



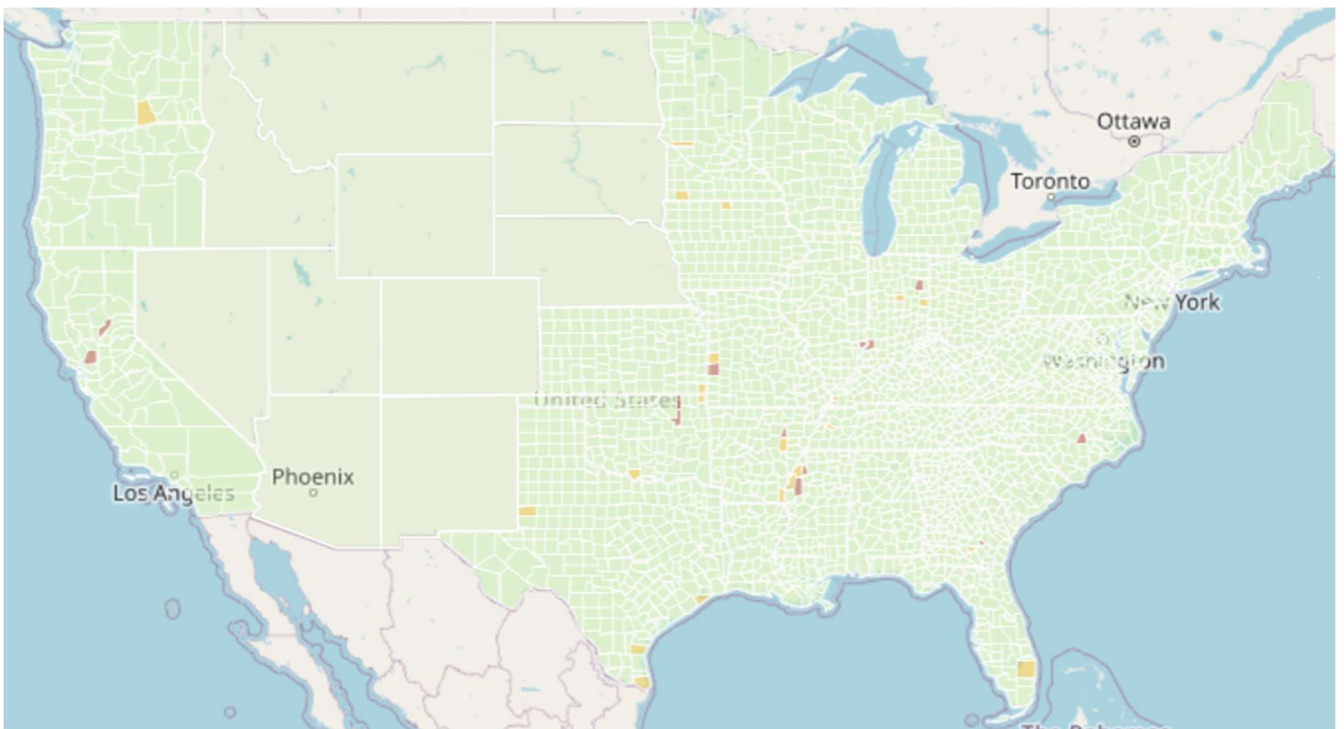
American Hardwood Assured

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AHA 2025 deforestation risk assessment Annual Report

September 2026

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Author's note

This report has been produced independently by George White and commissioned for the American Hardwood Assured (AHA) Platform by the American Hardwood Export Council (AHEC).

The views expressed herein are those of the author and do not necessarily reflect the official opinion of the AHA Platform or American Hardwood Export Council.

Executive Summary

The AHA 2025 assessment finds a low level of potential conversion of U.S. hardwood forest to agricultural land across the area studied. It examined 2,615 counties in 37 states, using a revised 2020 forest baseline and land-use data through 2025. Of approximately 154.5 million hectares of hardwood forest in the baseline, an estimated 94,914 hectares may have been converted to agriculture over five years. This is an average of 18,983 hectares, or 0.012% of the baseline forest area, per year.

Most counties fell below AHA's risk threshold. The assessment classified 2,578 counties (98.6%) as Negligible Risk and 37 (1.4%) as Unspecified or Specified Risk. Further examination confirmed 13 of the 37 as Specified Risk. Only 12 of the higher-risk counties had reported hardwood sawlog production; together, they accounted for approximately 0.34% of the hardwood sawlog volume reported for the assessed states.

The estimated exposure of hardwood production to agricultural conversion was also small. For the 1,491 counties with reported hardwood sawlog production, potential conversion averaged 0.011% of their 2020 hardwood forest area annually. Applying those county-level rates to production gives an estimated 11,636 cubic metres of sawlogs exposed to risk each year, approximately 0.0135% of the 85.9 million cubic metres reported. This is a landscape-level estimate of exposure, not a determination of the origin or status of individual logs.

The analysis finds little relationship between hardwood sawlog production and potential forest loss. Across all 2,615 counties, sawlog production explained less than 1% of the variation in either the area or rate of forest loss. High-producing counties often had low potential conversion rates, while many of the 37 higher-risk counties reported no hardwood sawlog production. The findings do not support hardwood harvest volume as a useful predictor of agricultural deforestation at county level.

Agricultural conversion is concentrated in a small number of counties and is associated with several land uses. In the 37 higher-risk counties, estimated potential forest loss averaged about 2,100 hectares per year. Pecans were the largest single land-use category identified, but this attribution is uncertain: naturally occurring pecan trees and commercial orchards can be difficult to distinguish in satellite data. The report identifies similar classification challenges for blueberries. Soybeans accounted for approximately 6% of potential conversion in these counties. Development and other non-agricultural pressures also affect hardwood forests, although the assessment's principal measure is conversion to agriculture.

The results should be read as a risk assessment rather than proof of land-use change at every flagged site. In its review of 308 selected sites for the 2025 assessment, AHA's Expert Eye process found that 40% of suspected deforestation was not deforestation, while land use could not be determined at 32% of sites. The increase in detected potential conversion since the 2024 assessment largely reflects changes in the forest baseline, imagery resolution and assessment methods, so the two annual estimates should not be treated as a direct measure of change on the ground. AHA uses expert review to refine its classifications and requires platform users sourcing from Unspecified or Specified Risk counties to declare their risk-mitigation actions.

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Front cover map: Unspecified and Specified risk of deforestation counties identified by the AHA Platform for year 2025.

1. Background

1.1 The AHA Platform

The AHA Platform is a bespoke tool exclusively designed for US-based exporters to deliver a robust assurance of the legal and deforestation-free status of hardwoods that originate in the United States. Aside from determining the level of legality risk at a state level, the system uniquely determines the potential level of hardwood forest conversion to agriculture at a county ('micro-jurisdiction') level. Thanks to the US Department of Agriculture's long term earth observation-based monitoring of crop land and forest land in combination with the latest developments in artificial intelligence (AI), the AHA Platform has been available to American hardwood exporters since September 2025. At the time of writing more than 130 US-based exporters have used the Platform to produce due-diligence statements, representing over 250,000 tons of lumber or around 50% of annual US hardwood exports to Europe by volume. Typically, AHA Platform users have indicated that around 6-8 counties supply the wood for each consignment / AHA statement.

Using the latest GIS and AI technology, AHA's independent assessment of deforestation risk is based on two key sources of data: the USDA National Agricultural Statistics Service (NASS) Cropland Data Layer (CDL) and the refined baseline for forest cover¹ which was published by the European Commission's *Joint Research Centre* (JRC) in 2025. The JRC global map of forest cover provides a spatially explicit representation of forest presence and absence for the year 2020 at 10m spatial resolution. The Global Forest Cover 2020 version 3 (GFC2020v3) dataset is widely regarded as a major technical achievement and an important transparency tool for use at a global level. The CDL is an annual geo-referenced, crop-specific land cover data layer produced using satellite imagery and extensive agricultural ground reference data. Annual review of the combined data sets allows the rate and immediate drivers of hardwood forest conversion (in terms of the crops or other land uses that replace forests) to be readily identified.

AHA's independent assessment of deforestation risk is updated annually, with each version named after the year of the CDL data it is derived from. This page reflects the latest current version of that analysis. The current assessment is applied to any new statement regardless of harvest date — that is, every new statement is assessed against this version, irrespective of when the hardwood was harvested.

The analysis starts from the JRC Global Map of Forest Cover 2020 (v3). CDL data from 2017–2020 is then used to remove softwood forests leaving a base map of deciduous forest and mixed forest. This base map is compared against the 2025 10m-resolution CDL to locate potential areas of deforestation. The results are then refined using several further data sources — primarily historic CDL data — to identify areas that are unlikely to have been forest in the recent past and which therefore cannot be deemed to have contributed to deforestation under the EUDR.

¹ Joint Research centre (JRC) (2025) *GFC2020: A Global Map of Forest Land Use for year 2020 to Support the EU Deforestation Regulation* Bourgoin, C.; Verhegghen, A.; Carboni, S.; Amezttoy, I.; Degreve, L.; Fritz, S.; Herold, M.; Tsendbazar, N.; Lesiv, M.; Achard, F.; Colditz, R. (2025). GFC2020: A Global Map of Forest Land Use for year 2020 to Support the EU Deforestation Regulation. Earth System Science Data, preprint. <https://data.jrc.ec.europa.eu/dataset/8c561543-31df-4e1b-9994-e529afecaf54>

For each U.S. County, the assessment shows the percentage of total forest area with a deciduous component potentially converted to agricultural land since 2020.

To enhance the accuracy of the assessment, AHA has developed a procedure to bring expert human eyes to bear on any sites flagged by AI analysis of satellite data as potentially at risk of deforestation. Even the best algorithms can struggle to accurately distinguish between sites subject to sustainable timber harvesting operations; or that are damaged by pests, fires or windthrow; or that are undergoing conversion. In practice, some sites must be scrutinised by experts with knowledge of local forestry practices using higher-resolution satellite data, or even by putting feet on the ground. Over time, the results of this Expert Eye “truthing” exercise will continue to be used to refine the AI analytical procedures.

In its first year of operation the AHA Platform has gained some insight into the make-up of actual hardwood consignments. An example of the complexity of many shipments is given by American White Oak barrel staves shipped to Europe. A single consignment of around 35 cubic metres was identified as originating within ten states and from across 80 individual counties. This one shipment illustrates the degree of sorting required to meet an exacting specification based on colour, timber quality and sizes.

As the introduction date for the European Union Deforestation Regulation (EUDR) draws near it is likely that the number of AHA Platform users will increase. With increased usage will also come increased scrutiny of the Platform and its underlying methodology. This report has been commissioned to independently assess how the Platform functions, which counties have been assessed as at highest levels of potential risk of deforestation and to seek to understand what might be driving this.

Focusing on a sub-set of the several thousand counties within the hardwood producing states allows for more nuanced understanding of the assessment process itself and likely errors in the technology. Understanding these errors allows the AI to learn for future assessments.

Identification of the actual drivers of potential or real deforestation allows for a better understanding of the role of hardwood production in this process and more accurate attribution of the actual drivers of deforestation in the American hardwood context.

Hardwood sawlog production is not a strong predictor of forest loss. Counties with high hardwood production frequently maintain low rates of forest loss, while many counties experiencing the highest forest losses have little or no hardwood sawlog production. Agricultural conversion appears to be a much stronger driver of permanent forest loss than hardwood harvesting itself. Counties producing more hardwood sawlogs do not systematically experience higher percentages of potential forest loss and in practical terms, production volume has almost no predictive power for forest-loss rates.

Across the counties in this dataset, hardwood sawlog production shows virtually no relationship with potential forest-loss rates and explains less than 1% of variation in observed forest loss. Forest loss appears to be driven primarily by land-use conversion—particularly agricultural expansion—rather than by the level of hardwood sawlog production itself.

1.2 Why focus deforestation analysis on U.S. counties?

Following two years of technical and consultative work starting in early 2023, AHA initially concluded that assessing deforestation risk and providing geolocation data for individual hardwood harvesting sites at a property level with each export consignment was unviable due to several structural realities of the U.S. hardwood industry. Due to the naturally diverse composition of US hardwood forests and fragmentation of ownership across 9.4 million family forests in hardwood-producing regions with average holdings of just 9 hectares, a single harvest produces only a very small volume of each hardwood species, size, and grade. As a result, US hardwood exporters need to rely on extensive aggregation across numerous harvest locations to create viable export consignments, resulting in a single shipment potentially containing material from thousands or tens of thousands of individual properties.

This creates significant technical challenges at a time when the resolution and accuracy of publicly accessible satellite data, and the algorithms that detect land-use change, are still not sufficient for confident assessment and attribution of deforestation events at the level of non-industrial private properties in the U.S. However, publicly accessible data and existing land-use change algorithms are more than adequate to accurately assess deforestation risk at a county level in the U.S., particularly to identify counties where deforestation events are extremely rare or non-existent.

In the U.S. hardwood sector, satellite analysis of deforestation events is greatly complicated by the time factor. Unlike for agricultural crops where their contribution to deforestation can be assessed by determining if they are on land that was previously a forest after a certain cut-off date – i.e. assessing a past event – in the U.S. hardwood sector it is only possible to assess the *probability* that harvesting will be followed by deforestation in the future. It typically takes several years – sometimes up to a decade – before satellite data can confirm, or otherwise, that harvesting has been followed by forest regrowth. Therefore, satellite data cannot be used at the time U.S. hardwoods are exported to check there was no deforestation at the specific site where harvesting occurred. In this sector, satellite data is most effectively used to determine if there is a *systemic risk* of conversion within specific counties over a longer time horizon, and what are the drivers of deforestation where it occurs. From that, strategies and plans can be developed to mitigate risk in the future.

The analysis covers 2,615 counties, with an average forest base area of around 59,000 hectares per county. Of these, 1,491 counties are recorded as harvesting hardwood sawlogs, with average annual production of over 57,000 m³.² These figures are comparable to those of typical state forest areas or industrial forest landholdings in both the U.S. and other countries.

Counties represent the frontline of elected governance and function as key administrative units within states throughout the U.S. with significant responsibilities for land management and resource planning. They therefore provide an appropriate unit for assessment of deforestation risk and development of action plans to mitigate this risk where necessary.

² AHA analysis of USDA Forest Inventory Analysis (FIA) database, latest state annual inventory 2020-2025 depending on state.

At the time of writing, recent advances suggest that the provision of **harvest site geolocation “in excess” at a county level** has become more feasible and may become available for users of the AHA Platform by 2027. The developing approach builds a complete biomass analysis using the NDVI index³ (a measure of healthy canopy) derived from Sentinel 2 red and near infra-red channels in areas previously identified as forest in the revised 2020 forest base layer. Changes in this layer are identifiable on a year-on-year basis to allow identification of forest thinning and low intensity harvesting as well as more obvious clear fell areas. These changes can be corroborated using NASA GEDI LiDAR⁴ and ESA CCI biomass primary datasets.⁵ Future development might also use a combination of these technologies, plus the Forest Persistence layer from the Forest Data Partnership⁶ and an adaptation to the AHA Expert Eye process to help re-categorise large areas of hardwood plantation forest which are not currently differentiated by the CDL or JRC. Further detail on these developments will likely be available in late 2026 or early 2027.

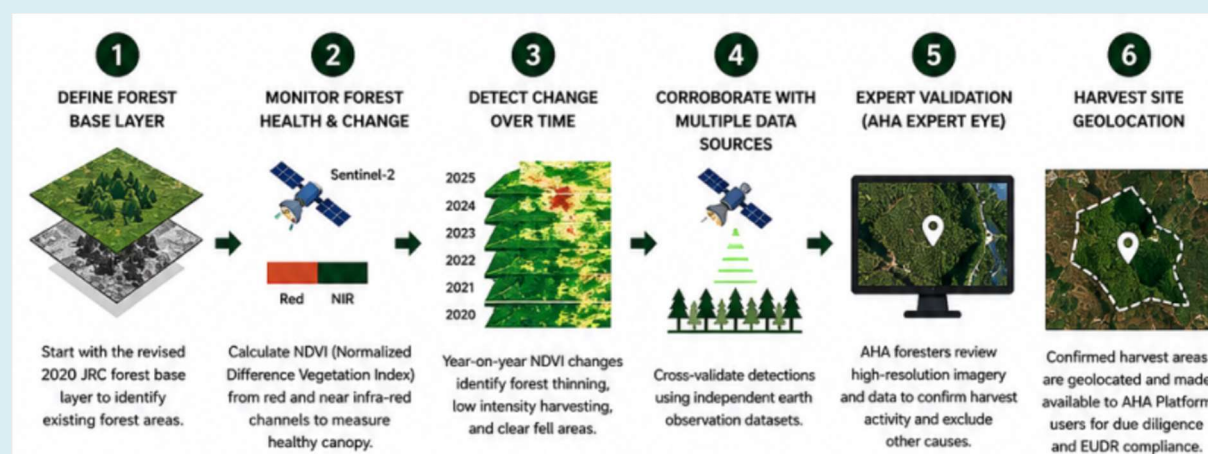


Figure 1 Overview of how AHA is developing new techniques to identify geolocations for hardwood harvest sites

1.3 Definitions

To facilitate broad acceptance in the global market, the AHA assessment of deforestation risk in U.S. hardwood forests is based, as far as possible, on internationally recognised definitions of deforestation by the United Nations Food and Agriculture Organisation (UN FAO). It also takes account of the definitions used in the EU Deforestation Regulation (EUDR) and related guidance issued by the European Commission.

As the focus is on the risk of commodity-driven deforestation of hardwood stands, the analysis quantifies the extent of conversion of deciduous and mixed deciduous / coniferous

³ The Normalized Difference Vegetation Index (NDVI) is one of the most widely used satellite-derived indicators of vegetation health, density, and productivity. It is commonly used in agriculture, forestry, land-cover mapping, and deforestation monitoring.

⁴ GEDI (Global Ecosystem Dynamics Investigation) is a spaceborne LiDAR mission developed by National Aeronautics and Space Administration and installed on the International Space Station in 2018. Its primary purpose is to measure the three-dimensional structure of forests and vegetation across much of the Earth's land surface. Unlike conventional satellite imagery, which records reflected light, GEDI uses LiDAR (Light Detection and Ranging) to directly measure the vertical structure of vegetation.

⁵ The ESA CCI Biomass products are global above-ground biomass datasets derived from a combination of radar (ALOS PALSAR, Sentinel-1, Envisat ASAR), LiDAR (ICESat GLAS, GEDI), optical imagery (MODIS, Landsat, Sentinel-2), and ground-based forest inventories. They provide estimates of forest biomass and carbon stocks and are widely used to assess forest condition, carbon storage, degradation, and recovery. For EUDR applications, they are valuable supporting datasets for distinguishing biomass loss from permanent forest conversion, but they do not directly identify deforestation on their own.

⁶ The Forest Persistence Layer developed by the Forest Data Partnership is a remote-sensing dataset designed to identify areas that have remained continuously forested over time.

forest to agricultural land. Unless otherwise stated, the term “*hardwood forest area*” in this report refers specifically to the area of deciduous and mixed deciduous / coniferous forest in hardwood producing states of the United States.

The term “*deforestation*” refers to the conversion of deciduous and mixed deciduous / coniferous forest in hardwood producing states of the United States to agricultural land as categorised by US government assessment.

“*Hardwood producing states*” are those for which FIA Program data⁷ identifies that hardwood sawlog harvests are being undertaken in the latest year reported.

Drawing on the analysis and in consultation with stakeholders, AHA has determined a threshold level for deforestation at county level. For each U.S. County, the AHA assessment identifies the percentage of hardwood forest area potentially converted to agricultural land between 2020 and 2025 and classifies each county as follows:

- *Negligible risk* – deforestation confirmed as less than 0.5% over the five-year period (<0.1% average deforestation per year).
- *Unspecified risk* – deforestation possibly more than 0.5% over the five-year period. Further assessment using the Expert Eye tool (see sections 2.2 and 2.3 below) is needed before negligible risk can be confirmed. (>0.1% average unconfirmed deforestation per year)
- *Specified risk* – deforestation confirmed as more than 0.5% over the five-year period following further assessment using the AHA Expert Eye tool. (>0.1% average confirmed deforestation per year).

The European Commission used two key quantitative thresholds in its 2025 EUDR benchmarking methodology⁸ to identify *countries* eligible for their low-risk category:

- Annual forest loss below 0.2% of total forest area (measured over 2015–2020), and
- Annual forest loss below 70,000 hectares.

A *country* generally needed to remain below both thresholds (along with other conditions and qualitative checks) to be considered low risk.

AHA’s chosen threshold for determining risk at a *county* level (0.1% average deforestation per year) is therefore precisely set at half the low-risk threshold level determined by the European Commission.

