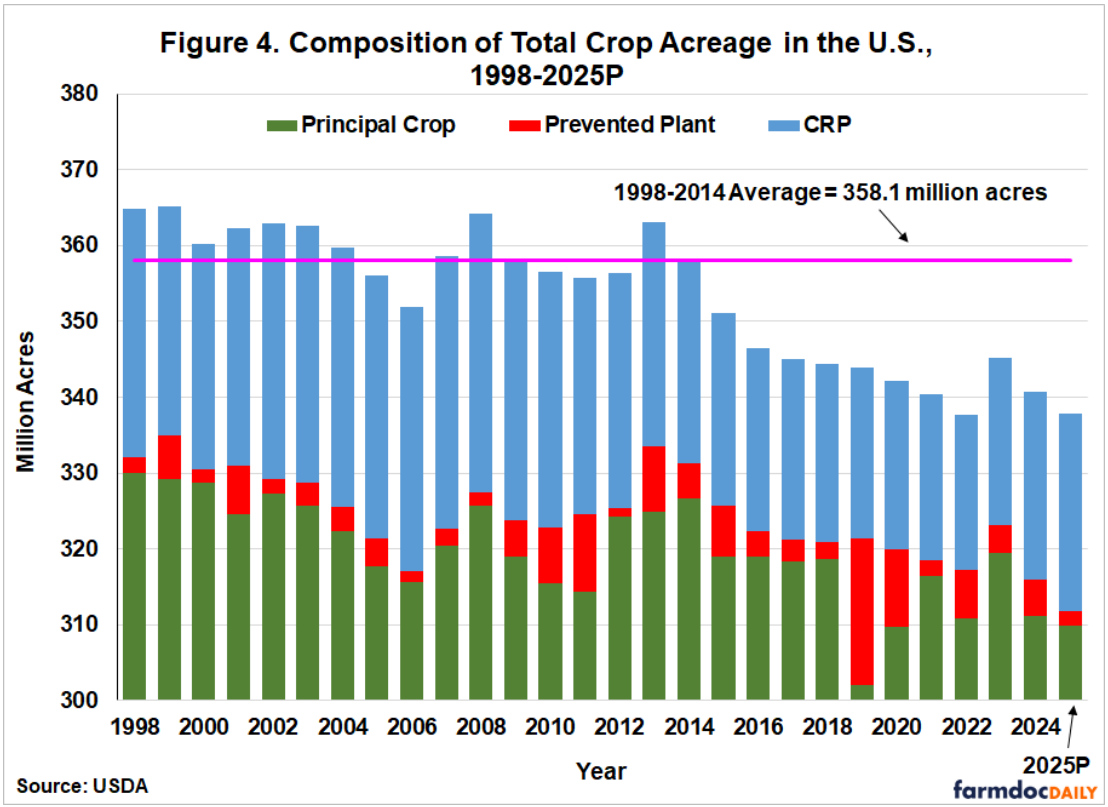


Other factors that may be driving the post-2014 acreage decline were highlighted in an earlier *farmdoc daily* article (June 21, 2021). The analysis in this article shows that the decline in total crop acreage through 2020: i) was concentrated in the Great Plains; and ii) the principal crops that experienced the greatest declines in acreage within the Great Plains were wheat and hay. Hence, we can infer that a key driver in the decline of total crop acreage after 2014 was the loss of wheat and hay acreage in the Great Plains. It is important to recognize that this means that the wheat and hay acres were literally lost, in that they were not planted to other principal crops. We do not know exactly what happened to the missing wheat and hay acres—perhaps pasture, range, or fallow—but the data indicate they have not been used for the same cropping purposes since 2014.