Where hardwood derives from U.S. counties identified as “Unspecified” or “Specified” risk, U.S. hardwood exporters using the AHA Platform must declare the actions taken to mitigate the risk of sourcing products from sites that may be converted to agricultural land in those counties.

⁷ US Forest Inventory and Analysis (FIA) data <https://research.fs.usda.gov/programs/nrum#data-and-tools->

⁸ https://environment.ec.europa.eu/publications/commission-implementing-regulation-laying-down-rules-application-deforestation-regulation_en?

2. Methodology to identify potential deforestation

2.1 AI Analysis of Satellite Imagery

Artificial Intelligence (AI) analysis for potential deforestation detection utilizes satellite imagery and sometimes other data sources to detect changes in forest cover. This involves training AI models to recognize patterns of deforestation, such as tree loss and especially changes to land use.

To identify areas of potential deforestation, AHA has undertaken analysis of changing land use since 2016 across 37 states which contain 2,615 counties. The 2025 assessment has covered a total forested area of 154,511,676 hectares (circa 381,644,000 acres). This has been through a combination of statistical analysis, artificial intelligence (AI) and expert human examination.

The year 2020 has been used as the baseline for all AHA analysis for potential deforestation.

One major source of data has been the USDA National Agricultural Statistics Service (NASS) Cropland Data Layer (CDL)⁹ which itself draws primarily on 30m resolution Landsat data and more recently (i.e., for 2025) 10m resolution Sentinel-2 satellite data. The CDL is widely trusted because it is one of the most transparent, extensively validated, and consistently updated agricultural land-cover datasets in the world. USDA generally positions the CDL as an agricultural land-cover product suitable for broad forest / non-forest context that was originally developed to support crop acreage estimation.

The second major source of data used for this analysis by AHA is a further refined baseline for forest cover¹⁰ which was published by the European Commission's *Joint Research Centre* (JRC) in 2025. The JRC global map of forest cover provides a spatially explicit representation of forest presence and absence for the year 2020 at 10m spatial resolution. Known as the Global Forest Cover 2020 version 3 (GFC2020v3) dataset, it is widely regarded as a major technical achievement and an important transparency tool for use at a global level.

Some additional manipulation of the GFC2020(v3) dataset has been required to remove roads from the analysis as these are considered within it as 'forest' and subject to their density their presence is in reality likely to cause numerous false positives for subsequent deforestation analysis. The AHA analysis has therefore removed roads from the combined analysis. This version of the deforestation risk analysis has also removed softwood forests and agricultural crop trees such as planted pecan nut trees, apple and cherry fruit trees or orchard ("English") walnut trees. This base map has been compared with the 2025 10m-resolution CDL to locate potential areas of deforestation driven by agriculture.

The USDA Cropland Data Layer (CDL) has been updated annually since 2008 with new data released, usually in January each year, reflecting the crop and forest types occupying land

⁹ https://www.nass.usda.gov/Research_and_Science/Cropland/SARS1a.php

¹⁰ Joint Research centre (JRC) (2025) *GFC2020: A Global Map of Forest Land Use for year 2020 to Support the EU Deforestation Regulation* Bourgoin, C.; Verhegghen, A.; Carboni, S.; Ametztoy, I.; Degreve, L.; Fritz, S.; Herold, M.; Tsendbazar, N.; Lesiv, M.; Achard, F.; Colditz, R. (2025). *GFC2020: A Global Map of Forest Land Use for year 2020 to Support the EU Deforestation Regulation*. Earth System Science Data, preprint. <https://data.jrc.ec.europa.eu/dataset/8c561543-31df-4e1b-9994-e529afecaf54>

during the previous growing season. The AHA deforestation-risk assessment for each year is updated as soon as possible after the CDL annual update becomes available.

The GFC2020(v3) dataset and maps are intended for global-scale use, not parcel-level legal determinations. Aside from its technical validity and useability at a global scale, the system also benefits from patronage of the European Commission.

The combined dataset has been further enhanced by the removal of false-positive ‘forest’ areas that were in reality agricultural areas in 2009, but which were misclassified as forest in 2020 by both the CDL and GFC. Such areas are likely to have remained fallow and, in some cases, had begun to partially regenerate or had become scrubland. These areas are not considered secondary or regenerating forests as defined by the European Commission.¹¹ For the purposes of this analysis, these false-positive areas are not considered secondary forest regrowth and are not treated as forest as per the EUDR forest definition extant on 31st December 2020. The CDL from 2009 onwards is considered the only legitimate source of land use designation in the USA with which to make such a determination.

The combined dataset (from the years 2016 to 2025 inclusive) has then been re-sampled at different spatial and temporal frequencies to provide training data for a deep convolutional neural net. A deep convolutional neural network is a type of artificial neural network designed primarily for processing grid-like data, such as images, by automatically learning complex features through multiple layers of operations. In this context it is used to identify trends from year to year at local, regional and state level, and to assess the likelihood that any given area of tree-cover loss is related to forest clearance to make way for food production.

The AHA Platform bespoke AI has been trained to recognize patterns in the data that suggest deforestation through analysis of images over time to detect changes, such as patterns indicative of potential deforestation. These changes include changes in forest cover (especially tree cover density), road construction, housing, or industrial development, quarrying or mining, or, most importantly, establishment of agricultural row crops.

Areas which are highlighted as being potentially deforested or which are identified by the combined dataset as being deforested but where the AI analysis suggests that this is unlikely are then examined by a human expert using high resolution satellite imagery across several years in order to ascertain whether deforestation has indeed occurred. The human expert results inform the statistical analysis and are fed back into the AI model in order to improve its future capabilities.

2.2 AHA Expert Eye land use truthing tool

An AHA Expert Eye land use truthing tool has been developed to improve the accuracy of deciduous forest conversion assessments made using AI alone. To enhance the accuracy of the assessment, AHA has developed a procedure to bring expert human eyes to bear on any sites flagged by AI analysis of satellite data as *potentially* at risk of deforestation. Even the best algorithms can struggle to accurately distinguish between sites subject to sustainable

¹¹ European Commission FAQ on EUDR Implementation (5th FAQ, 4 May 2026) https://environment.ec.europa.eu/publications/faq-eudr-implementation_en

timber harvesting operations; or that are damaged by pests, fires or windthrow; or that are undergoing conversion. In practice, some sites must be scrutinised by experts with knowledge of local forestry practices using higher-resolution satellite data, or even by putting feet on the ground. Over time, the results of this on-going “truthing” exercise will be used to refine the AI analytical procedures.

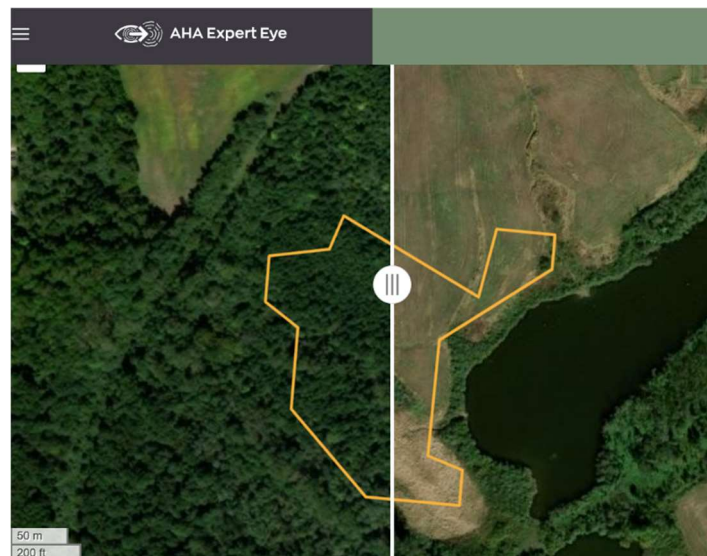
In 2024 application of AI to the pre-prepared USDA Cropland Data Layer (CDL) allowed vast areas to be assessed whilst still giving relatively high levels of confidence in the assessments produced. The process was not 100% accurate though, and further checks were required to improve accuracy and to eliminate errors. The Expert Eye tool therefore improved the level of accuracy and for these rectified errors to be fed back into the algorithm. The importance of truthing is especially pertinent in counties where the estimated deciduous forest conversion rate is relatively close to the threshold used by AHA. Set at 0.1% conversion per annum the rate determines whether a county is classified as negligible risk (below 0.1% per annum) or specified risk (over 0.1% per annum). The tool focuses on selecting sites in counties which are close to the 0.1% threshold to ensure that mis-categorisation is reduced, or risk is specified only where it is very likely to be present.

The Expert Eye tool allows selected sites to be scrutinised using a range of other visual data and human input that can reveal greater detail and the wider context for the potential change in land use, such as proximity to other crops, previously invisible infrastructure developments, or signs of fire and pest damage that the AI might mistake for conversion to agriculture.

Figure 2 Comparison of EO images from 2020 (left) and 2026 (right) using the AHA Expert Eye tool. The image indicates deforestation driven by agriculture.

Note: The tool allows multiple image choice from 31 sources with images from 2014 to 2026 for comparison and cropland data from 2009 to 2025.

Assessing temporary vs permanent abandonment is an important determination. USDA generally treats fallow or idle cropland as agricultural land, that is *not* forest and which has not been permanently converted. Analysis of CDL imagery going back to 2009 can identify land in long term fallow or idle status. This distinction is important for land-use change analysis and deforestation assessments.



Some idle land enters the USDA Conservation Reserve Program. This land may be planted with grasses or trees, remain agricultural in legal classification and appear vegetated or semi-natural in satellite imagery. This can complicate remote-sensing interpretation.

Satellite imagery may show idle cropland as bare soil, grass-covered, shrubby, or showing signs of early successional vegetation. Because of this, fallow fields are sometimes confused with grasslands, shrublands, or young forest regeneration. In these circumstances long time-series analysis is needed. USDA generally views fallow cropland as part of an ongoing

agricultural system if the land remains suitable for cropping, and agricultural use is expected to resume where the resting period is temporary.

These distinctions matter a lot in land-use verification. A parcel may look vegetated in one year, still be legally and operationally agricultural and be classified by USDA as idle cropland rather than forest.¹² Historical USDA CDL records can therefore be powerful evidence that land remained agricultural despite temporary vegetation growth.

2.3 Initial results of AHA Expert Eye tool

In the 2024 phase using the Expert Eye tool scrutinised a total of nearly 270 sites worthy of consideration. These ranged in size from sites as small as 1 acre through to sites spanning more than 100 acres. Priority was attached to sites in counties close to the risk threshold where truthing will allow the county to be correctly identified as either “unspecified risk” or “negligible risk”. The first round of assessment was undertaken by one expert primarily to test the value and feasibility of future widescale assessment.

The analysis concluded that 52% of the “deforestation” identified / suspected by the AI was not actual deforestation. It concluded that this land either remains as forest land (27% of the sites assessed) or remained as agricultural land (25% of the sites).

The analysis also concluded that 37% of the potential deforestation identified / suspected by AI was likely to be actual deforestation. It either was forest land in 2020 and in 2024 had become agricultural land (33%) or has been developed into a non-agricultural or non-silvicultural land use, such as through some form of development (4%). Development sites identified ranged from industrial sites, through to housing and mining sites.

For 10% of sites suspected as “deforestation” identified by the AI, the land use could not be determined. This is due to the image quality being too poor or situations where the past and/or present land use cannot be identified. In this situation it is often clear that forest land has been cleared but there is no subsequent image available to reveal the intended land use.

Learning from the Expert Eye truthing process in 2024 contributed to the AI assessment in 2025.

For the 2025 assessment a further Expert Eye analysis of 308 sites was conducted by a single expert. These sites ranged in size from 3 hectares (circa 7 acres) to over 150 hectares (circa 370 acres). As in 2024 the analysis focused on a selected group of potential false-positives (potentially indicating “deforestation” where in fact unlikely) and a number of potential false-negatives (potentially indicating “forest” where there is / was in fact none).

Table 1 Summary of analysis using the AHA ‘Expert Eye’ truthing tool for 2025 data

‘Expert eye’ determined status	Number of sites assessed
Agricultural land – no change 2020-2025	66
Forest land – no change 2020-2025	60
Forest land converted to agricultural land 2020-2025	70
Forest land converted for development 2020-2025	13
Unidentified / unknown land use either in 2020 or 2025	99

¹² https://www.nass.usda.gov/Research_and_Science/Cropland/metadata/meta.php

The 2025 Expert Eye analysis concluded that 40% of the “deforestation” identified / suspected by the AI was definitely not actual deforestation. It concluded that this land either remains as forest land (19% of the sites assessed) or remained as agricultural land (21% of the sites). It also identified quite a large number of sites where no determination could be made (32%). Around 4% of sites assessed were determined to be deforestation driven by development.

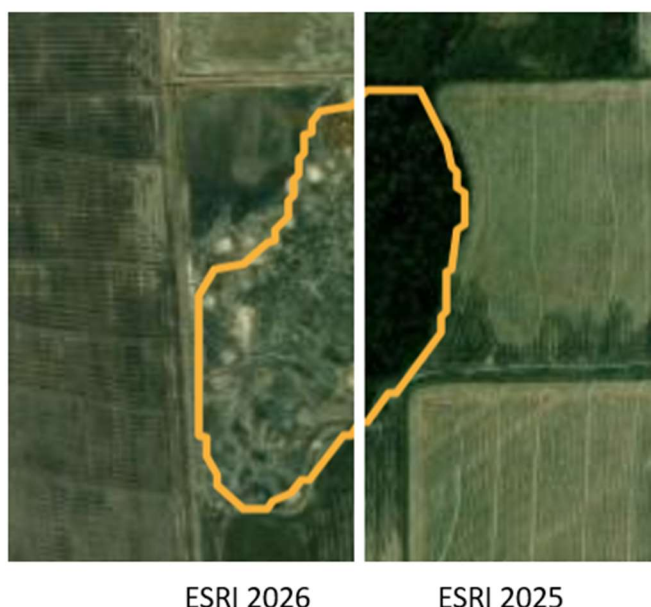


Figure 3 Site in Woodruff County, Arkansas. A small, wooded area harvested in 2025. The wider agricultural context suggests this may be the final stages of conversion. Conversely, the site may be awaiting regeneration – highlighting one of the difficulties of assessment.

The majority of sites scrutinised where the land use was ascertained were concluded to be agricultural land. The process was facilitated by the addition of extra layers of information becoming available. These included updates to ESRI¹³ images for 2025 and 2026 plus updates to Google¹⁴ imagery for some areas. Of particular value were crop maps for all years from 2009 to 2025 generated from the Cropland Data Layer (CDL). Cross referencing between years and the variety of other maps identified anomalies and confirmed determinations. A clear timeline of CDL imagery ranging back to 2009 has proven useful to determine the land use category over an extended time period. In some states, such as Missouri, Louisiana and Georgia, land use alternates between fallow or idle

agricultural land, short rotation tree plantations and row crops. Only an extended temporal consideration of the available imagery allows an informed determination of the possibility of actual deforestation. Almost one third (32%) of the sites analysed in 2025 were concluded as an unknown land use in 2020 - potential forest conversion identified by AI but not determinable by Expert Eye. Typically, such sites cannot be determined as agricultural land, either in current production or left as fallow land. These sites cannot also be determined to be forest land either based on visual cues. In some cases, these sites appear to be in the latter stages of conversion or reactivation to future use as agricultural land. Most of the sites within this category typically have had any tree or shrub cover removed but show no evidence of row crops or ploughing. Some sites may be awaiting future tree replanting; some will continue in an indeterminate state with their future usage known only to the landowner. The phenomenon of unknown land use will likely continue into future assessments as the 2020 base layers of maps and Cropland Data Layers will be unlikely to ever improve. Being unable to determine a land use in 2020 ensures that 100% accurate determinations of land use change post 2020 will remain elusive.

¹³ Esri World Imagery is one of the most widely used base map imagery products in GIS and remote sensing applications. It typically uses images at 1-2 metre resolution in rural areas. <https://www.esri.com/en-us/arcgis/products/unlock-earths-secrets>

¹⁴ Google Maps satellite imagery is one of the most commonly used sources for visually examining land cover, forestry, and agriculture.

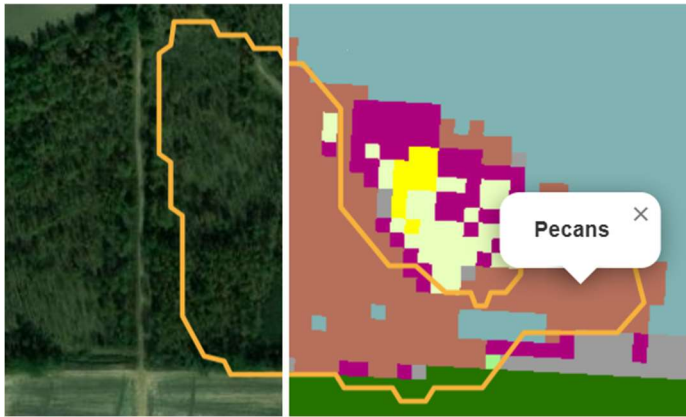


Figure 4 Site in Washington County, Mississippi. The left-hand image shows the forest area in 2025. The right-hand image shows the CDL assessment for the area in 2025. The CDL suggests the area is pecans. The land was recorded as fallow agricultural land between 2009 and 2020.

The initial results of the 2025 analysis were again used to train the AI and allowed a refinement of the raw data produced by the first run.

Perhaps of most significance, the results of the Expert Eye truthing process have allowed a number of counties in 2025 to be categorised as Specified Risk - where deforestation has been confirmed as more than 0.1% annual deforestation for agriculture. This follows further close assessment by Expert Eye and has revealed that 13 counties are now identified under this category.

In 2026, additional reviews of selected sites have been determined as being required for future assessments to continue to improve accuracy of the assessment.

Additional scrutiny will ensure that any changes are credible and reflect the expert opinion of more than one individual expert. Where there is agreement between experts, learning for the AI algorithm will be incorporated where possible into future analysis. A planned assessment to be undertaken in 2026 will likely take into account learning from around 500 sites where the assessments will be performed by up to five local experts – in effect potentially offering around 2,500 validations. Results of the ongoing and enhanced Expert Eye truthing process will be integrated in the 2026 annual report.

3. Deforestation risk at national and state level

3.1 National level deforestation risk

Considering the deforestation risk from across the 37 states producing hardwoods and 2,615 counties, the risk of hardwood being from land potentially deforested for agriculture is extremely low.

AHA estimates of agriculturally driven deforestation for the period 2020-2025 suggest that in total the 37 states contained over 154 million hectares of hardwood forest in 2020. In the five years from 2020 to 2025 potentially 94,914 ha of this land had been converted to agriculture, representing 0.012% of the 2020 forest land being converted annually. For comparison, this is just 1/16th of the 0.2% conversion rate set by the EC to define “low risk” countries under EUDR.

The annual potential deforestation rate increased from 10,400 hectares (0.010%) in the 2024 assessment to 18,983 hectares (0.012%) in the 2025 assessment. This largely reflects a shift to using higher resolution 10m Sentinel 2 data (from previous 30m resolution Landsat data) which picks up more potential conversion sites from a larger forested area.

The 37 assessed states with corresponding FIA harvest data available produce around 86 million cubic metres of hardwood per year of which 11,636 *could* have been sourced from potentially cleared land in 2025. Wood obtained from land *potentially* cleared for agriculture represented 0.013% of the total wood harvested in 2025.

Table 2 Determination of deforestation risk for US hardwoods for 2025: all counties in 37 assessed states

Number of counties assessed across 37 states in 2025	2,615
Forest area of counties assessed (hectares) – all counties in 37 states	154,511,676
Total area potentially deforested (2020-2025) (hectares) ¹⁵	94,914
Area potentially deforested per year in 2020-2025 (%)	0.012
Area potentially deforested per year between 2020-2025 (hectares)	18,983

Analysis indicates that there are 311 counties that have no corresponding record of hardwood production on the US Forest Inventory Analysis (FIA) database.

Table 3 Determination of deforestation risk for US hardwoods for 2025: all counties with corresponding FIA harvest data available in 37 assessed states – i.e. producing hardwood and / or softwood

Number of counties with corresponding FIA harvest data in 2025)	2,304
Forest area of counties assessed (hectares) ¹⁶ - all counties with FIA harvest data	147,618,704
Area potentially converted to crop land (2020-2025) (hectares) ¹⁷ - all counties with FIA harvest data	89,932
Area potentially converted to crop land per year in 2020-2025 (%)	0.012
Annual area potentially converted to crop land (ha) – annual (hectares)	17,986
Total hardwood production per year (m ³) ¹⁸	85,931,593
Exposure to risk by volume per year (m ³) ¹⁹	11,636
Exposure to risk as a share of total hardwood harvest (%)	0.0135

Closer examination of the **1,491 counties recorded as producing hardwoods** reveals that the level of risk of deforestation is even lower than for the overall sample. The assessment reveals that 66,982 hectares of forest land was potentially converted to agriculture in these counties between 2020 and 2025, with an annual total of 13,396 hectares potentially converted. This is from a forest baseline area of over 121.2 million hectares in 2020.

Table 4 Determination of deforestation risk for US hardwoods in 2025: counties producing hardwoods in 37 assessed states

Number of counties recording hardwood production	1,491
Forest area of counties assessed (hectares) – producing hardwoods	121,260,646
Area potentially converted to crop land (2020-2025) (hectares) – all counties producing hardwoods	66,982
Annual area potentially converted to crop land – annual (hectares)	13,396
Area potentially converted to crop land per year in 2020-2025 (%)	0.011
Total hardwood production per year (m ³)	85,931,593
Exposure to risk – per year (m ³)	11,636
Exposure to risk - Annual percentage converted annually (%)	0.0135

¹⁵ AHA platform analysis of potential deforestation attributed to agriculture – 2025 data.

¹⁶ AHA platform analysis of forest area in 2020

¹⁷ AHA platform analysis of potential deforestation attributed to agriculture – 2025 data against 2020 baseline area.

¹⁸ US Forest Inventory and Analysis (FIA) data for the 37 states that AHA assess as producing 99.9% of US hardwood production. Data for latest year from 2021-2024 with latest year available used.

¹⁹ The attributed share of the hardwood log harvest volume using the volume exposed to risk of potential deforestation.

It should be noted that state-level totals include all counties within the 37 assessed states, whereas Tables 3 and 4 are restricted to counties for which corresponding FIA production data are available. Consequently, totals differ between these tables.

For **counties producing hardwoods**, 0.011% of the forest land was potentially converted annually. **Considering this in terms of risk exposure, around one cubic metre of hardwood sawlogs for every 7,385 cubic meters entering supply chains would have originated from land potentially converted to agriculture** (see Table 4).

3.2 State level deforestation risk

The 2025 AHA potential deforestation analysis considers counties in 37 states, increased from 34 states in 2024. The analysis reveals that the area of forest land potentially converted per state varies widely. Importantly no single state exceeds the threshold used by AHA to determine Unspecified Risk – i.e., potential conversion of hardwood forest at or above 0.1% per year.

The States with the largest forest area potentially converted are North Carolina, Georgia, Mississippi and South Carolina. The states with the lowest areas potentially converted are Rhode Island, Connecticut and New Hampshire – all having extremely low levels.

The volume of hardwood sawlog harvested in each state varies widely with states such as Virginia, Kentucky, Tennessee, Pennsylvania producing over 6 million cubic metres per year; compared to states such as Rhode Island and Delaware producing less than one hundred thousand cubic metres.

Using the percentage of forest area potentially converted per year it is possible to calculate the volume of hardwood sawlog exposed to this risk per year. The highest annual exposure to risk in absolute sawlog harvest volume terms occurs in North Carolina (1,481 m³). The lowest exposure to risk on a volume basis occurs West Virginia, Maine, Vermont, Washington, Minnesota and New Hampshire (all well below 100 m³ per year).

For context, Minnesota harvests over 1.9 million cubic metres of hardwood sawlogs each year and Kentucky harvests annually over 6.2 million cubic metres. The volumes potentially exposed to deforestation driven by agriculture and exposed to this risk are, by comparison, almost vanishingly small at less than 11,000 m³ out of an annual harvest of around 86 million m³.

The first striking result is that **states with the largest hardwood industries generally exhibit very low rates of potential agricultural conversion**. For example, Michigan produces over 5 million m³ of sawlogs but has a supremely low potential annual conversion rate of 0.007%. Pennsylvania produces over 6 million m³ per year and has an even lower potential annual conversion rate at 0.006%. Although North Carolina exhibits one of the higher conversion rates among major hardwood-producing states, even there the estimated annual conversion rate is only 0.029% of the 2020 forest base.

Conversely, **states with the highest conversion rates are generally not the largest hardwood producers**, for example North Carolina produces over 5 million m³ per year but has a

conversion rate still relatively low at 0.028%. Even these values remain extremely low in absolute terms, representing only a few hundredths of one percent of the forest estate each year.

The most relevant metric is the estimated hardwood volume exposed to agricultural conversion. Across all states, exposure levels are remarkably low. The highest exposure rates are Delaware (4.8 m³ per 10,000 m³) and North and South Carolina at 2.9 m³ per 10,000. Even Delaware—the highest-risk state in the dataset—has only 46 m³ exposed annually. This implies that approximately **99.95% of hardwood production is not associated with potential agricultural conversion in a given year.**

For the major hardwood-producing states, exposure is even lower: Virginia at 1.1 m³ per 10,000 m³, Kentucky also at 1.1 m³ and Pennsylvania at 0.6 m³ per 10,000 m³. In practical terms, between **99.89% and 99.98% of hardwood production in these states is outside areas of potential agricultural conversion.**

A regional pattern also emerges. States within the Appalachian hardwood region (Kentucky, Tennessee, Virginia, Pennsylvania, West Virginia and New York) combine:

- High hardwood production
- Very low annual conversion rates
- Large forest areas
- Very low exposed volumes

This region represents the core of the U.S. hardwood industry and exhibits some of the lowest apparent deforestation risks in the dataset.

Within the Southern hardwood region (Georgia, North Carolina, South Carolina, Mississippi, and Alabama) there are somewhat higher conversion rates but still very low exposure relative to production volumes. These states account for a substantial proportion of U.S. hardwood production while maintaining annual conversion rates generally below 0.03% of forest area.

Viewed through the lens of the European Union Deforestation Regulation, the dataset suggests three important conclusions:

- First, there is **no evidence that major hardwood-producing states are experiencing widespread agricultural conversion of forests.** The states supplying the largest volumes of hardwood to domestic and international markets generally exhibit low rates of forest conversion.
- Second, **the volume of hardwood production potentially exposed to agricultural conversion is extremely small relative to total production.** Across most states, fewer than two cubic metres per 10,000 cubic metres produced are associated with areas potentially converted to agriculture.
- Third, the data support a **low / negligible risk landscape assessment** for most U.S. hardwood-producing regions. The state-level evidence indicates that hardwood production occurs overwhelmingly within stable forest landscapes rather than areas undergoing significant agricultural expansion.

The complete 37 state-level dataset suggests that U.S. hardwood production is occurring within a highly stable forest resource. Annual agricultural conversion typically affects between 0.002% and 0.03% of forest area, while the volume of hardwood production potentially exposed to conversion averages only 0.2–2.9 m³ per 10,000 m³ produced.

Consequently, **more than 99.9% of hardwood production in most states appears to originate from forests that remain forest**, providing strong quantitative evidence that **the U.S. hardwood sector has a very low exposure to deforestation risk**.

Table 5 Overview of potential deforestation and risk exposure for 37 hardwood producing states

State	Total hardwood sawlog production (m ³)	Area potentially deforested for agriculture per year 2020-2025 (ha)	Baseline Forest area 2020 (ha)	% potentially converted annually	Hardwood volume exposed per year m ³	Log volume exposed per 10,000 m ³ of logs	Log volume exposed per 10,000 m ³ of logs (2024)
AL	3,788,720	3,757	6,529,374	0.012	436	1.2	0.0
AR	2,662,483	3,454	5,717,759	0.012	322	1.2	0.6
CA	619,699	2,727	5,198,998	0.010	65	1.0	1.0
CT	422,160	202	704,169	0.006	24	0.6	n.d.
DE	95,198	348	143,788	0.048	46	4.8	5.0
FL	531,341	1,552	3,861,819	0.008	43	0.8	0.1
GA	3,550,456	8,306	6,313,473	0.026	934	2.6	0.3
IA	543,671	1,083	1,210,483	0.018	98	1.8	5.3
IL	1,224,726	2,948	2,294,451	0.026	315	2.6	6.5
IN	2,324,435	2,416	2,264,661	0.021	496	2.1	4.4
KS	248,659	1,484	1,080,729	0.028	68	2.8	n.d.
KY	6,383,166	3,064	5,672,967	0.011	689	1.1	1.6
LA	1,781,461	2,414	3,696,102	0.013	233	1.3	2.0
MA	239,188	132	1,048,881	0.003	6	0.3	0.1
MD	509,614	696	1,066,950	0.013	67	1.3	1.1
ME	1,909,507	2,268	5,392,248	0.008	161	0.8	0.1
MI	5,304,784	2,777	7,918,222	0.007	372	0.7	1.1
MN	1,901,216	1,752	7,176,393	0.005	93	0.5	0.9
MO	2,497,056	4,712	6,979,314	0.014	337	1.4	n.d.
MS	3,069,712	6,101	5,866,495	0.021	638	2.1	0.0
NC	5,036,960	8,914	6,064,028	0.029	1,481	2.9	1.1
NH	671,783	150	1,559,918	0.002	13	0.2	0.0
NJ	181,935	314	747,383	0.008	15	0.8	1.0
NY	4,026,505	2,583	6,981,852	0.007	298	0.7	0.7
OH	2,463,625	2,322	3,496,208	0.013	328	1.3	1.8
OK	522,582	3,433	3,978,368	0.017	90	1.7	0.1
OR	1,615,251	462	3,146,361	0.003	47	0.3	0.1
PA	6,319,727	2,235	7,236,297	0.006	390	0.6	0.6
RI	54,109	33	141,047	0.005	3	0.5	0.2
SC	2,423,396	4,852	3,313,874	0.029	710	2.9	0.7
TN	6,382,519	3,402	5,925,370	0.011	733	1.1	0.6
TX	1,058,933	472	9,197,215	0.003	32	0.3	0.1
VA	7,025,151	3,294	6,085,861	0.011	763	1.1	0.5
VT	517,535	275	1,642,858	0.003	17	0.3	0.0
WA	1,655,531	360	2,518,553	0.003	47	0.3	0.0
WI	3,678,386	4,242	7,138,131	0.012	437	1.2	1.3
WV	3,112,573	597	5,201,075	0.002	71	0.2	0.0

Note 1 – n.d. = no data for comparison.

Note 2 - All figures rounded.

Note 3 - State totals include counties with no reported hardwood harvest.

3.3 Changes from 2024 to 2025

Improvements in establishing the 2020 baseline for forests across the hardwood producing states have increased the overall detection of potential deforestation across the full range of counties. The addition of extra hardwood producing states has also increased the area of hardwood producing forest under consideration.

A better understanding by the AI of what is likely in reality to be happening at each point of detection in combination with the Expert Eye has produced a richer understanding of deforestation whilst not significantly changing the number of counties assessed at or above the threshold for Unspecified / Specified Risk.

Figure 5 perhaps best illustrates the relative lack of change in the levels of potential deforestation risk and the associated exposure to this risk expressed in log volume. Across all of the states assessed the exposure figure has risen slightly in 2025 to 1.3 m³ logs per 10,000 m³ of log production, rising from 1 m³ in 2024.

On a state-by-state basis the level of exposure has decreased significantly in Indiana, Iowa and Illinois. Noticeable increases are evident for both of the Carolinas. Some of the reasons behind these changes are discussed in Section 4 and within the annex.

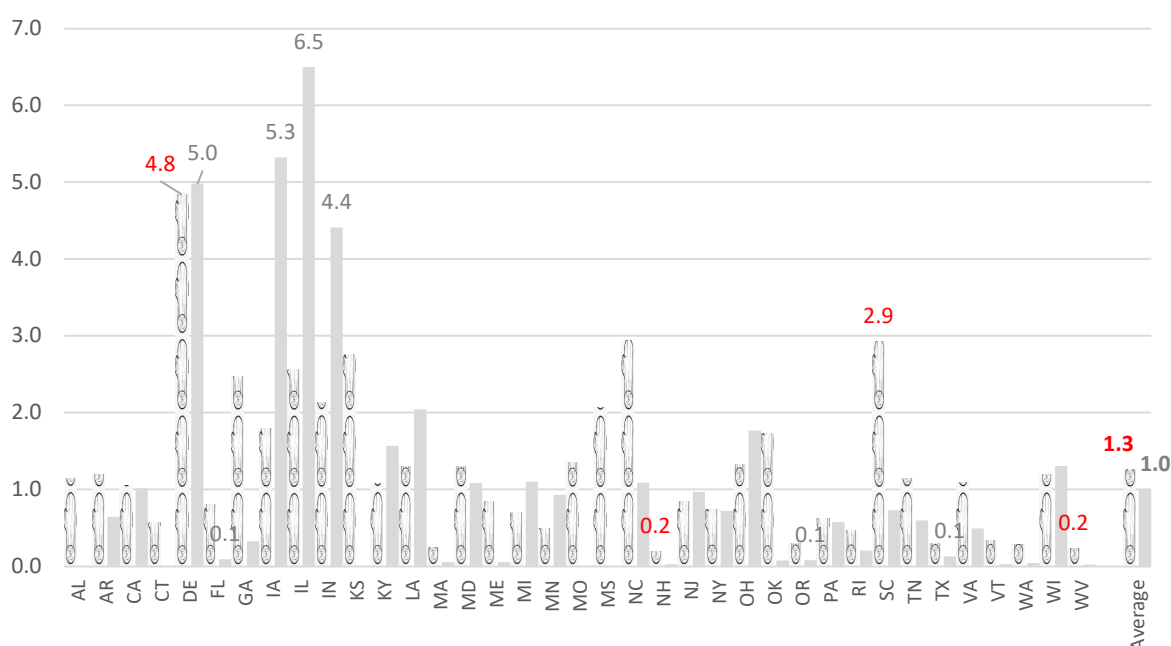


Figure 5 Log volume exposed to potential deforestation per 10,000 m³ of logs harvested per year by state. 2025 estimates in red. 2024 data in grey.

Boundary and name changes in Connecticut

2025 was the first year in which many federal, state, and commercial datasets fully reflected a major change that had been implemented earlier - the replacement of Connecticut's historic 8 counties with 9 planning regions as county-equivalent units.

3.4 Correlations between hardwood harvesting and deforestation risk

The data allows the testing of any possible correlation between the volume of hardwood production across the counties assessed and the potential levels of deforestation identified. At a very basic level it might be hypothesised that the greater the volume of hardwood harvested in each county - the greater this potential driver of deforestation. Calculating the correlation allows this hypothesis to be explored. Correlations between potential deforestation and specific crop types are considered in section 5.3.

Correlations were calculated using Pearson's correlation coefficient, which measures the degree of linear association between two continuous variables. Results were interpreted as:

- 1 → perfect positive correlation
- 0 → no linear correlation
- 1 → perfect negative correlation

The correlation explored was that between the area potentially converted to crops in each county and the volume of hardwood produced in each county in 2025 (or the latest year available).

- **All counties** (2,615) regardless of the amount of hardwood produced: **+0.105 correlation**
A very weak positive relationship between two variables. The value is close to 0, meaning there is little evidence of a meaningful linear association. As the volume harvested increases, potential deforestation tends to increase very slightly, but the relationship is weak enough that it may have little practical significance.

- **Hardwood producing counties** (1,491): **+0.014 correlation**
A very negligible positive relationship between the variables. The association between hardwood production and agriculturally driven deforestation is practically meaningless.

- **Unspecified risk counties** (37) regardless of the amount of hardwood volume: **+0.214 correlation**
This also falls into a weak correlation range. There is a detectable tendency for the variables to move together, but it is not strong or reliable for prediction. The value suggests that most of the potential deforestation is being driven by other factors.

- Of which - **Unspecified risk counties** (12) recorded as producing hardwood sawlogs: **-0.337 correlation**

Deforested area and timber production exhibited a moderate negative correlation. Counties with higher timber production tended to experience somewhat *lower* levels of deforestation. The relationship explains approximately 11% ²⁰ of the observed variation, the negative association is **consistent with**, rather than evidence of, working forests being maintained. This suggests that timber production is not a primary driver of deforestation and detection may instead be associated with the maintenance of working forest landscapes. However, the relationship remains relatively weak, indicating that other factors such as agricultural

²⁰ $R^2 = (-0.337)^2 = 0.114$. Approximately 11.4% of the variation in deforested area is associated with variation in timber production through a linear relationship.

expansion, urban development, ownership patterns, and local land-use policies are likely more important determinants of deforestation in these counties.

A regression analysis on 2,615 counties was conducted using hardwood sawlog production as the explanatory variable. The regression analysis tests whether there is a systematic relationship across the entire dataset. When predicting total forest area lost (hectares), the model produced an R^2 value of approximately 0.008, indicating that hardwood sawlog production explains less than 1% of the variation in forest loss among these counties. A second regression analysis on the same counties using forest loss as a percentage of the forest base yielded an even lower R^2 value of approximately 0.005, suggesting that sawlog production accounts for only around one-half of one percent of the variation in county-level forest loss rates.

These results indicate that hardwood sawlog production has very limited explanatory power for either absolute forest loss or forest loss rates. In practical terms, the volume of hardwood sawlogs produced within a county is a poor predictor of the extent of forest loss observed there, implying that other factors—such as agricultural expansion, urban development, and other forms of land-use change—are likely to play a much more significant role in driving forest loss. Hardwood production alone explains less than 1% of the variation in forest area lost among the 2,615 counties assessed.

In practical terms, production volume has almost no predictive power for forest-loss rates.

The evidence does not support the hypothesis that *increasing hardwood harvest volumes are associated with increasing deforestation*. Rather, hardwood harvesting, and deforestation appear largely decoupled across the study area. Forest loss is more strongly associated with agricultural conversion and other land-use changes than with the intensity of hardwood harvesting. Counties and states with the highest levels of hardwood production frequently maintain stable forest resources and exhibit some of the lowest rates of forest conversion.

From an EUDR perspective, the most important message from the dataset is that **hardwood production and deforestation appear to be largely decoupled at the county level across the United States.**

The European Union Deforestation Regulation (EUDR) requires operators to demonstrate that products placed on the EU market are not associated with deforestation after 31 December 2020. A common concern is whether timber-producing regions are also regions experiencing significant forest loss. This dataset suggests that, in most cases, this is not the case.

The dataset shows that much of the observed forest loss is attributed to agricultural conversion rather than timber production. In many counties, agricultural expansion accounts for the majority of forest area lost between 2020 and 2025. This distinction is important because EUDR focuses on deforestation, defined as the conversion of forest to agricultural use or other non-forest land uses, rather than the harvesting of timber within sustainably managed forests.

Consequently, the data support the argument that:

Hardwood harvesting in the United States is generally occurring within managed forest systems where forests remain forests after harvest, rather than through permanent conversion of forests to other land uses.

The dataset also contains an estimate of "hardwood sawlog volume exposed to deforestation risk." Across most counties this exposure is extremely small relative to total production volumes. For example:

- Northampton County, NC: 234,276 m³ produced; 207 m³ exposed to deforestation risk.
- Wilcox County, GA: 104,161 m³ produced; 98 m³ exposed.
- Bates County, MO: 56,133 m³ produced; 91 m³ exposed.
- Daviess County, KY: 87,131 m³ produced; 86 m³ exposed.

In most cases, the exposed volume represents less than 0.5% of total hardwood production, and often less than 0.1%. This suggests that the overwhelming majority of hardwood sawlog production originates from areas that did not experience forest conversion during the assessment period.

Under the EUDR framework, operators are expected to assess the risk that products originate from land that has been deforested after 2020. The county-level evidence suggests:

1. County-level hardwood production is not a reliable indicator of deforestation risk.
2. Most hardwood-producing counties exhibit very low forest-loss rates.
3. Where forest loss occurs, it is frequently linked to agricultural expansion rather than timber harvesting.
4. Only a very small proportion of hardwood production appears to overlap with areas of recent forest conversion.

The dataset provides strong landscape-scale evidence that across the counties analysed, hardwood production is largely disconnected from observed deforestation patterns, and the proportion of production potentially exposed to deforestation risk is very small relative to total hardwood output.

Viewed through the lens of the EUDR, the dataset supports the conclusion that **U.S. hardwood supply chains generally operate within a landscape where timber production is not a significant driver of deforestation.** Forest loss (modest as it is) is much more strongly associated with agricultural land-use conversion than with hardwood harvesting, and the share of hardwood production potentially linked to post-2020 forest conversion appears to be very small. This suggests a generally low deforestation-risk profile for U.S. hardwood production at the county scale.

3.5 International comparisons

Analysis published in 2025²¹ found that drivers of tree cover loss likely to cause deforestation — which include “permanent agriculture,” or the removal of tree cover for agricultural activities; “hard commodities,” like mining for minerals or metals and energy infrastructure;

²¹ <https://www.wri.org/insights/forest-loss-drivers-data-trends>

or development of settlements and infrastructure — accounted for 34% (182 million ha) of all tree cover loss globally from 2001-2025.