If declines in wheat and hay acreage in the Great Plains were key factors driving the post-2014 decline in total crop acreage, the next step is to figure out what was behind the declines in wheat and hay acreage. Fortunately, a series of recent *farmdoc daily* articles (February 6, 2025; February 14, 2025; February 24, 2025) on U.S. planted crop acreage provide important information in this regard. These articles show that wheat returns declined notably from 2013 through 2024, which undoubtedly contributed to the decline in wheat acres. This period of low returns overlapped with an extended drought in the Colorado River basin (Arizona, California, Colorado, Nevada, New Mexico, Utah, and Wyoming) from 2013 through 2024. In addition, Kansas, Oklahoma, and Texas have at times experienced severe drought conditions during the same period. It seems reasonable to conclude that the combination of low returns and drought is most responsible for the decline in wheat and hay acreage in the Great Plains, and by extension, the decline in total crop acreage in the U.S. after 2014.

The final step of the analysis is to project total crop acreage for 2025 based on information available at the present time. This is shown in Figure 4. Principal crop acreage of 309.2 million acres is drawn directly from the March 2025 *Prospective Plantings* report. This is 1.3 million acres less than principal crop acreage in 2024. CRP acreage as of November 1, 2024 was 26.0 million acres, 1.2 million acres higher than 2024. Projecting prevented plant acreage for 2025 is less straightforward than one might think. The reason is that planted acreage estimates reported in the *Prospective Plantings* report incorporate an expectation of some level of prevented plant acreage (*farmdoc daily*, April 28, 2021). This means that projecting prevented plant acreage for 2025 using historical averages would overstate prevented plant acres in total crop acreage because some prevented plant acres would be double counted in the historical average and the *Prospective Plantings* estimate. The solution used here is to

start with the assumption that prevented plant acreage for all crops in 2025 will equal the historical average for 1998 through 2024 of 5.7 million acres. We use the regression method in the *farmdoc daily* article from April 28, 2021 (with updated data) to estimate that the principal crop acreage estimate in the March 2025 *Prospective Plantings* report of 309.9 million acres includes an expected 3.8 million acres of prevented plant. The difference between 5.7 and 3.8 million, 1.9 million, is shown in Figure 4 as projected prevented plant acreage for 2025. It is important to emphasize that this is not the total projected plant acreage for 2025, which remains 5.7 million acres. We estimate that 3.8 million acres are included in the principal crop planted acreage estimate and the remainder of 1.9 million acres is displayed as the red bar for 2025 shown in Figure 4.



The sum of three components results in a projected total crop acreage for 2025 of 337.8 million acres, 3.0 million acres less than the total for 2024 and tied with 2022 for the lowest total crop acreage over 1998 through 2025. This decline in total crop acres for 2025, if ultimately verified, signals that the decline in total acreage in the U.S. that began in 2014 has not yet run its course.

Implications

An important and often under-appreciated factor when anticipating acreage of crops planted each year is the total acreage base, or the size of the "acreage pie." In this article, we update our earlier estimates of total crop acreage for the U.S. through 2024 and make a projection for 2025. We find that total acreage was relatively stable over 1998 through 2014, varying by roughly +/- 5 million acres from an average of 358.1 million acres. Total acreage declined from 356.7 million in 2014 to a low of 337.8 million in 2022, a decline of 18.9 million acres. This is a major contraction in the crop acreage base for the U.S. and it is important to understand what has been driving it. A popular explanation for the decline in total crop acres is urban sprawl, and there is an inverse relationship between total crop acres and new houses sold in the U.S. after 2014. However, the relationship appears to be tenuous across the entire 1998 through 2024 period. The best that can probably be said at this point is that urban sprawl is likely driving some of the decline in total crop acreage after 2014, but the magnitude is very much open to debate. There is more concrete evidence that low wheat returns and drought conditions in the Great Plains are mainly responsible for the decline.

We project total crop acreage of 337.8 million acres for 2025 using the estimate for principal crop acreage in the March 2025 USDA *Prospective Plantings* report and other assumptions. This is 3.0 million acres less than the total for 2024 and tied with 2022 for the lowest total crop acreage over 1998 through 2025. The decline in total U.S. crop acreage that began in 2014 does not appear to have fully run its course. But it is important to keep in mind that if economic and weather conditions in the Great Plains improve in the future the total could begin ticking up.

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