Approximately 94% of this was permanent agriculture, which was associated with the global loss of 172 million ha of trees from 2001-2025, an area of land larger than Mongolia. In tropical primary rainforests, specifically, drivers likely to cause deforestation accounted for 51.8 million ha, an area larger than Thailand.

Considering a couple of temperate countries which have experienced modest forest loss in the period 2010-2020 provides some context for the AHA analysis.

Table 6 Determination of deforestation risk for selected temperate countries

Country	Deforestation ha/year (average 2010-2020)	Forest area 2020 (ha)	Annual conversion (%)
Japan	3,100	24,935,000	0.012
Belgium	100	689,000	0.015

Both Japan and Belgium have annual conversion rates that are similar to the American hardwood producing states, at 0.012% and 0.015% compared to circa 0.012%. The level of risk in all three cases must be considered extremely low (negligible by any measure).

In the global context, FAO reports that annual deforestation covered 4.7 million hectares per year for 2015-2020 with an annual conversion rate of 0.116%.²² **This global average figure is approximately 10 times the level of deforestation risk of American hardwoods.**

4. County level deforestation risk

4.1 Overview

AHA's overall assessment considers land use changes in 2,615 counties across 37 States. Of these counties, 1,491 were recorded²³ as harvesting hardwood sawlogs in 2025²⁴. Hardwood sawlog harvest volumes across these producing counties ranged from a high of 538,000 m³ to a low of 322 m³ per county per year, with an average annual harvest volume of 57,634 m³. Hardwood producing counties had a forest area of over 121 million hectares. This represents a deforestation rate across these 37 states of 0.011% per year.

The assessment of 2,615 counties determined that an area of 94,914 hectares of hardwood forest was potentially converted to agriculture in the period 2020 to 2025. On closer inspection, 66,982 hectares were potentially cleared in counties with recorded hardwood sawlog harvests in the period 2020 to 2025, with an average conversion of 13,396 ha per year. Over the five-year period 2020 to 2025 the potential deforestation rate for counties producing hardwood sawlogs is estimated as 0.055%, equating to an annual rate of 0.011%.

²² FAO (2020) *Op. Cit.*

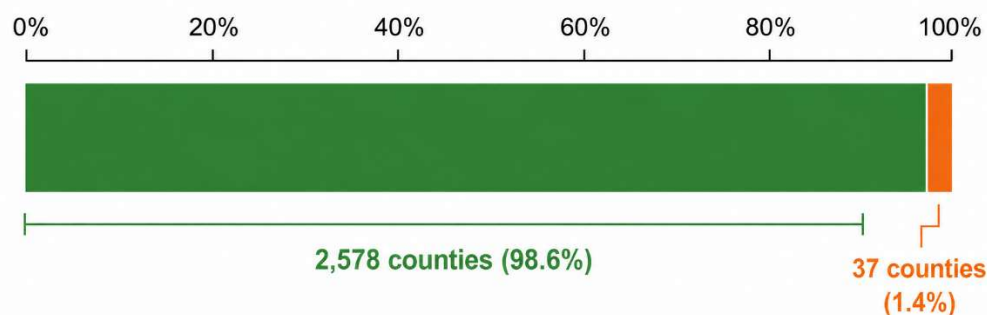
²³ US Forest Inventory and Analysis (FIA) data <https://research.fs.usda.gov/programs/nrum#data-and-tools->

²⁴ Earlier years for some counties – latest data used for analysis.

The average area potentially converted to agriculture per year varies between counties with and without hardwood sawlog harvests. The average area potentially converted each year per county producing hardwood sawlogs is 8.9 hectares, and 4.9 hectares in counties not producing hardwood sawlogs. It should be noted that counties with no recorded hardwood sawlog production tend to have smaller forested areas.

The assessment for 2025 reveals that in total there were 37 counties at or above the AHA Unspecified Risk threshold (0.1% potential total deforestation per year). This in turn implies that there are 2,578 counties below this threshold and therefore considered as of Negligible Risk.

The figure below illustrates the very small proportion of counties that are considered as Unspecified Risk or Specified Risk compared to the total number of counties assessed.



Annual forest loss threshold = 0.1% (n = 2,615 counties)

Figure 6 Distribution of U.S. counties according to annual forest loss. Of the 2,615 counties analysed, 2,578 (98.6%) had annual forest loss below 0.1%, while only 37 counties (1.4%) exceeded this threshold.

As indicated in the figure above, within the lowest potential deforestation band (Negligible Risk), which includes 2,578 counties, there are 466 counties assessed as having zero (0%) risk of deforestation per year. The Negligible Risk band within the chart also includes a further 1,015 counties where the risk of deforestation is assessed as at or below 0.01% per year for this period. (Please note these figures are rounded to two decimal places).

In volume terms, the figures for Negligible Risk counties represent a likelihood in many cases of just one (1) cubic metre of hardwood per year originating from forest land potentially deforested for agriculture in hardwood sawlog producing counties. This is tantamount to an almost unmeasurably low level of risk.

4.2 Counties with highest levels of potential deforestation risk

There are 37 counties which have been assessed as Unspecified or Specified Risk for deforestation driven by agriculture in the year 2025. These counties are at or above the threshold level specified by AHA, that is at or above 0.1% potential deforestation per year. [See Table below]. These 37 counties also include 13 which are now classified as Specified Risk, where deforestation has been confirmed as more than 0.1% per year over a five-year period following further assessment using the AHA Expert Eye tool.

The Specified and Unspecified Risk of agriculturally driven deforestation counties are generally concentrated in those areas of the United States where highly productive agricultural land is more prevalent. Of the 37 counties, there are 5 in Indiana; 4 in Mississippi, Texas and Oklahoma; 3 in Georgia and Arkansas; 2 in California, Minnesota and Missouri and a single county in each of Kansas, Kentucky, Florida, Illinois, North Carolina, Iowa, Washington and Tennessee respectively. [See Table below]. Across these 37 counties the area of forest that has potentially been lost in the five-year period amounts to 10,500 hectares – or 2,100 ha per year. As a whole the 37 counties here have a potential deforestation rate of 0.275%.

The table below illustrates the quite dramatic effect of the revised 2020 forest baseline resulting from the combining of the CDL and GFC2020. In this sub-set of counties, the forest area believed extant in 2020 has increased from circa 564,000 ha to over 763,000 ha.

Table 7 - 37 counties assessed as Unspecified or Specified Risk in 2025 (Specified Risk counties highlighted).

Rank 2025	State	County	Base area used in 2024 assessment (ha)	Revised 2020 Forest Base area (ha)	Potential Forest loss 2020-2025 (ha)	Area potentially deforested – annual (%)
1	TX	Gaines	10	12	1	1.775
2	TX	Kleberg	90	28,753	1,648	1.147
3	CA	Yuba	1,992	15,969	428	0.536
4	KS	Cherokee	not assessed	28,069	711	0.507
5	MS	Sunflower	16,505	20,791	526	0.506
6	OK	Washington	18,330	23,759	510	0.430
7	GA	Bacon	10,778	27,546	571	0.415
8	OK	Jefferson	16,548	20,827	415	0.399
9	TX	Galveston	not assessed	4,973	99	0.396
10	AR	Jackson	28,296	31,926	604	0.379
11	MO	Vernon	47,722	53,714	928	0.346
12	MS	Quitman	17,089	27,143	395	0.291
13	CA	Solano	1,954	9,848	131	0.266
14	OK	Tulsa	27,803	30,126	350	0.232
15	OK	Ottawa	28,575	35,248	348	0.197
16	GA	Lanier	12,101	21,032	190	0.180
17	MS	Bolivar	37,903	41,539	370	0.178
18	KY	Carlisle	15,486	16,272	144	0.177
19	IN	Randolph	8,668	8,519	75	0.175
20	TX	Cameron	352	9,946	85	0.171
21	MO	Bates	33,310	41,695	339	0.163
22	AR	Chicot	30,768	37,008	279	0.151
23	MS	Coahoma	31,144	34,794	260	0.150
24	IN	Wells	6,659	7,043	51	0.145
25	FL	Palm Beach	40,434	11,516	71	0.123
26	IN	Tipton	1,697	1,816	11	0.123
27	IN	Knox	16,860	15,363	94	0.123
28	IL	Lawrence	16,537	18,625	112	0.120
29	MN	Nobles	24,643	518	3	0.119
30	NC	Wayne	24,643	43,333	253	0.117
31	MN	Swift	2,178	4,215	24	0.114
32	IN	Blackford	4,159	4,283	24	0.110
33	GA	Atkinson	15,283	32,737	172	0.105
34	TN	Crockett	9,161	10,984	57	0.103
35	IA	Winnebago	not assessed	1,443	7	0.102
36	AR	Woodruff	32,487	41,169	210	0.102
37	WA	Benton	not assessed	572	3	0.102

Of the Specified and Unspecified Risk counties only 12 are reported as producing hardwood sawlogs. Hardwood forest area in these counties varies widely, ranging from 7,043 hectares to 53,714 hectares. The area potentially converted per year across the counties is also varied, ranging from 10 ha to 186 ha [see table 5].

The volume of hardwood sawlogs harvested per year across the counties also varies considerably, ranging from 2,233 m³ to over 81,000 m³. The level of risk exposure by hardwood sawlog production volume ranges from under 7 m³ to 99 m³ per county per year. The 12 counties reporting production of hardwood sawlogs account for 291,547 m³ in the last reported year. Out of a total reported annual production of 85,931,593 m³, this represents 0.34% of all hardwood sawlogs originating from these Unspecified or Specified risk counties in 2025.

Table 8 Hardwood producing counties with Unspecified Risk / Specified Risk of deforestation driven by agriculture

State	County	FIA inventory year	Total hardwood sawlog production (m ³)	2020 Forest base (ha)	Potential forest loss (ha) 2020-2025	Potential forest loss (ha) - annual	Area potentially deforested - annual (%)	Exposure to risk per year (m ³)
CA	Yuba	2021	2,233	15,969	428	86	0.536	12
MO	Vernon	2025	12,618	53,714	928	186	0.346	44
OK	Tulsa	2024	7,035	30,126	350	70	0.232	16
OK	Ottawa	2024	3,581	35,248	348	70	0.197	7
GA	Lanier	2024	13,364	21,032	190	38	0.180	24
IN	Randolph	2024	6,094	8,519	75	15	0.175	11
MO	Bates	2025	56,133	41,695	339	68	0.163	91
AR	Chicot	2024	26,206	37,008	279	56	0.151	40
MS	Coahoma	2024	21,391	34,794	260	52	0.150	32
IN	Wells	2024	40,273	7,043	51	10	0.145	58
IN	Knox	2024	81,066	15,363	94	19	0.123	99
NC	Wayne	2024	21,554	43,333	253	51	0.117	25

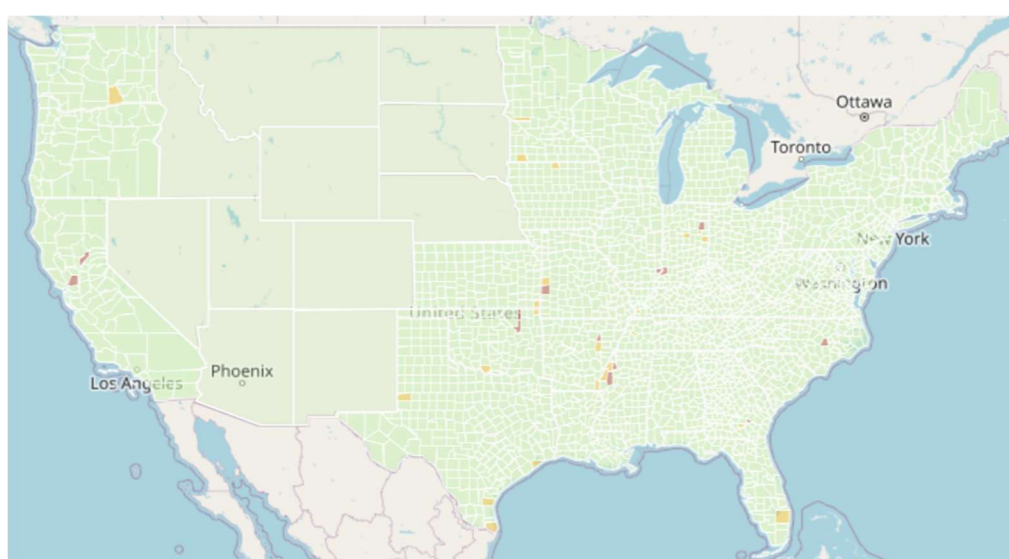


Figure 7 AHA County Deforestation Risk, 2025 analysis, Assessment Covers 37 Leading Hardwood Producing States. Counties coloured Amber are Unspecified Risk. Counties coloured Red are Specified Risk. Counties coloured Green are Negligible Risk. 37 counties are identified as Unspecified / Specified risk, of which only 12 harvest hardwood sawlogs. Map Source: <https://www.hardwood.us/>

There is a wide range of commercial hardwood species originating across the Unspecified and Specified Risk counties recording production of hardwood saw logs. The species harvested in 2025 include a broad spectrum of American hardwoods.

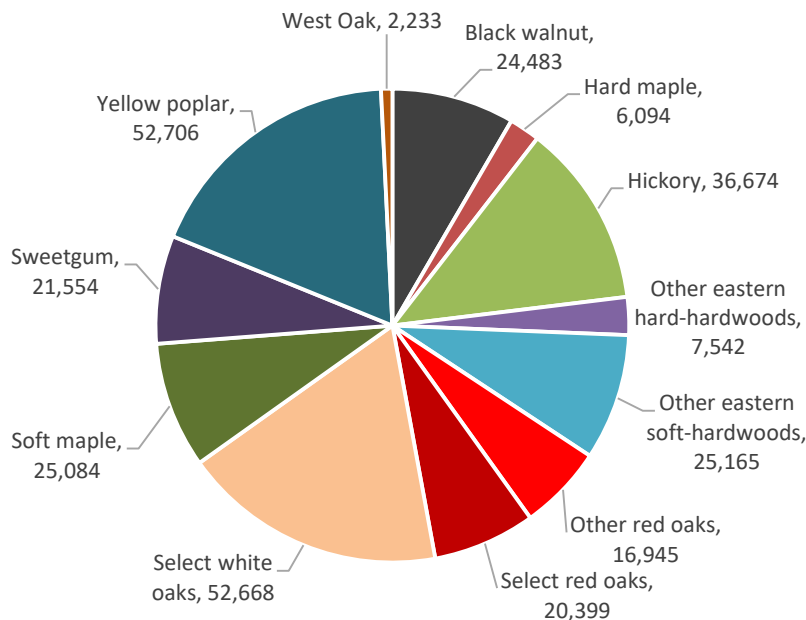


Figure 7 Hardwood sawlog harvests in Unspecified & Specified Risk counties by species and volume (m³). Source: AHA analysis of US Forest Inventory and Analysis (FIA) downloaded from EVALIDator API in April 2025 using data from the most recent annual inventory, year 2020 to 2025 dependent on state

4.3 Comparisons with the 2024 assessment

Of the 37 Unspecified / Specified Risk counties identified in 2025, seven are counties that were identified in the list of counties meeting this threshold in 2024. Thirty new counties have entered the list of Unspecified / Specified Risk counties for 2025.

Most of the counties that have entered Unspecified Risk status for 2025, or which have been removed from this category, have not experienced major changes in the assessed potential deforestation rate, with modest changes either sufficient to place them in this status or to move them below this threshold. Five counties were not included in the assessment in 2024 thereby not allowing comparison with 2025 data.

Counties which were ranked as “2506=” in 2024 (see Table 6) were assessed in that year as having zero % potential deforestation. Typically, these counties were in California and Texas. Counties where the assessed potential rate of deforestation has dramatically increased since the 2024 assessment are typically found Georgia, Oklahoma and North Carolina. This is largely explained by improved assessment of the baseline forest area in 2020 and input from the Expert Eye truthing process.

Trends within each of the Unspecified / Specified Risk counties are discussed in the Annex.

Table 9 Comparison between Unspecified Risk / Specified Risk counties: 2024-2025

Rank 2024	Rank 2025	State	County	Annual area potentially deforested used in 2025 assessment (%)	Annual area potentially deforested used in 2024 assessment (%)
2506=	1	TX	Gaines	1.775	0
2506=	2	TX	Kleberg	1.147	0

Rank 2024	Rank 2025	State	County	Annual area potentially deforested used in 2025 assessment (%)	Annual area potentially deforested used in 2024 assessment (%)
826	3	CA	Yuba	0.536	0.041
not assessed	4	KS	Cherokee	0.507	-
25	5	MS	Sunflower	0.506	0.643
2506=	6	OK	Washington	0.430	0
1479	7	GA	Bacon	0.415	0.27
1598	8	OK	Jefferson	0.399	0.001
not assessed	9	TX	Galveston	0.396	not assessed
323	10	AR	Jackson	0.379	0.165
195	11	MO	Vernon	0.346	0.168
638	12	MS	Quitman	0.291	0.07
2506=	13	CA	Solano	0.266	0
965	14	OK	Tulsa	0.232	0.026
2506=	15	OK	Ottawa	0.197	0
1098	16	GA	Lanier	0.180	0.015
648	17	MS	Bolivar	0.178	0.068
4	18	KY	Carlisle	0.177	3.89
9	19	IN	Randolph	0.175	1.376
2506=	20	TX	Cameron	0.171	0
387	21	MO	Bates	0.163	0.135
114	22	AR	Chicot	0.151	0.331
575	23	MS	Coahoma	0.150	0.082
15	24	IN	Wells	0.145	0.949
41	25	FL	Palm Beach	0.123	0.53
8	26	IN	Tipton	0.123	1.729
17	27	IN	Knox	0.123	0.918
11	28	IL	Lawrence	0.120	1.141
not assessed	29	MN	Nobles	0.119	not assessed
478	30	NC	Wayne	0.117	0.105
30	31	MN	Swift	0.114	0.599
37	32	IN	Blackford	0.110	0.539
1117	33	GA	Atkinson	0.105	0.014
184	34	TN	Crockett	0.103	0.245
not assessed	35	IA	Winnebago	0.102	not assessed
215	36	AR	Woodruff	0.102	0.226
not assessed	37	WA	Benton	0.102	not assessed

5. Agricultural deforestation drivers in the U.S.

5.1 Current trends in agriculturally driven deforestation

In 2025 agriculturally driven deforestation is still evident in some counties, though at levels far reduced from the 18th and 19th century. Other drivers are also at play, including development for infrastructure, homes, industrial uses, mines, quarries, and power generation. US forests have also experienced, and continue to experience, large-scale degradation of tree cover due to pests and diseases and forest fires. Typically, such degradation is temporary, in the sense that the forest usually is allowed to regenerate naturally or is replanted, though regeneration rates vary dependent upon climate, the degree of human intervention and intensity of grazing, typically by deer.

A closer examination of the 37 counties identified as having the highest potentially deforested area reveal that there is a diverse range of agricultural crops being grown (see Annex).

Two main crop types predominate in terms of area planted - soybean production and corn (maize) for grain, silage and popcorn are the main crop types *potentially* driving deforestation in this selection of counties; combined the two crop types accounting for 92% of the

agriculturally driven forest loss in the Unspecified Risk counties. This figure has increased from 88% in reported 2024.

The current and predicted markets and related profitability of these major crop types therefore likely have a significant bearing in some areas. As of mid-2026 an agreement on U.S. agricultural sales to China has raised optimism for an export market pickup for soybeans, wheat, and corn. China is reported to have agreed to buy at least \$17 billion annually in American agricultural produce through 2028, in addition to a soybean purchase pledge from late 2025.²⁵

In the US, **soybeans** are primarily used for animal feed, human food, and biofuel production. A large portion of the soybean crop is processed into soybean meal, which is a high-protein ingredient in livestock feed for poultry, pigs, cattle, and fish. The other major component, soybean oil, is used for cooking oil, biodiesel, and various industrial products.

The leading soybean producing states in the US are Illinois, Iowa, Indiana, Minnesota, and Ohio. These five states consistently account for a significant portion of the total US soybean production.²⁶

The outlook for U.S. soybean production in 2026 and 2027 is generally positive, with USDA projecting a larger crop in 2026/27 and only a modest easing thereafter. According to the USDA Grains and Oilseeds Outlook for 2026/27 ²⁷ the planted area is likely to increase to around 85 million acres (up from about 81 million in 2025). At this forecast level production would be one of the largest soybean crops in U.S. history, second only to the record 2021 harvest.

USDA's long-term baseline in USDA Agricultural Projections to 2035²⁸ suggests that the soybean acreage will decline slightly after 2026, settling near 83 million acres. Therefore, USDA expects 2027 production to stay strong, even if acreage softens somewhat.

New and expanded crushing plants are increasing demand for soybean meal and soybean oil. Biofuel growth is expected to boost soybean oil use for renewable diesel and biodiesel. Compared with corn, soybeans often require lower fertilizer costs, making them attractive when nitrogen prices are elevated. Recent increases in oil prices are likely to further increase short term attractiveness to farmers.

Four states dominate in **corn**²⁹ farming. Iowa, Illinois, Nebraska and Minnesota make up the Corn Belt, which is responsible for almost half of all US corn production. The main markets for U.S. corn are livestock feed, ethanol production, exports, and food / industrial processing. Although corn is widely associated with food products, most U.S. corn is used indirectly as animal feed or fuel.

²⁵ <https://www.farmprogress.com/marketing/china-s-17b-farm-pledge-sends-corn-wheat-higher>

²⁶ <https://www.statista.com/statistics/192076/top-10-soybean-producing-us-states/>

²⁷ <https://www.usda.gov/sites/default/files/documents/2026AOF-grains-oilseeds-outlook.pdf>

²⁸ https://ers.usda.gov/sites/default/files/_laserfiche/outlooks/113817/OCE-2026-1.pdf

²⁹ 'Corn', in the American sense of the term, is in British English known as 'maize'. Corn is grown for use as grain, fodder and for popcorn.

The outlook for U.S. corn production in 2026 and 2027 is strong, but below the record 2025 crop. USDA expects production to remain historically high, supported by rising trend yields, even as planted acreage eases from the unusually large 2025 level.

According to the USDA Grains and Oilseeds Outlook for 2026/27³⁰ the planted area will be circa 94 million acres. The projected harvest for 2026 would be about 7% lower than the record crop in 2025, but still among the largest U.S. corn harvests ever recorded.

USDA's long-term baseline in USDA Agricultural Projections to 2035³¹ suggests that the corn acreage remains near the mid-90-million-acre range in the near term, then gradually trends lower. National average yields are projected to continue to rise due to improved genetics and management. The baseline notes that although planted acreage declines over time, corn production continues to edge higher because yield gains more than offset acreage reductions.

The outlook remains favourable due to long-term genetic improvement and better agronomic practices continue to lift trend yields. This combines with stable domestic demand for corn use for livestock feed and for biofuels. The U.S. also remains one of the world's leading corn exporters, though competition from Brazil and Argentina is increasing. Corn remains highly attractive in the Corn Belt when price relationships support returns despite relatively high fertilizer costs.

Drought, excessive heat during pollination, or flooding could significantly affect yields. Nitrogen fertilizer and fuel costs can influence acreage and profitability. Large South American crops may pressure export prices and market share. Trade relations and ethanol policy could also materially affect demand.

USDA expects U.S. corn production to remain very large in both 2026 and 2027. Although acreage is projected to decline from the exceptional 2025 level, continued gains in yield should maintain production volumes. The biggest uncertainties are weather, fertilizer costs, and export competition from South America. Further uncertainty has been caused by the recent increases in fuel costs even though the potential increased demand for domestic ethanol may offset this.

Pecan trees (*Carya illinoensis*) are a native hardwood species that can occur in commercial orchards, managed native groves, mixed tree-crop systems, and naturally occurring in bottomland forests. This diversity of occurrence and the potential for the presence of pecans to be both a crop and a naturally occurring forest tree presents a number of difficulties for assessment.

The U.S. pecan industry has experienced significant growth in recent years, accompanied by substantial year-to-year variability driven by weather, alternate nut bearing cycles, international trade, and changing orchard acreage. The United States remains the world's largest producer of pecans, the only major commercial tree nut native to North America.³²

³⁰ <https://www.usda.gov/sites/default/files/documents/2026AOF-grains-oilseeds-outlook.pdf>

³¹ https://ers.usda.gov/sites/default/files/_laserfiche/outlooks/113817/OCE-2026-1.pdf

³² <https://www.ers.usda.gov/data-products/charts-of-note/78661>

Over the past decade, bearing pecan acreage has gradually increased from approximately 390,000 acres to more than 440,000 acres as new orchards established during the 2000s and 2010s reached maturity. Production has generally fluctuated between 220 and 300 million pounds annually, reflecting the natural tendency of pecan trees to produce alternating high- and low-yield crops.³³

Commercial pecan plantations are usually established for nut production, not timber production, so most pecan orchards are not harvested in the way hardwood timber forests are. Trees begin producing nuts 4–8 years after planting and commercially significant production begins around 8–12 years after planting. Peak nut production occurs 20–75+ years and some orchards remain productive for well over a century. Orchards are generally removed when yields decline due to age or disease or when land is converted to another agricultural use. *Pecan is rarely planted specifically for timber* because stem form in orchards is often unsuitable for high-value sawlogs. Pecan wood from orchards may enter sawlog supply chains and can be mixed with the more commercial Hickory.



Figure 8 Pecan plantation in Wheeler County, Georgia. Left hand image from CDL in 2025, right hand image from ESRI in 2025.

A USDA Cropland Data Layer (CDL) classification of "Pecans" does not necessarily indicate a newly established orchard, intensive agricultural production, or recent forest conversion. This distinction is particularly important when using remote-sensing datasets to identify potential forest-to-agriculture conversion. In regions where pecans occur naturally, CDL classifications may represent commercial orchards, managed native groves, or mixed hardwood stands containing pecan trees. Native pecan groves and bottomland hardwood forests can sometimes be difficult to distinguish from orchard systems in satellite imagery.

Because pecans are native to the Mississippi River Valley and Gulf Coast region, native groves can resemble natural hardwood forests, while managed orchards may be identified as specialty crops in remote-sensing products such as the CDL.

It is important to recognise that a CDL pecan classification in a single year alone is not evidence of deforestation. Although pecans are not one of the commodities regulated under the EUDR, conversion of forest to a pecan orchard after 31 December 2020 *could* still constitute deforestation because the regulation focuses on forest-to-agriculture land-use change regardless of the crop established. However, available evidence suggests that pecan production is unlikely to be a significant driver of recent forest loss in counties assessed and is generally a minor contributor to land-use change in the regions considered. Expert Eye assessment also indicates that the accuracy of the CDL in determining pecan trees is variable with contrary indications across a range of years exacerbating assessment.

³³ <https://www.ers.usda.gov/data-products/charts-of-note/78661>

5.2 The role of agriculture as a driver of deforestation in Unspecified / Specified Risk counties

The analysis of the 37 counties classified as Unspecified / Specified Risk provides insight into the extent to which agricultural expansion may have contributed to recent forest loss. Although agricultural conversion remains evident in these counties, the overall area affected is modest and involves a diverse range of crop types, with varying levels of confidence in land-use attribution.

Across the period 2020–2025, the estimated area of potential forest conversion ranged from less than 1 hectare to 330 hectares per county per year, with an average of 57 ha per county annually. Collectively, the 37 counties experienced an estimated average annual potential forest loss of approximately 2,100 ha (5,189 acres).

Assessment of the 2025 USDA Cropland Data Layer (CDL) indicates that 73 crop types were present on land identified as potentially deforested. Of these, nine crop types each accounted for at least 2% of the attributed deforestation. Approximately 1,348 ha per year of the attributed loss was associated with six crop types (blueberries, corn, cotton, pecans, soybeans and sorghum) together with agricultural fallow land (246 ha per year). The remaining crop types, plus areas that cannot be determined, collectively accounted for approximately 505 ha per year.

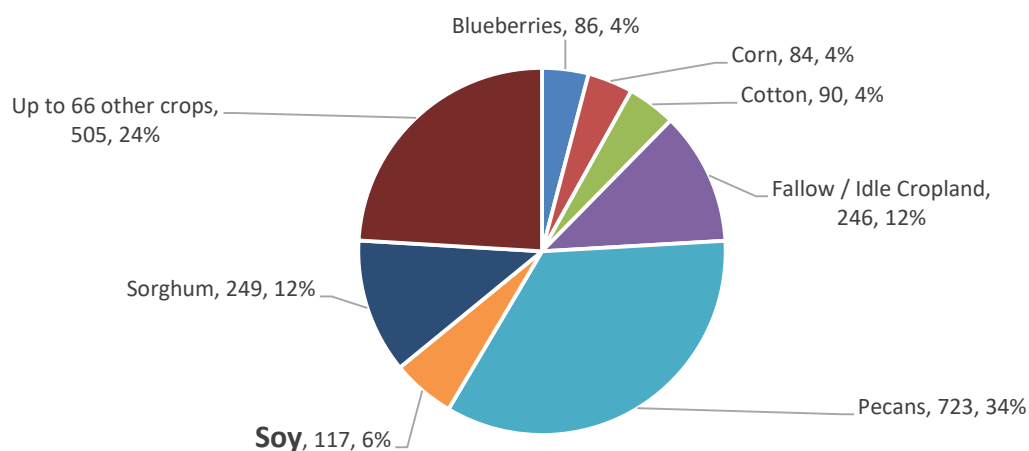


Figure 9 Forest loss attribution across 37 Unspecified / Specified Risk counties by crop type indicated as 2025 land use
Data source: AHA deforestation analysis of USDA Cropland Data Layer (CDL)

Identification of the crops associated with potential forest conversion also provides context for commodities regulated under the EU Deforestation Regulation (EUDR). Of the commodities listed in Annex I of the Regulation, **soybeans** are the only crop identified as a potential driver of deforestation within U.S. hardwood-producing counties. However, soybean production accounts for only approximately 6% of the potential deforestation identified across the 37 counties. Unregulated crops, particularly pecans and sorghum, represent a larger proportion of the attributed land-use change.

Overall, agricultural markets, particularly for **soybeans and corn**, are likely to provide an economic incentive for limited forest conversion where agricultural returns exceed those from standing woodland. Conversely, active management and marketing of hardwood timber generally increase the economic value of forests and discourage conversion to agriculture. Furthermore, numerous studies indicate that many private woodland owners retain forests for ecological, recreational and personal reasons rather than purely financial considerations.

Within the United States, relatively few legal restrictions prevent private landowners from converting woodland to agricultural use. Right to Farm legislation generally protects agricultural and forestry activities, including timber harvesting, thereby permitting lawful forest clearance where landowners choose to change land use. Nevertheless, **available evidence indicates that most private woodland owners do not convert their forests and instead retain them for a range of economic and non-economic reasons.**

Pecan production represents the largest single land-use category, accounting for around 723 ha per year of potentially deforested land. However, this result should be interpreted with caution. Pecan (*Carya illinoensis*) is a native hardwood species that occurs naturally within bottomland forests as well as in commercial orchards. Consequently, distinguishing natural woodland containing pecan from orchard systems using remote sensing is inherently difficult.

As noted in the 2024 report, identification of some types of orchards remains one of the principal sources of uncertainty within the CDL. Visual interpretation of multi-year imagery suggests that both the CDL and the AHA AI may intermittently classify natural or semi-natural woodland containing pecan trees as agricultural land. This issue is compounded by the lower mapping accuracy generally associated with specialty crops compared with major row crops such as corn and soybeans, and by the tendency of pecan trees to naturalise and form clusters within native forests. Accordingly, areas attributed to pecan production should be regarded as indicative rather than definitive evidence of forest conversion.

Blueberries present a similar, although less pronounced, classification challenge. Commercial blueberry production is concentrated within the southern Coastal Plain of Georgia, particularly in counties such as Coffee, Bacon, Appling, Clinch and Ware. The perennial row structure of blueberry plantations, combined with the close spatial association between agriculture and managed forest plantations, has resulted in recurring misclassification within the CDL. In several locations, changes in land cover appear to reflect inconsistent crop classification rather than genuine forest-to-agriculture conversion. Continued refinement of the AHA AI and additional years of analysis are expected to improve the reliability of both blueberry and pecan identification.

In summary, agriculture remains a localised driver of forest loss within a limited number of counties, principally through expansion of row crops and certain perennial crops. However, the overall area affected is small at both national and international scales, and attribution for specialty crops such as pecans and blueberries remain subject to considerable uncertainty.

Statistical analysis also demonstrates little relationship between hardwood harvesting and deforestation, providing no evidence that increased harvesting of U.S. hardwoods is itself a

significant driver of forest conversion or a justification for regulating U.S. hardwood trade under measures intended to address deforestation.

5.3 Correlations between hardwood production and potential deforestation driven by crops

The tables below examine correlations between the area of land potentially deforested attributed to two major crop types (soybeans and corn) and the volume of hardwood produced. It seeks to explore any relationship between hardwood harvesting and deforestation driven by these crop types. It is a more focused analysis of the correlations explored in Section 3.4.

Across the whole sample of 2,615 counties there is a very weak relation between forest conversion and soybeans [Table 10]. In Unspecified and Specified Risk counties there is a moderate positive relationship, but the correlation is not strong enough to suggest that soybean demand alone is leading to potential deforestation.

Table 10 Correlation between the Area potentially converted to Soybeans (2020-2025) and Volume of hardwood produced in 2025

Selected group of counties	Correlation value	Observations
All 37 assessed states (2,615 counties)	0.118	A very weak positive relationship. This means that counties with higher hardwood production tend to have slightly higher areas potentially converted to soybeans, but the association is weak. A correlation of 0.118 is generally considered too weak to support a strong conclusion that hardwood production and soybean expansion are meaningfully linked.
Unspecified & Specified Risk counties (37 counties)	0.361	A moderate positive relationship. Areas with higher hardwood production tend to have somewhat larger areas identified as potentially converted to soybeans, although the relationship is not particularly strong. The relationship is meaningful enough to investigate, however, 87% of the variation remains unexplained by hardwood production alone. It does not demonstrate that hardwood production is driving soybean expansion.

Exploring the correlation between corn production and hardwood production [Table 11] offers a weak positive relationship between the area potentially deforested for corn and hardwood production across the whole sample of 2,615 counties. Within the Unspecified and Specified Risk counties there is a moderately strong correlation. Unspecified and Specified Risk counties with higher hardwood production tend to also have larger areas identified as potentially converted to corn. The correlation suggests that hardwood production and potential conversion for corn are occurring in many of the same landscapes.

Table 11 Correlation between the Area potentially converted to Corn (2020-2025) and Volume of hardwood produced in 2025

Selected group of counties	Correlation value	Observations
All assessed states	0.135	A weak positive relationship. Areas with higher hardwood production tend to have slightly larger areas potentially

(2,615 counties)		converted to corn, but the relationship is weak. The relationship is not strong enough to suggest a major linkage between hardwood production and corn expansion.
Unspecified Risk states producing hardwoods (12 counties)	0.527	A moderately strong positive relationship. This means that counties with higher hardwood production tend to also have larger areas identified as potentially converted to corn. A correlation above 0.5 is noteworthy in county-level land-use analyses. It suggests that hardwood production and potential corn conversion are occurring in many of the same landscapes.

Table 12 explores correlation between the area potentially converted to any agricultural use, as determined by the Cropland Data Layer (CDL), and the volume of hardwood production. The CDL utilises 102 different descriptions of crop types.

Considering the whole sample of 2,615 counties there appears to be a moderate positive relationship suggesting that counties with higher hardwood production, also tend to have more land identified as potentially converted to crops between 2020 and 2025. However, this does not mean hardwood production is causing crop conversion. It should also be noted that over 1,200 of the counties in this broader sample have no hardwood production reported.

Considering the 1,491 counties with reported hardwood production the correlation is extremely weak between production volume and potential deforestation. Hardwood production and potential crop conversion appear largely independent.

The 37 counties assessed as Unspecified or Specified Risk indicate an extremely weak negative relationship, effectively no meaningful linear relationship. This result provides little evidence that hardwood production and potential crop conversion are related. **Counties with high hardwood production are not systematically experiencing more crop conversion.** Counties with low hardwood production are not systematically experiencing less crop conversion. **The result suggests that hardwood production volume is a poor predictor of potential agricultural expansion.**

The 12 counties assessed as Unspecified or Specified Risk that have a reported volume of hardwood sawlog production indicated a moderate negative correlation. Counties with higher hardwood production tended to have lower levels of potential crop conversion. This correlation could generally be interpreted as evidence *against* the hypothesis that Unspecified and Specified Risk hardwood-producing counties are major hotspots of crop-driven forest conversion. The relationship suggests that higher hardwood production is associated with somewhat *lower* levels of potential crop conversion, although the effect is not strong enough to be considered definitive on its own.

Table 12 Correlation between the Area potentially converted to all crop types determined by the CDL (2020-2025) and Volume of hardwood produced in 2025

Selected group of counties	Correlation value	Observations on the correlation
In all 37 assessed states (2,615 counties)	0.483	A moderate positive relationship. In practical terms, areas with larger amounts of potential crop conversion tend to also have higher hardwood production, although the relationship is far from perfect. It suggests that counties or regions with higher hardwood production, also tend to have more land identified as potentially converted to crops between 2020 and 2025. However, this does not mean hardwood production is causing crop conversion.
Hardwood producing states (1,491 counties)	0.070	An extremely weak positive relationship—so weak that, for most practical purposes, it is close to no linear relationship at all. Counties with higher hardwood production are only very slightly more likely to have larger areas potentially converted to crops. The association is so small that it would generally not be considered meaningful from a practical or policy perspective. Hardwood production and potential crop conversion appear largely independent.
All Unspecified and Specified Risk counties (37 counties)	-0.080	An extremely weak negative relationship, effectively no meaningful linear relationship. This result provides little evidence that hardwood production and potential crop conversion are related. Counties with high hardwood production are not systematically experiencing more crop conversion. Counties with low hardwood production are not systematically experiencing less crop conversion.
Unspecified Risk counties producing hardwoods (12 counties)	-0.337	A moderate negative correlation. Counties with higher hardwood production tended to have lower levels of potential crop conversion. The relationship explained approximately 11% of the observed variation ($R^2 = 0.114$), suggesting that while hardwood production is associated with reduced crop-conversion potential, most variation is explained by other geographic, economic, and land-use factors. This correlation could generally be interpreted as evidence against the hypothesis that Unspecified Risk hardwood-producing counties are major hotspots of crop-driven forest conversion. The relationship suggests that higher hardwood production is associated with somewhat lower levels of potential crop conversion, although the effect is not strong enough to be considered definitive on its own.

Note: The analysis in Section 3.4 uses the AHA potential-deforestation dataset, whereas the analysis in this section uses the full range of crop categories identified by the Cropland Data Layer (CDL). The different datasets therefore produce different correlation coefficients.

None of the correlations in any of the contexts considered here suggest that hardwood production is a driver of deforestation in American hardwood production. Considering the modest areas of deforestation and the associated crops it can be seen that agriculture is a driver of deforestation *per se* but identifying an individual crop type at a national or even state level is not possible. Corn, soybeans and other crops play a role, but the market dynamics and diversity of US agriculture ensure that determining an individual commodity as a key driver at a national level is not clear. Determinations are further compounded by likely inaccuracies in

the Cropland Data Layer, especially concerning its yearly variation in determining the assessment of pecan orchards.

5.4 Other drivers of deforestation

The hardwood region is not without forest sustainability challenges. The most cited sustainability issues identified in state forest action plans relate to forest health, particularly the impact of invasive pests and wildfire. Hardwood forests located in close proximity to rapidly growing urban areas are also under pressure from development and other land use changes. While these challenges can be formidable, they do not present significant risk to overall sustainable hardwood production and exports. Strong markets for US hardwood products, including exports, provide an incentive to private landowners to maintain their properties in forest cover.³⁴

It is evident that for one of the counties identified as Unspecified Risk, urban or suburban development poses a far greater deforestation risk than agriculture.

Non-agricultural drivers make a substantial and growing contribution to deforestation and forest degradation in U.S. hardwood forests, although their importance varies by region. In many eastern hardwood landscapes, agriculture was the dominant historical cause of forest loss, but today a large share of ongoing loss is associated with development, fragmentation, pests, and climate-related disturbances rather than new cropland expansion.

Housing, roads, industrial sites, and utility corridors are among the leading current causes of permanent forest conversion, especially near metropolitan areas. The USDA Forest Service's Forests on the Edge project identifies private forests in the eastern U.S. as particularly vulnerable to increasing housing density and 'parcelisation'.³⁵ Such development is often the largest non-agricultural cause of permanent hardwood forest loss in the Northeast, Mid-Atlantic, Great Lakes, and portions of the Southeast. Subdivision of large ownerships into smaller parcels does not always remove tree cover immediately, but it increases the probability of future clearing, road building, invasive species, and reduced management. It is a major indirect driver that accelerates long-term loss and degradation.

Non-native pests such as Emerald ash borer and Beech bark disease can eliminate or severely reduce populations of major hardwood species. USDA Forest Service research notes that invasive pests are one of the few disturbance agents capable of effectively removing entire tree species or genera from U.S. forests. Pests can cause extensive mortality and degradation; may not always convert land to non-forest immediately but can lead to salvage harvest and eventual land-use change.³⁶

Climate change increases drought and heat stress and leads to regeneration failure. These stresses can reduce forest resilience and increase mortality, particularly for species near the edge of their climatic range. Wildfire is historically less important in most eastern hardwood forests than in western forests, but its role is increasing where fuel loads, drought, and invasive species interact.

³⁴ Goetzl, A et al (2019) *Assessment of Lawful Sourcing and Sustainability: U.S. Hardwood Exports*. Seneca Creek Associates, LLC

³⁵ <https://www.usgs.gov/programs/climate-adaptation-science-centers/science/effects-urbanization-conservation-value-forests?utm>

³⁶ <https://www.usgs.gov/programs/climate-adaptation-science-centers/science/deep-dive-invasive-species-a-changing-american?utm>

Surface mining, oil and gas development, and associated roads and pipelines can remove hardwood forests directly, especially in Appalachia. This impact is regionally significant, particularly in eastern Kentucky, West Virginia, and parts of Pennsylvania. Levees, drainage systems, dams, and groundwater withdrawals can alter flooding and soil moisture, contributing to loss of bottomland hardwood forests. This impact is important in floodplain systems such as the Mississippi Alluvial Valley.

Historically, agriculture was the primary driver of hardwood forest loss in the eastern U.S. Today in many regions, non-agricultural drivers account for most ongoing permanent forest conversion.³⁷ Urban development is often the leading cause of new forest loss. Invasive pests and climate stress are major drivers of mortality and compositional change. Non-agricultural drivers now play a major role in the loss of U.S. hardwood forests. Urban development, fragmentation, invasive insects and diseases, and climate change are often more important than agricultural expansion in determining current patterns of forest decline, especially in the eastern United States where most hardwood forests occur.

Annex 1: Data sources for the AHA platform

A1.1 Land use image sources used by the AHA platform

The initial assessments made by AHA's bespoke AI compare the USDA National Agricultural Statistics Service (NASS) Cropland Data Layer (CDL) from 2020 - which itself draws primarily on 30m resolution Landsat data - with the CDL for 2025. The CDL for 2025 draws primarily on 10m resolution Sentinel-2 satellite data. USDA generally positions the CDL as an agricultural land-cover product suitable for broad forest / non-forest context that was originally developed to support crop acreage estimation.

The AHA platform has chosen the Cropland Data Layer as it offers a US focused source, and high resolution (at 10m). The NASS CDL also is able to differentiate forest types, including mixed coniferous and temperate forest types. Its focus on agriculture intrinsically assesses the crop types visible at any given moment and therefore is a complete package for assessing land use and potential drivers of forest conversion.

NASS CDL uses a range of land use classes, where forest classes often achieve ~70–90% accuracy range for both deciduous and evergreen forest. Forest accuracy is lower than crops as forested landscapes tend not to have distinctive seasonal signals, small sized blocks are often irregular in shape and are less heavily represented in USDA training datasets. Other causes of errors include young forest resembling shrubland, harvested stands temporarily appearing barren and mixed forests that are spectrally heterogeneous. Common CDL misclassification problems include confusion between forest and shrubland, young regrowth and pasture, wetlands and bottomland forest, fallow land and early successional woodland. These issues are especially relevant in south-eastern U.S. managed timber landscapes and within agroforestry mosaics.³⁸

³⁷ <https://research.fs.usda.gov/treesearch/61513>

³⁸ https://www.nass.usda.gov/Research_and_Science/Cropland/metadata/

In late 2025 a further refined baseline for forest cover³⁹ was published by the European Commission's *Joint Research Centre*. The global map of forest cover provides a spatially explicit representation of forest presence and absence for the year 2020 at 10m spatial resolution in geographical coordinates (latitude, longitude). The GFC2020(v3) dataset is widely regarded as a major technical achievement and an important transparency tool. However, concerns have been raised regarding potential misclassification of agroforestry and tree crops and confusion between tree cover and legal forest status. Other concerns raised also include an apparent inability to observe under-canopy land use and geographic variability in accuracy.

These concerns do not mean the dataset is unreliable or unusable, but they do mean it should be treated as a screening and risk-assessment tool, not as conclusive proof of whether a specific plot was forest in 2020. One insightful observation from a reviewer of GFC2020(v3) was that 'tree cover' is a biophysical observation whilst 'forest' is a legal and land-use classification. Earth observation alone is reasonably accurate at determining the former and of no use determining the latter. For EUDR due diligence, GFC2020(v3) is best used alongside known boundaries, historical satellite imagery, national land-use records and ground-truth evidence.⁴⁰

AHA will continue to monitor other sources of information and to assess the efficacy of the CDL as its primary data source. It will also continue to utilise other sources of data to monitor accuracy and trends. Regarding the 2020 baseline for assessing deforestation, it is unlikely that further data sources will become available as the time gap increases and the combined analysis of the CDL and GFC2020(v3) is likely to be the best dataset available for establishing a baseline at this cut-off subject to the unlikely release of improved data.

A1.2 Land use imagery used by the AHA platform 'Expert Eye' truthing tool

Aside from Sentinel-2, which produces images at 10x10m or 20x20m resolution, a number of other free to access data sets are available and were utilised in truthing the initial assessment.

Esri images⁴¹ in the continental United States are at 0.3-meter resolution and were produced in 2020, 2024 and 2025. Unfortunately, 2020 images can only be guaranteed to be taken in 2020 or before. Esri does not adhere to a strict, predetermined schedule for updating its imagery base maps. Therefore, Esri offers high-quality images on an infrequent basis.

Google Maps images are a mosaic of data from various sources, including satellites and aeroplanes, and the resolution can differ depending on location and the specific data source. Large areas often have a resolution of 1 meter or less. Experience has shown that the majority of images were created 2022-2025. Google Maps satellite images are updated on an irregular schedule, with some areas updated more frequently than others. While major cities and areas with frequent changes might see updates every few months or even monthly, other areas

³⁹ Joint Research Centre (JRC) (2025) *GFC2020: A Global Map of Forest Land Use for year 2020 to Support the EU Deforestation Regulation* Bourgoin, C.; Verhegghen, A.; Carboni, S.; Amezttoy, I.; Degreve, L.; Fritz, S.; Herold, M.; Tsendbazar, N.; Lesiv, M.; Achard, F.; Colditz, R. (2025). *GFC2020: A Global Map of Forest Land Use for year 2020 to Support the EU Deforestation Regulation*. Earth System Science Data, preprint. <https://data.jrc.ec.europa.eu/dataset/8c561543-31df-4e1b-9994-e529afecaf54>

⁴⁰ Peer review comments on GFC2020. <https://essd.copernicus.org/articles/18/1331/2026/essd-18-1331-2026-discussion.html>

⁴¹ [https://doc.arcgis.com/en/data-appliance/2022/maps/world-imagery.htm#:~:text=This%20imagery%20ranges%20from%200.3%280%20in%20select%20communities\).](https://doc.arcgis.com/en/data-appliance/2022/maps/world-imagery.htm#:~:text=This%20imagery%20ranges%20from%200.3%280%20in%20select%20communities).)

could see updates every few years. It is likely that the rural areas AHA are focused on are updated less frequently.

MapTiler images⁴² provides 1-2 meters per pixel resolution, while aerial imagery can achieve even higher resolutions, potentially down to 8cm per pixel in some areas, according to MapTiler. The specific resolution depends on the source imagery and the zoom level. Unfortunately for temporal analysis MapTiler images are undated. Experience indicates that many of the images currently available appear to be from 2024. In some cases, MapTiler images appear older or virtually identical to the latest Google image. MapTiler integrates Maxar's satellite imagery for global coverage, with data claimed as no older than two years.

In 2026 a much broader team of experts are anticipated to assess around 500 sites identified by the AHA AI. Using a host of 'Expert Eyes' with US hardwood forestry experience will allow closer than ever scrutiny of a range of images to make more accurate determination of what is happening on the ground. It is further envisaged that future analysis will also incorporate actual ground truthing in a number of counties. Feedback from these visits will assist in future refinement of the AI in time for the 2026 deforestation assessment.

A1.3 Other image sources not used by the AHA platform

A multitude of image sources are available for assessing deforestation and tree cover loss.

An open-access platform that became available in 2025 was *OpenForis*⁴³. OpenForis is an initiative that provides free and open-source solutions for forest and land monitoring. It is a part of the digital public goods offered by the Food and Agriculture Organization of the United Nations (FAO). This approach potentially provides a cost-effective way to monitor forest cover and other critical land types.

Developed in collaboration with partners including Google, NASA, and international research institutions, OpenForis is a suite of ten different inter-related platforms. This data distinguishes seven driver classes—permanent agriculture, hard commodities (mining and energy), shifting cultivation, logging, settlements and infrastructure, wildfire, and other natural disturbances—enabling finer discrimination between permanent deforestation and temporary or small-scale disturbances. The data do not differentiate natural forests from plantations or resolve co-located events below 1 km and thus do not disentangle rapid successive drivers in the same cell. From the perspective of determining potential deforestation on a site-by-site basis a resolution of 1 kilometre is unsuitable in a US hardwood forest context.

Efforts to improve detection of harvest sites and / or the early stages of deforestation continue. Much of the efforts focus on tropical forests and are often hampered by persistent cloud cover. While radar remote sensing offers a compelling complement to optical data, a significant research gap remains in distinguishing the strengths and limitations of different radar sensors to the multiple stages of forest disturbance.

⁴² <https://www.maptiler.com/satellite/>

⁴³ <https://www.openforis.net/>

As reported in Remote Sensing of Environment⁴⁴ there is likely an impending rapid expansion of available data outside the C-band, and a need for new sensors to detect changes rapidly and accurately in forest cover. Investigation of the sensitivity of two freely available radar datasets — JAXA’s ALOS-2 PALSAR-2 (L-band) and ESA’s Sentinel-1 (C-band) — has considered tropical forest loss. C-band and L-band are two commonly used microwave radar bands in satellite remote sensing. They are especially useful because they can collect data through clouds and at night, making them valuable for monitoring forests, agriculture, floods, and land-use change. With a particular focus on detecting the earliest stage of deforestation, the researchers compared backscatter values⁴⁵, SAR indices⁴⁶, and statistical metrics against time series data from 92 locations over three years in the Amazon. In these locations, early deforestation, biomass burning, and vegetation regrowth were occurring in different stages of the full conversion process. The analysis revealed that the L-band-derived Radar Forest Degradation Index (RFDI) is highly sensitive to early deforestation, even when biomass remains on the ground soon after cutting. In contrast, C-band information showed limited ability to sense this critical initial stage of change but was much stronger at detecting later deforestation stages. The results point the way toward combining information from the upcoming L-Band NISAR mission with the existing C-band information to produce a multi-component system that can accurately detect deforestation in all its temporal stages.

Whilst focused on tropical forests in a context where early-stage detection of forest disturbance often reveals impending deforestation, the same technology offers potential value for analysis of temperate forest. A future ability to detect harvest sites in temperate hardwood forests or identify areas of potential degradation raises the prospect of ever more detailed and useful analysis for future assessments by the AHA Platform.

A1.4 Hardwood saw log data

The USDA Forest Service’s Forest Inventory and Analysis (FIA) Program identifies hardwood sawlog harvests at the county level primarily through its Timber Products Output (TPO) system, which is part of the broader National Resource Use Monitoring (NRUM) program.

Each year, the Forest Service surveys sawmills and other primary processors that receive logs in roundwood form. Mills report:

- Volume of roundwood received,
- Product type (e.g., sawlogs, veneer logs, pulpwood),
- Species or species group,
- County where the timber was harvested,
- Mill residues generated.

For hardwood sawlog reporting, the relevant records are logs identified as hardwood species and classified as sawlogs rather than pulpwood or veneer logs.

⁴⁴ Flores-Anderson A.I, Cardille J.A, Kellndorfer J, Meyer F.J, & Olofsson P, (2026) On the sensitivity of SAR C- and L-band dual-polarized data for detection of early deforestation in the tropics. Remote Sensing of Environment, Volume 333, ISSN 0034-4257, <https://doi.org/10.1016/j.rse.2025.115133>.

(<https://www.sciencedirect.com/science/article/pii/S0034425725005371>)

⁴⁵ Radar backscatter values quantify the strength of microwave energy returned from the Earth to a satellite sensor.

⁴⁶ Synthetic Aperture Radar (SAR) indices are mathematical combinations of radar backscatter designed to highlight specific surface properties such as vegetation structure, moisture, roughness, flooding, or disturbance.

Mills identify the county of harvest origin for each batch of logs. FIA aggregates these reported volumes to produce county-level estimates. So, if a mill reports receiving 2 million board feet of oak sawlogs from a specific county, that volume is attributed to that county's hardwood sawlog production.

Because not every mill may respond, FIA applies estimation procedures and expansion factors based on survey design, historical procurement patterns, and other information to estimate total county production. Recent research has improved county-level sawlog estimates using historical and distance-based procurement models.

FIA data regarding hardwood sawlog production on a county basis is therefore an estimate. Calculations of the exposure to risk of hardwood sawlogs per county are based upon these estimates. Some of the counties do not record hardwood sawlogs may have harvests of hardwoods which have not been estimated. Conversely, some counties recorded as producing hardwood sawlogs may in reality have no such production for the recorded year.

A1.5 Differences in the area identified as forest using the USDA Cropland Data Layer (CDL) and the area identified as forest in the USDA Forest Inventory and Analysis (FIA) data

The discrepancy exists because the USDA National Agricultural Statistics Service (NASS) Cropland Data Layer (CDL) counts tree canopy cover using satellite imagery, whereas the USDA Forest Service Forest Inventory and Analysis (FIA) data relies on a strict administrative definition of land use. Essentially, the CDL maps what is on the ground physically (spectrally classified tree cover), while the FIA tracks how the land is managed and structured long-term.⁴⁷

The primary structural differences driving the higher acreage in the CDL include the following:

1. Land Use vs. Land Cover Definitions

- The FIA Definition: To be classified as forest by the USDA Forest Service FIA, a piece of land must be at least 1 acre in size, at least 120 feet wide, have at least 10% canopy cover, and must not be primarily developed for another use.⁴⁸
- The CDL Definition: The CDL is a remote sensing product generated from 30-metre resolution satellite imagery. If a 30x30m pixel is spectrally reflective of trees, it is categorized as forest. It does not factor in land-use context, minimum acreage thresholds, or width constraints.⁴⁹

2. Treatment of Urban Trees and Subdivisions

- The CDL captures tree canopies wherever they occur. This includes backyard trees in residential suburbs, public city parks, corporate campuses, golf courses, and green strips along highways.

⁴⁷ <https://pmc.ncbi.nlm.nih.gov/articles/PMC12821166/>

⁴⁸ <https://databank.worldbank.org/metadataglossary/millennium-development-goals/series/AG.LND.FRST.ZS>

⁴⁹ <https://pmc.ncbi.nlm.nih.gov/articles/PMC8891360/>

- The FIA explicitly excludes these areas. Even if an upscale suburban neighbourhood has 50% tree canopy cover, the FIA classifies its primary land use as "Urban/Developed," which instantly disqualifies it from being counted as forest land.

3. Linear Tree Features and Windbreaks

- The CDL regularly classifies fence lines, narrow riparian corridors (trees alongside rivers), and agricultural windbreaks or shelterbelts as forest, provided they are wide enough to fill a satellite pixel.
- The FIA disqualifies these features because they rarely meet the strict 120-foot minimum width requirement.

4. Orchards and Agroforestry

- The CDL is fundamentally designed to monitor agriculture. While it separates certain fruit orchards, complex agroforestry practices, tree nurseries, or Christmas tree farms often register spectrally as generic deciduous or evergreen forest.
- The FIA categorizes active agricultural operations—including commercial nut/fruit orchards and intensive agroforestry where grazing or crops take priority—as agricultural land rather than forest land.

Table 13 Comparison of methodology used by CDL and FIA

Attribute	USDA Cropland Data Layer (CDL)	USDA Forest Inventory & Analysis (FIA)
Primary Method	Remote Sensing / Satellite Imagery	Field Plot Ground Inventory + Imagery
Classification Focus	Land Cover (What physical material covers the pixel)	Land Use (How the land is managed/designated)
Minimum Patch Size	1 pixel (approx. 0.22 acres)	1 acre
Minimum Width	No restriction	120 feet
Includes City Parks?	Yes	No
Includes Fence Rows?	Yes	No

A1.6 Missing FIA data for certain counties

A number of the counties identified as Unspecified Risk lack FIA data. The reasons given below for this lack of data in those counties help to explain their higher level of risk.

FIA data is missing for a large number of counties in **Texas**. Data is omitted for counties in West / Central Texas, and the reported counties are only in East Texas.

This is for several reasons:

1. Historically, the FIA program in Texas only collected data for the 43 counties making up East Texas. This region contains the commercial timberlands of the East Texas Piney Woods. Because the programme's original mandate was to track commercial timber volume and forest products, public and state funding was entirely focused on these 43 counties. Central and West Texas were excluded from inventory cycles for decades.
2. Differing Definitions of "Forest" vs. "Woodland". In arid and semi-arid Central and West Texas, vast tracts of land are dominated by mesquite, juniper, and scrub oaks. Historically, these did not meet the strict FIA definition of a "forest" (which requires a minimum canopy cover, area, and tree height capability). While the FIA programme has expanded to include "woodlands," many western counties have such sparse tree

density that they do not hit the minimum threshold of forestland needed to trigger intensive ground plot tracking.

3. The 10-Year Annualized “Panel” Measurement Cycle. The FIA program uses an annualized rolling sample design. Instead of measuring every plot in Texas at once, field crews visit a small subset (or “panel”) of plots each year. In the timber-dense East Texas region, plots are remeasured on a fast 5-year cycle. In Central and West Texas, plots are remeasured on a much slower 10-year cycle. Counties in West or Central Texas may show up as missing or blank simply because their specific 10-year panel cycle has not been fully completed, processed, or aggregated into that year’s release database.
4. Sampling Error Constraints in Low-Density Areas. The national Forest Survey Handbook mandates strict limitations on sampling errors per million acres of forestland. In counties with highly fragmented tree canopies or low forest percentages, the statistical sampling error spikes. To maintain database integrity, the FIA suppresses or omits county-level reporting in areas where there are not enough qualifying ground plots to generate a statistically valid estimate.

Data is also absent from a number of counties due to the limited forest area in some regions that are heavily dominated by agricultural land or where environmental conditions not conducive to a large and stable forest area.

Connecticut

2025 was the first year in which many federal, state, and commercial datasets fully reflected a major change that had been implemented earlier - the replacement of Connecticut's historic 8 counties with 9 planning regions as county-equivalent units.

Historically, Connecticut had eight counties. However, these counties ceased to function as governmental entities in 1960. In 2022, the U.S. Census Bureau approved Connecticut's request to use its nine planning regions (Councils of Governments) as official county-equivalent geographies for federal statistical purposes. By 2024, Census products and many federal datasets had transitioned to the new geography.

The new planning-region boundaries do not correspond directly to the old county boundaries, meaning there is no simple one-to-one conversion between the eight historic counties and the nine planning regions.

At the time of writing the FIA data regarding hardwood sawlog production and Cropland Data Layer mapping data are mismatched. This does not facilitate time-series analysis at this stage. It is expected that the data sets will be reconciled for future analysis.

Annex 2: Profiles of Unspecified & Specified Risk Counties

- This annex covers all the counties that are Unspecified or Specified Risk as determined by the 2025 analysis.
- Counties which are highlighted are those which are reported by FIA to have had hardwood saw log production in the period 2022-2025.

A2.1 Arkansas: Jackson, Chicot & Woodruff

Table 3 Profile of Unspecified Risk counties in Arkansas

County	2020 forest base hectares	Forest loss - 2020-2025 (ha) - attributed to crops	Forest loss - annual (ha) - attributed to crops	Forest loss - annual (%) - attributed to crops	Total annual hardwood sawlog production	Sawlog volume exposed to deforestation risk (m3 per year)
Jackson	31,926	604	121	0.379	0	0
Chicot	37,008	279	56	0.151	26,206	40
Woodruff	41,169	210	42	0.102	0	0

Chicot County, located in the southeastern corner of Arkansas along the Mississippi River, is one of the state's most productive agricultural counties. Its deep alluvial soils, flat topography, and extensive irrigation infrastructure support large-scale commercial farming focused on row crops.

Chicot County agriculture is dominated by large, capital-intensive farms with a high reliance on irrigation. Chicot County is a classic Mississippi Delta row-crop region. The principal crops include soybeans, corn, cotton, rice and wheat (often as a winter crop).

Soybeans and corn are typically the largest crops by area, while cotton and rice remain economically important where prices and irrigation favour them. Chicot County has relatively few farms, but they are large and commercially significant, and more than one-third of farms are over 1,000 acres. This reflects a landscape dominated by large family and corporate farming operations.⁵⁰

Although agriculture dominates, farms reported 12,983 acres of woodland in 2022. Bottomland hardwood forests remain important along waterways and in less intensively farmed areas.⁵¹

Forest loss in Chicot County, Arkansas, is driven primarily by the conversion of bottomland forests to highly productive row-crop agriculture, with additional pressure from timber harvesting, drainage changes, and river-related land-use change. The dominant cause of forest loss in Chicot County has been the clearing of bottomland hardwood forests for agriculture.

Much of southeastern Arkansas was originally covered by extensive bottomland hardwood forests. Over the 19th and 20th centuries, large areas were cleared for cotton and later

⁵⁰ https://www.nass.usda.gov/Publications/AgCensus/2022/Online_Resources/County_Profiles/Arkansas/cp05017.pdf

⁵¹ <https://agriculture.arkansas.gov/forestry/county-contacts/chicot-county/>

diversified row crops. Today, remaining forests are concentrated along rivers, oxbow lakes, and areas less suited to farming.

Drainage canals, levees, and water-control structures have made seasonally flooded land suitable for cultivation. These modifications reduce natural flooding, improve field access, and encourage conversion of wet forests to cropland. While harvested stands are often regenerated, some sites may be converted to agriculture instead of replanted.

High prices for soybeans, corn, cotton, and rice can increase pressure to clear remaining forest patches or avoid reforesting marginal land. Large farms favour broad, uninterrupted fields, creating incentives to remove small woodlots, hedgerows, tree lines and irregular forest patches.

The main driver of forest loss in Chicot County is the economic advantage of converting fertile Delta bottomland forests to irrigated row-crop agriculture. Soybeans, corn, cotton, and rice have long generated higher returns than leaving land in forest, while drainage and levee systems have made even flood-prone land suitable for cultivation.

Table 15 Forest loss attribution (2020-2025): by crop type indicated for 2025 land use – loss in hectares attributed to this crop type

County	Corn	Cotton	Fallow / Idle Cropland	Pecans	Soy	Sorghum	Other crops / non-determined
Jackson	5		469	1	21		108
Chicot	49	4	202	4	18	1	1
Woodruff	4	1	35	4	18	1	147

A2.2 California: Yuba & Solano

Yuba County is located in California's northern Sacramento Valley and has a highly diversified agricultural sector. The county combines irrigated field crops, orchards, rice production, livestock grazing, and specialty crops. Agriculture is concentrated in the western valley floor, while the eastern portion of the county becomes increasingly foothill and forested.

Because eastern Yuba County contains significant forest and woodland cover, potential causes of forest loss include residential development in foothill areas, wildfire, orchard expansion and infrastructure development. Forest conversion risk is generally concentrated along the transition zone between agricultural valleys and foothill woodlands.

Solano County occupies a strategic position between the San Francisco Bay Area and California's Central Valley. Agriculture remains highly important despite increasing urban development pressures.

The county has one of the most diverse agricultural economies in California. The county is particularly well known for wine production in the Suisun Valley region. The county benefits from both fertile soils and a Mediterranean climate. Large portions of the county are protected through agricultural conservation programs designed to limit urban sprawl.

Unlike heavily forested counties in northern California, Solano County contains relatively limited forest cover. Tree-cover loss is more commonly associated with urban expansion from the Bay Area, infrastructure projects, vineyard or orchard development and wildfire in oak woodland areas. Large-scale commercial forestry is not a major land use.

Table 16 Profile of Unspecified Risk counties in California

County	2020 forest base hectares	Forest loss - 2020-2025 (ha) - attributed to crops	Forest loss - annual (ha) - attributed to crops	Forest loss - annual (%) - attributed to crops	Total annual hardwood sawlog production	Sawlog volume exposed to deforestation risk (m3 per year)
Yuba	15,969	428	86	0.536	2,233	12
Solano	9,848	131	26	0.266	0	0

Table 17 Forest loss attribution (2020-2025): by crop type indicated for 2025 land use – loss in hectares attributed to this crop type

County	Fallow / Idle Cropland	Other crops / non-determined
Yuba	9	419
Solano	6	125

A2.3 Florida: Palm Beach

Palm Beach County is one of the most productive and diverse agricultural counties in the United States and is consistently the leading agricultural county in Florida by value of production. Although widely known for its urban coastal communities, a large portion of the county—particularly the western area around the Everglades Agricultural Area (EAA)—is devoted to intensive commercial agriculture.⁵²

Table 4 Profile of Unspecified Risk counties in Florida

County	2020 forest base hectares	Forest loss - 2020-2025 (ha) - attributed to crops	Forest loss - annual (ha) - attributed to crops	Forest loss - annual (%) - attributed to crops	Total annual hardwood sawlog production	Sawlog volume exposed to deforestation risk (m3 per year)
Palm Beach	11,516	71	14	0.123	0	0

Palm Beach County's agriculture is far more diverse than the corn-soybean systems typical of the Midwest. The county has an emphasis on high-value specialty crops rather than commodity grain production.

Much of the county's agricultural production occurs within the Everglades Agricultural Area, a highly productive farming region south of Lake Okeechobee. Sugarcane dominates much of this landscape and supports Florida's sugar industry.

Unlike many south-eastern counties, woodland accounts for only about 6,300 acres of farmland. Agriculture is concentrated on long-established agricultural land, and large areas are already committed to farming, conservation, or urban development. Forest resources are therefore relatively limited compared with the county's agricultural footprint.

Palm Beach County is not a major soybean-producing county and the dominant crops—sugarcane, vegetables, sod, and nursery crops—are not EUDR-regulated commodities. Most agricultural land has been under cultivation for decades.

Table 19 Forest loss attribution (2020-2025): by crop type indicated for 2025 land use – loss in hectares attributed to this crop type

County	Fallow / Idle Cropland	Other crops / non-determined
Palm Beach	12	59

FIA data is omitted for Palm beach, due to specific environmental classifications, high urban development, and structural suppression parameters unique to South Florida. A massive portion of undeveloped Palm Beach County sits within the Everglades ecosystem. The USDA Forest Service strictly classifies land based on land use capability rather than just tree cover. These areas are legally and ecologically categorised as herbaceous wetlands or sawgrass marshes, not forestland. Even areas with saturated tree cover (like cypress strands or mangrove fringes) are often classified as non-forest wetlands under FIA definitions, meaning they do not get assigned permanent FIA tracking plots. The remaining dry land in Palm Beach

⁵² https://www.nass.usda.gov/Publications/AgCensus/2022/Online_Resources/County_Profiles/Florida/cp12099.pdf

County is heavily partitioned into two non-forest categories: intensive agricultural zones (such as the massive sugarcane fields near Lake Okeechobee) and dense urban/suburban development along the Atlantic coast. Because the core FIA program explicitly filters out active agricultural and urban zones, the county lacks the minimum continuous rural "timberland" or "forestland" acreage required to anchor permanent sampling grids.

A2.4 Georgia: Bacon, Lanier & Atkinson

In Georgia, agriculture and forestry are closely linked. Many landscapes contain a combination of managed pine plantations, silvo-pasture systems and rotational timberlands.

Lanier County is a small, predominantly rural county in south-central Georgia. Forests remain a dominant land cover, with a community wildfire protection assessment noting that approximately 88% of the county was forested, despite the presence of extensive agriculture.⁵³

Lanier County appears to experience low-to-moderate levels of annual forest conversion, but like many counties in southern Georgia, it is exposed to ongoing pressure from agricultural expansion, timber harvesting and replanting cycles, infrastructure and rural development and extreme weather events, particularly hurricanes.

Agriculture is a major component of the local economy. Agricultural land-use change therefore represents one of the most likely sources of permanent forest conversion where it occurs.⁵⁴

Recent tree cover change in Lanier County has been strongly influenced by hurricanes rather than agricultural expansion alone. Hurricane Helene (2024) caused extensive damage across south Georgia's forests and pecan orchards.⁵⁵ Local reports indicate substantial losses of mature pecan trees and damage to timber stands, while regional forestry assessments estimated damage across millions of acres of forestland in southern Georgia. These storm-related losses appear in satellite-based tree cover loss datasets even though they do not necessarily represent deforestation.

Table 205 Profile of Unspecified Risk counties in Georgia

County	2020 forest base hectares	Forest loss - 2020-2025 (ha) - attributed to crops	Forest loss - annual (ha) - attributed to crops	Forest loss - annual (%) - attributed to crops	Total annual hardwood sawlog production	Sawlog volume exposed to deforestation risk (m3 per year)
Bacon	27,546	571	114	0.415	0	0
Lanier	21,032	190	38	0.180	13,364	24
Atkinson	32,737	172	34	0.105	0	0

Agriculture is one of the largest industries in Georgia and is extremely diverse, ranging from row crops and poultry to timber, peanuts, cotton, and specialty crops. Georgia is the leading

⁵³ https://dlg.usg.edu/record/dlg_ggpd_s-ga-bf600-b-pm1-b2019-bw5-bl36-belec-p-btext

⁵⁴ <https://extension.uga.edu/county-offices/lanier/agriculture-and-natural-resources.html>

⁵⁵ <https://www.laniercountynewsonline.com/2025/04/10/stay-or-go-helene-has-set-stage-for-reset-of-regions-pecan-industry>

peanut-producing state in the United States with much of the production is concentrated in South Georgia. Cotton remains a major row crop, especially in southern counties.

Forestry is also economically significant with Georgia having extensive pine plantations, pulpwood production, sawmills and biomass industries. Large areas of managed forest are part of agricultural and rural land use.

Georgia is one of the leading pecan-producing states with pecan orchards especially common in southwest Georgia. After growth a decade ago, pecan production is under pressure from Chinese tariffs.⁵⁶

As in much of the south-eastern United States, it is very important to distinguish between temporary timber harvest with replanting and permanent conversion from forest to non-forest land use. Georgia has one of the most active commercial forestry sectors in the U.S., but most harvesting is rotational forestry rather than permanent deforestation.

The largest long-term drivers of permanent forest loss in Georgia are generally considered:

- Metropolitan expansion,
- Transportation corridors,
- Housing development,
- Commercial growth.^{57 58}

Major pressure areas include: the Atlanta metropolitan region, Savannah, Augusta, Macon and coastal counties. Development commonly converts forests into residential subdivisions, industrial parks, warehousing, roads and commercial land.

A major issue in Georgia is fragmentation of large forest ownerships into smaller parcels. This process can increase development likelihood and increase wildfire-interface pressures. Georgia has extensive privately owned forestland, making it particularly sensitive to real-estate pressure, rural subdivision and exurban growth.

Agriculture can also drive forest conversion in some regions. Localized forest clearing may occur for pasture expansion, irrigated agriculture, poultry-related land use and pecan orchard establishment.

Georgia is heavily managed for timber production, and the state contains pine plantations, pulpwood systems, sawmill operations and intensive replanting programs. Satellite imagery may show clear-cuts, harvest rotations and temporary canopy loss, but much of this land likely remains legally forestland which continues in timber production.

Localized forest loss can result from solar farms, manufacturing facilities, utility infrastructure and mining and aggregate extraction. These are generally smaller drivers than development and fragmentation. In coastal Georgia residential development and tourism infrastructure affect forested ecosystems.

⁵⁶ <https://www.agriculture.com/partners-china-s-retaliatory-tariffs-cost-u-s-ag-exporters-usd15-billion-study-says-11982444>

⁵⁷ <https://gatrees.org/>

⁵⁸ <https://www.srs.fs.usda.gov/>

Georgia forests are also affected by storm damage (hurricanes), southern pine beetle outbreaks and fires which may cause canopy loss or degradation without constituting permanent deforestation.

Georgia is widely regarded as one of the most intensive private forestry economies in the United States. Most commercial timber harvesting in Georgia is generally treated as rotational forestry with expected replanting and regrowth rather than permanent deforestation.

Table 21 Forest loss attribution (2020-2025): by crop type indicated for 2025 land use – loss in hectares attributed to this crop type

County	Blueberries	Corn	Cotton	Pecans	Soy	Sorghum	Other crops / non-determined
Bacon	344	35	36	20	1	1	136
Lanier	50	6	13	3	66		51
Atkinson	36	9	30	4	3		90

A2.5 Iowa: Winnebago

Winnebago County is located in north-central Iowa along the Minnesota border and is part of one of the most productive agricultural regions in the United States. Agriculture dominates the landscape, with intensive corn and soybean production integrated with a substantial livestock sector, particularly pig production.⁵⁹

Table 226 Profile of Unspecified Risk counties in Iowa

County	2020 forest base hectares	Forest loss - 2020-2025 (ha) - attributed to crops	Forest loss - annual (ha) - attributed to crops	Forest loss - annual (%) - attributed to crops	Total annual hardwood sawlog production	Sawlog volume exposed to deforestation risk (m3 per year)
Winnebago	1,443	7	1	0.102	0	0

The county has almost no natural woodland outside of narrow strips along the Winnebago River.

Table 23 Forest loss attribution (2020-2025): by crop type indicated for 2025 land use – loss in hectares attributed to this crop type

County	Corn	Soy
Winnebago	6	1

Lack of FIA data for Winnebago County, Iowa, is due to the county sitting on the fertile Des Moines Lobe landform. Well over 85% of the county's total land area is strictly dedicated to industrial corn and soybean farming. Because the FIA program explicitly filters out active farmland, and the local windbreaks fail to hit the national standard of 1 contiguous acre of woods that is at least 120 feet wide, randomized federal sampling grid points mathematically drop to zero.

⁵⁹ https://data.nass.usda.gov/Publications/AgCensus/2022/Online_Resources/County_Profiles/Iowa/cp19189.pdf

A2.6 Illinois: Lawrence

Lawrence County is located in south-eastern Illinois along the Indiana border and is part of the highly productive agricultural region of the lower Wabash River valley. Agriculture is dominated by row-crop production, particularly corn and soybeans, with smaller areas of wheat and livestock production.⁶⁰

It is a long-established agricultural landscape with extensive historical cropland. Most current agricultural production occurs on land that has been farmed for decades. Agricultural expansion is generally limited compared with more heavily forested parts of the south-eastern United States. Soybeans are a major crop and therefore the principal EUDR-regulated agricultural commodity produced in the county.

Table 24 Profile of Unspecified Risk counties in Illinois

County	2020 forest base hectares	Forest loss - 2020-2025 (ha) - attributed to crops	Forest loss - annual (ha) - attributed to crops	Forest loss - annual (%) - attributed to crops	Total annual hardwood sawlog production	Sawlog volume exposed to deforestation risk (m3 per year)
Lawrence	18,625	112	22	0.120	0	0

Table 25 Forest loss attribution (2020-2025): by crop type indicated for 2025 land use – loss in hectares attributed to this crop type

County	Corn	Fallow / Idle Cropland	Soy	Sorghum	Other crops / non-determined
Lawrence	18	51	41	2	0

Illinois is one of the most productive agricultural states in the United States and a global leader in grain production. Its deep prairie soils, extensive transportation infrastructure, and large processing sector make agriculture a central part of the state's economy.

Illinois is consistently one of the top two U.S. producers of corn. Illinois is also a leading soybean-producing state. Soft red winter wheat is grown in southern and central Illinois, though acreage is much smaller than corn and soybeans. Illinois produces pumpkins, horseradish, apples, and processing vegetables, though these occupy relatively small acreage.

Farms in northern and central Illinois are dominated by highly mechanized corn–soybean systems, characterized by very large, efficient farms. Southern Illinois farms are more diverse and include wheat, cattle, hay, fruits, vegetables, and forestry.

Forest loss in Illinois has been driven primarily by the historic conversion of land to agriculture, with current pressures coming from urban and suburban development, fragmentation, invasive species, and changes in forest management and regeneration.⁶¹

The dominant historical cause of forest loss in Illinois was clearing land for farming. Northern and central Illinois forestland was converted mainly to cropland, although much of that land

⁶⁰ https://data.nass.usda.gov/Publications/AgCensus/2022/Online_Resources/County_Profiles/Illinois/cp17101.pdf

⁶¹ <https://ifdc.nres.illinois.edu/wp-content/uploads/Illinois-Forest-Action-Plan-2026-Update.pdf>

was originally prairie rather than forest. In southern Illinois and along major river valleys, extensive hardwood forests were cleared for crops, pasture, and timber. Today, the most productive agricultural regions remain heavily devoted to corn and soybean production.

The Illinois Forest Action Plan notes that Illinois forests experienced “significant losses ... over the past centuries,” largely associated with land-use conversion.⁶²

Development around the Chicago metropolitan area and other cities such as Springfield, Peoria, Rockford, and St. Louis suburbs continue to convert forestland to housing, roads, warehouses, industrial sites, and utility corridors (e.g., power lines).

The Illinois Department of Natural Resources (IDNR) states that Illinois has lost natural lands due to “urban sprawl and agricultural expansion.” Much of Illinois’s forestland occurs in relatively small patches, especially outside southern Illinois.⁶³

Timber harvesting itself does not necessarily reduce forest area, but poorly planned harvests can degrade stands and increase the likelihood of conversion to non-forest uses. IDNR specifically identifies inappropriate timber harvest practices as a contributor to forest degradation.⁶⁴

In northern Illinois forest loss is driven mainly by urbanization and suburban expansion. In Central Illinois remaining forests are small and fragmented within intensive agricultural landscapes. Across southern Illinois the largest forest blocks remain, but they face fragmentation, invasive species, and regeneration challenges.

The largest historical cause of forest loss in Illinois was conversion to agriculture. Today, the main pressures are urban development, fragmentation, invasive species, and declining forest health. While southern Illinois still contains extensive forests, maintaining healthy and connected forest landscapes remains a major conservation challenge state-wide.

⁶² <https://ifdc.nres.illinois.edu/wp-content/uploads/Illinois-Forest-Action-Plan-2026-Update.pdf>

⁶³ <https://ifdc.nres.illinois.edu/wp-content/uploads/Illinois-Forest-Action-Plan-2026-Update.pdf>

⁶⁴ <https://dnr.illinois.gov/conservation/iwap/forestandwoodland.html>

A2.7 Indiana: Randolph, Wells, Tipton, Knox & Blackford

Table 26 Profile of Unspecified Risk counties in Indiana

County	2020 forest base hectares	Forest loss - 2020-2025 (ha) - attributed to crops	Forest loss - annual (ha) - attributed to crops	Forest loss - annual (%) - attributed to crops	Total annual hardwood sawlog production	Sawlog volume exposed to deforestation risk (m3 per year)
Randolph	8,519	75	15	0.175	6,094	11
Wells	7,043	51	10	0.145	40,273	58
Tipton	1,816	11	2	0.123	0	0
Knox	15,363	94	19	0.123	81,066	99
Blackford	4,283	24	5	0.110	0	0

Knox County, located in southwestern Indiana along the Wabash River, is characterized by a mix of productive agricultural land, bottomland forests, riparian woodlands, and upland hardwood forests. Agriculture is a dominant land use in the county, with extensive row-crop production and some of Indiana's most productive farmland.⁶⁵ Tree cover loss in Knox County is primarily influenced by its agricultural land-use history and ongoing management of farmland, rather than by intensive hardwood harvesting. Remaining forests are concentrated in riparian corridors, bottomlands, and private woodlots, and losses are more likely to result from agricultural expansion, development, or localized land-use change than from commercial forestry.⁶⁶

Wells County is located in north-eastern Indiana and is one of the most intensively agricultural counties in the state. Approximately 200,000 acres of the county's land area are in farms, and more than 94% of agricultural land is devoted to cropland. Forests occur primarily as small woodlots, riparian corridors, and scattered patches embedded within the agricultural landscape rather than as large contiguous forest blocks.⁶⁷ Tree cover loss in Wells County is best understood as a consequence of its long-established agricultural landscape. Most historical deforestation occurred more than a century ago when forests and wetlands were converted to cropland. Current tree cover loss is likely driven by localized agricultural expansion, removal of small woodlots and fencerows, development, and natural disturbances.

Randolph County is located in east-central Indiana along the Ohio border and is predominantly an agricultural county. Much of the county was originally forested, but extensive clearing and drainage during the nineteenth and early twentieth centuries transformed the landscape into one of Indiana's major farming regions. Historical records note that prairie, marsh, and forested lands were cleared to create productive cropland, and agriculture remains the dominant land use today.⁶⁸ Tree cover loss in Randolph County is best understood in the context of a long-established agricultural landscape. Most large-scale forest conversion occurred during the county's agricultural development in the nineteenth and twentieth centuries. Current tree cover loss is primarily associated with the management of

⁶⁵ <https://knoxcounty.in.gov/>

⁶⁶ https://codelibrary.amlegal.com/codes/knoxcounty/latest/knoxcounty_in/0-0-0-5017

⁶⁷ https://wellscounty.org/wp-content/uploads/2024/10/MHMP_Wells_20190709-Reduced.pdf

⁶⁸ <https://www.hmdb.org/>

small woodlots, agricultural land use, development, and natural disturbances rather than intensive commercial forestry.

Table 27 Forest loss attribution (2020-2025): by crop type indicated for 2025 land use – loss in hectares attributed to this crop type

County	Corn	Fallow / Idle Cropland	Soy	Sorghum	Other crops / non- determined
Randolph	32	14	29		
Wells	23		17		10
Tipton	2	1	8		
Knox	46	9	30	1	8
Blackford	12		11		1

Indiana is one of the most productive agricultural states in the United States. Its fertile soils, favourable climate, and central location make it a major producer of grains, livestock, poultry, and specialty crops. Indiana agriculture is dominated by row crops, and it consistently ranks among the top U.S. corn-producing states.

In northern Indiana corn and soybeans dominate. In central Indiana agriculture is highly mechanized for corn–soybean production. Southern Indiana is more noted for mixed farming, including cattle, hay, hardwood forests, and smaller farms.

Forest loss in Indiana is driven primarily by historical agricultural clearing, along with ongoing urban and suburban development, forest fragmentation, invasive species, and poor regeneration of oak forests.

The single largest cause of forest loss in Indiana was the clearing of forests for farms during the 19th and early 20th centuries. Indiana was originally estimated to be about 85–90% forested. Most of the level and fertile land in central and northern Indiana was cleared for crops such as corn, soybeans, wheat, and hay. By the early 1900s, forest cover had fallen to a small fraction of the state. The Indiana Department of Natural Resources (DNR) notes that “timber overharvesting and land use change, starting in the mid-1800s,” were the major causes of forest disturbance.⁶⁹

Although Indiana’s total forest area has been relatively stable in recent decades, forests are still lost locally when:

- Small woodlots are converted to cropland,
- Hedgerows and fencerows are removed,
- Wetlands and marginal lands are drained,
- Farms consolidate into larger, more efficient field units.

Pressure to convert is greatest in highly productive agricultural counties in central and northern Indiana.

Growth around metropolitan areas such as Indianapolis, Fort Wayne, Evansville, South Bend and Bloomington have converted forest to housing, roads, industrial parks, and utilities. DNR

⁶⁹ <https://www.in.gov/dnr/fish-and-wildlife/wildlife-resources/state-wildlife-action-plan/ecosystems/forests>

identifies fragmentation and land ‘parcelisation’ as major current threats to forests. Even where forests remain, they are increasingly divided into smaller parcels.⁷⁰

About 83% of Indiana forestland is privately owned. Many owners have small parcels and may lack resources or incentives for active management, increasing vulnerability to fragmentation and conversion.^{71 72} Indiana now has roughly 5 million acres of forest, about 21% of the state’s land area. Much of this recovery came from abandonment of marginal farmland in southern Indiana. However, forest quality and continuity remain under pressure.

The dominant historical cause of forest loss in Indiana was conversion to agriculture. Today, the main pressures are urban development, fragmentation, invasive species, and forest regeneration challenges.

Lack of FIA data for Tipton County, Indiana is due to an extreme lack of qualifying tree cover. Tipton County routinely ranks as one of the least-forested counties in the entire state of Indiana. The data gap is driven by specific landscape and statistical realities. Tipton County is located in the heart of Indiana’s Tipton Till Plain, a region characterized by exceptionally flat, fertile glacial soil. Nearly 90% of Tipton County’s total land area is dedicated strictly to active crop farming (primarily corn and soybeans). Because the FIA program explicitly ignores active agricultural land, the county’s map layout lacks the vast, rural expanses of traditional timberland that the national survey was built to monitor.

A2.8 Kansas: Cherokee

Cherokee County is located in the extreme southeast corner of Kansas, bordering both Missouri and Oklahoma. Unlike the large wheat-producing counties of central and western Kansas, Cherokee County’s agriculture is characterized by a mixture of cattle production, pasture, hay, and row crops, reflecting its higher rainfall, rolling terrain, and historical land-use patterns. Compared with much of Kansas, farms tend to be smaller and more diversified.

The abundance of pastureland makes cattle production one of the county’s most important agricultural activities. Soybeans and corn have become increasingly important over recent decades, particularly in the more productive soils of south-eastern Kansas.

Cherokee County differs from many Kansas counties because it contains significant woodland resources, including oak-hickory forests, riparian hardwood forests and mixed hardwood stands along streams and river valleys.

Table 28 Profile of Unspecified Risk counties in Kansas

County	2020 forest base hectares	Forest loss - 2020-2025 (ha) - attributed to crops	Forest loss - annual (ha) - attributed to crops	Forest loss - annual (%) - attributed to crops	Total annual hardwood sawlog production	Sawlog volume exposed to deforestation risk (m3 per year)
Cherokee	28,069	711	142	0.507	0	0

⁷⁰ <https://www.in.gov/dnr/fish-and-wildlife/wildlife-resources/state-wildlife-action-plan/ecosystems/forests>

⁷¹ <https://www.in.gov/dnr/fish-and-wildlife/wildlife-resources/state-wildlife-action-plan/ecosystems/forests>

⁷² <https://extension.purdue.edu/extmedia/fnr/fnr-150-w.html>

Cherokee County is one of the more heavily forested counties in Kansas, although forest still occupies only a minority of the landscape. Forests are concentrated along rivers and streams, steep slopes, and former mining areas. A restoration assessment for the county estimated that forests cover roughly 9% of the county, primarily as riparian corridors and scattered woodland patches. Mixed hardwood stands containing black walnut, pecan, hickory, sycamore, and cottonwood species.

The main drivers of tree-cover loss include agricultural expansion and pasture development. Because much of Cherokee County's woodland occurs as narrow riparian corridors or isolated patches, small-scale clearing for field enlargement can appear significant in satellite-based forest-loss datasets. The county remains strongly agricultural, with more than 258,000 acres in farms.

Commercial logging occurs in the county, although forestry is much smaller than agriculture. Commercial logging and forestry support activities are recognized components of the county's economy.

Permanent forest loss occurs through residential development, road construction, utility corridors and commercial and industrial expansion.

Cherokee County is part of the historic Tri-State Mining District, where more than a century of lead and zinc mining altered the landscape. Mining historically removed vegetation and created large, disturbed areas. Today, land-use changes are more commonly associated with reclamation and restoration activities than with new mining. Some recent land-use changes in former mining areas have actually increased tree cover through restoration projects and habitat rehabilitation.

Kansas forests are increasingly affected by drought stress, invasive species, forest insects, and aging tree populations. These disturbances can create canopy loss without causing permanent deforestation. One of the most significant long-term concerns identified by the Kansas Forest Service⁷³ is the loss of riparian forests to agriculture and development. These forests often occupy fertile soils adjacent to streams and rivers, making them vulnerable to conversion.

Table 29 Forest loss attribution (2020-2025): by crop type indicated for 2025 land use – loss in hectares attributed to this crop type

County	Corn	Fallow / Idle Cropland	Pecans	Soy	Other crops / non-determined
Cherokee	13	6	591	1	101

⁷³ <https://www.kansasforests.org/forestry/forestthreats.html>

Pecan production

Pecan production occurs in Cherokee County, and the county is located in one of the few parts of Kansas where pecans are naturally well adapted. However, pecans remain a minor agricultural enterprise compared with cattle, pasture, soybeans, corn, and hay production. Cherokee County lies in south-eastern Kansas, which is at the northern edge of the commercial pecan belt. The Kansas Forest Service notes that pecans are grown largely in southeast Kansas and that wild pecan trees have been brought under cultivation as an additional source of farm income.

Production in Cherokee County generally falls into two categories - native pecan groves and naturally occurring pecan stands along rivers and floodplains.

The Kansas Department of Agriculture identifies both tree nut farming and fruit farming among Cherokee County's agricultural sectors, but these are much smaller than the county's major activities. Therefore, pecans are present but do not represent a dominant land use.

In Cherokee County, pecans commonly occur and because of this, remote-sensing datasets may sometimes have difficulty distinguishing native pecan groves, managed pecan orchards and mixed hardwood forest containing pecan trees. Where the USDA Cropland Data Layer (CDL) classifies an area as "Pecans", it may represent a commercial orchard, a managed native grove or a small specialty-crop planting, rather than a recent conversion of forest to agriculture.

Pecan orchards are unlikely to be a major driver of recent forest loss in the county.

A2.9 Kentucky: Carlisle

Carlisle County is located in the far western part of Kentucky, within the Mississippi Embayment region near the confluence of the Ohio and Mississippi Rivers. It is a predominantly agricultural county characterized by fertile alluvial soils, extensive cropland, and relatively large commercial farming operations. Agriculture is centred on row crops, particularly corn and soybeans.⁷⁴

The county has fewer farms than many Kentucky counties, but those farms tend to be larger and more commercially oriented. Agricultural land is overwhelmingly devoted to cropland. The county's flat topography and fertile soils make it well suited to mechanized row-crop production. Soybeans and corn account for the vast majority of cropped acreage, often grown in rotation.

Although agriculture dominates much of the landscape, forest remains present in bottomland hardwood areas, riparian corridors, wetland complexes and on less productive flood-prone land.

Carlisle County is generally considered a long-established agricultural landscape rather than a frontier area of agricultural expansion. From a land-use perspective, it is one of Kentucky's more intensive grain-producing counties and is closely aligned with the agricultural systems of the broader Mississippi River Valley region.

⁷⁴ https://data.nass.usda.gov/Publications/AgCensus/2022/Online_Resources/County_Profiles/

Table 30 Profile of Unspecified Risk counties in Kentucky

County	2020 forest base hectares	Forest loss - 2020-2025 (ha) - attributed to crops	Forest loss - annual (ha) - attributed to crops	Forest loss - annual (%) - attributed to crops	Total annual hardwood sawlog production	Sawlog volume exposed to deforestation risk (m3 per year)
Carlisle	16,272	144	29	0.177	0	0

Kentucky has one of the most diverse agricultural sectors in the United States. Unlike states dominated by a single crop, Kentucky combines row crops, livestock, equine production, tobacco, and forestry across a wide range of landscapes. Kentucky agriculture is notable for its large number of small and medium-sized family farms.

Corn and soybeans dominate the most productive cropland, particularly in western Kentucky and the Bluegrass region. Soft red winter wheat is commonly grown and often double-cropped with soybeans. Hay is widely produced to support cattle and horse operations. Although much smaller than in the past, tobacco remains culturally and economically important.

Western Kentucky is noted for large-scale corn, soybeans, and wheat. The Bluegrass Region is characterised by horse farms, beef cattle, hay, and tobacco. Eastern Kentucky contains smaller farms, cattle, hay, and significant forestland. South-central Kentucky is noted for mixed livestock and crop operations.

Forests cover nearly half of Kentucky and provide income from timber, hunting, and recreation. Many farms include woodland.

Forest loss in Kentucky is driven by a combination of historical agricultural clearing, development, energy extraction, and ongoing forest fragmentation and health challenges. Although Kentucky remains one of the most heavily forested states in the eastern U.S., these pressures continue to reduce or degrade forest cover in some areas.

The largest long-term driver of forest loss was clearing land for farms. Forests in the Bluegrass and western Kentucky regions were extensively converted to pasture and cropland. Much of the original forest in the most fertile regions was removed during the 18th and 19th centuries.

Growing metropolitan areas such as Louisville, Lexington, Bowling Green and the Cincinnati suburbs continue to convert forestland to housing, roads, and commercial development. The Kentucky Division of Forestry identifies land-use change and development as important threats to forest resources.⁷⁵

In eastern Kentucky, surface mining has caused substantial forest loss and fragmentation. The U.S. Geological Survey and other studies have documented significant forest impacts from mining in Appalachia.

Fragmentation is a state-wide issue because most Kentucky forestland is privately owned. Kentucky's oak-hickory forests often struggle to regenerate because of fire suppression, deer browsing and competition from shade-tolerant species such as maple and beech. These

⁷⁵ <https://eec.ky.gov/Natural-Resources/Forestry/forest-health/Pages/default.aspx>

factors alter forest composition and reduce resilience. Some marginal farmlands in eastern and southern Kentucky have reverted to forest over time, offsetting some losses elsewhere.

Kentucky's historic forest loss was driven largely by conversion to agriculture. Today, the most important pressures are development, fragmentation, coal mining in eastern Kentucky, invasive species, and regeneration problems. While Kentucky remains heavily forested overall, maintaining healthy and connected forests is an ongoing management challenge.

Table 31 Forest loss attribution (2020-2025): by crop type indicated for 2025 land use – loss in hectares attributed to this crop type

County	Corn	Fallow / Idle Cropland	Soy	Other crops / non-determined
Carlisle	43	35	60	6

A2.10 Minnesota: Nobles & Swift

Nobles County is one of the most productive agricultural counties in southwestern Minnesota and is a major centre for both crop and livestock production. Agriculture is highly commercialized, with large-scale corn and soybean farming integrated with significant pig and cattle operations.⁷⁶

Nobles County is best described as an intensive corn-soybean-livestock production system. Most agricultural land has been in cultivation for many decades, and opportunities for agricultural expansion are limited because nearly all suitable land is already farmed.

Swift County is located in west-central Minnesota and is another major agricultural county, although its production is somewhat more crop-oriented than Nobles County.⁷⁷ Swift County has a stronger emphasis on crop production than Nobles County, although livestock remains important. Large farms and extensive mechanized agriculture dominate the landscape.

The forest base for both counties, especially Nobles, is so extremely small that even a very small potential loss off forest cover pushes these counties at or above the threshold for Unspecified Risk.

Table 32 Profile of Unspecified Risk counties in Minnesota

County	2020 forest base hectares	Forest loss - 2020-2025 (ha) - attributed to crops	Forest loss - annual (ha) - attributed to crops	Forest loss - annual (%) - attributed to crops	Total annual hardwood sawlog production	Sawlog volume exposed to deforestation risk (m3 per year)
Nobles	518	3	1	0.119	0	0
Swift	4,215	24	5	0.114	0	0

⁷⁶ https://data.nass.usda.gov/Publications/AgCensus/2022/Online_Resources/County_Profiles/Minnesota/cp27105.pdf

⁷⁷ https://www.nass.usda.gov/Publications/AgCensus/2022/Online_Resources/County_Profiles/Minnesota/cp27151.pdf

Table 33 Forest loss attribution (2020-2025): by crop type indicated for 2025 land use – loss in hectares attributed to this crop type

County	Corn	Soy	Other crops / non-determined
Nobles	1	2	
Swift	12	2	10

Lack of FIA data for Nobles County, Minnesota is driven by an extreme scarcity of natural tree canopy. Located in the southwestern corner of the state, Nobles County is ecologically and structurally outside the scope of traditional forestry inventories.

A2.11 Missouri: Vernon & Bates

Vernon County is one of the most agriculturally important counties in western Missouri and has a large-scale, commercially oriented farming sector. Agriculture is dominated by a combination of row crops, cattle, and pig production, making it one of the stronger agricultural economies in the state.⁷⁸

Vernon County is typical of western Missouri's mixed crop-livestock agriculture, where extensive row-crop farming supports large livestock enterprises. Soybeans are a major crop and represent the principal EUDR-regulated commodity produced in the county.

Bates County lies immediately north of Vernon County and is also a major agricultural county. Agriculture is dominated by beef cattle, pasture, hay, corn, and soybeans, with a strong emphasis on livestock production. Agriculture is one of the county's primary economic sectors. The county forms part of Missouri's major cattle-producing belt, where pasture-based livestock systems are integrated with grain production.

Bates County is less intensive than the highly productive Corn Belt counties of northern Missouri but remains a significant agricultural landscape. The combination of pasture, hay, cattle, corn, and soybeans creates a diversified farming economy.

Both counties are long-established agricultural landscapes where most cropland has been farmed for many decades. Agriculture is dominated by existing farmland rather than recent 'frontier' expansion. Soybeans are the primary EUDR-regulated agricultural commodity. Forest conversion pressure is generally lower than in heavily forested regions of the south-eastern United States.

Vernon and Bates counties are best characterized as mature agricultural counties with extensive existing cropland and pasture, rather than areas of large-scale recent agricultural expansion.

Table 34 Profile of Unspecified Risk counties in Missouri

County	2020 forest base hectares	Forest loss - 2020-2025 (ha) - attributed to crops	Forest loss - annual (ha) - attributed to crops	Forest loss - annual (%) - attributed to crops	Total annual hardwood sawlog production	Sawlog volume exposed to deforestation risk (m3 per year)
Vernon	53,714	928	186	0.346	12,618	44
Bates	41,695	339	68	0.163	56,133	91

⁷⁸ https://data.nass.usda.gov/Publications/AgCensus/2022/Online_Resources/County_Profiles/Missouri/cp29217.pdf

Agriculture is one of the foundational industries in Missouri and is highly diverse, combining row-crop farming, cattle production, forestry, poultry, specialty crops and river-bottom agriculture. Missouri's central location and varied geography support a broad range of agricultural systems.

Soybeans are one of Missouri's largest crops by acreage and value and are often rotated with corn. Corn is another dominant row crop. Missouri is one of the leading cattle states in the eastern half of the United States. Large areas are devoted to hay production, pasture and grazing systems to support the state's livestock industry. Rice is produced in southeast Missouri where the area resembles the Mississippi Delta agricultural system.

Forestry is economically important, especially in southern Missouri. The state contains Oak-hickory forests supporting hardwood timber production in numerous sawmills.

Missouri landscapes often include a mix of cropland, pasture, managed forest, riparian woodland and river-bottom agriculture. This mosaic can complicate remote-sensing classification because forest harvests may be temporary, pasture may contain tree cover, and woodland grazing systems are common.

The main current drivers of deforestation or permanent forest conversion in Missouri are generally considered to be:

- Conversion to pasture and agriculture,
- Urban and exurban development,
- Forest fragmentation and parcelization,
- Infrastructure expansion,
- Some localized mining and energy development.⁷⁹

Much forest loss in Missouri is temporary timber harvest followed by regrowth, and the net forest area in Missouri has historically been relatively stable or even increasing in some periods.

Conversion to pasture and agriculture, as identified by the Missouri Department of Conservation, identifies conversion to pasture, cropland, and other agricultural land uses as a continuing concern. The state notes: "conversion to pasture, cropland or urban development is still a major concern in Missouri." This is especially relevant in Southern Missouri, Ozark regions, and more generally in edge zones between forest and grazing land.

Common agricultural drivers include cattle pasture expansion, hay production, and row-crop agriculture.

Urban expansion is one of the most important modern pressures on Missouri forests. This includes housing subdivisions, rural home sites, road construction and commercial development.

⁷⁹ <https://mdc.mo.gov/magazines/conservationist/2010-09/>

The Missouri Department of Conservation has identified concerns over forest fragmentation, 'parcelisation' and small-lot residential conversion. It has identified that large forest tracts are broken into smaller ownership parcels. Infrastructure and road expansion has led to localized forest loss.

Mining and energy development is associated with quarrying, mining, transmission corridors and reservoir and infrastructure projects. These are generally localized compared with agriculture and development.

Missouri forests also face degradation pressures from Oak decline, invasive species, drought stress and storm damage.

Table 35 Forest loss attribution (2020-2025): by crop type indicated for 2025 land use – loss in hectares attributed to this crop type

County	Corn	Fallow / Idle Cropland	Pecans	Soy	Other crops / non-determined
Vernon	15	8	750	14	141
Bates	17	2	224	55	41

Pecans in Missouri

Pecan production exists in both Vernon County and Bates County, but it is generally a minor agricultural activity compared with the dominant land uses of cattle grazing, hay production, corn, and soybeans.

The largest concentrations of pecan production in the state are generally found farther east and south than Vernon and Bates Counties.

For both counties, the USDA Cropland Data Layer (CDL) (CDL) may occasionally classify areas as "Pecans" because pecan orchards have distinctive spectral signatures and managed groves can be identified as specialty crops. However, some caution is warranted because native pecan stands may resemble orchards and hardwood forests containing pecan can sometimes be confused with managed pecan production.

Small acreage specialty crops generally have lower mapping accuracy than major crops such as corn and soybeans. This is particularly relevant where CDL data are being used to identify potential forest-to-agriculture conversion.

A2.12 Mississippi: Sunflower, Quitman, Bolivar & Coahoma

Coahoma County lies within the Mississippi Delta, a region that was historically covered by extensive bottomland hardwood forests but is now dominated by agriculture. As a result, tree cover loss in Coahoma County must be interpreted in the context of a landscape where most large-scale forest conversion occurred many decades ago.

Prior to widespread agricultural development, the Mississippi Delta contained vast areas of bottomland hardwood forest, cypress-tupelo wetlands and floodplain forests. During the late 19th and 20th centuries, much of this forest was cleared for cotton production, soybeans, corn, rice and other row crops.

Today, Coahoma County remains one of the most intensively farmed counties in Mississippi.

Table 36 Profile of Unspecified Risk counties in Mississippi

County	2020 forest base hectares	Forest loss - 2020-2025 (ha) - attributed to crops	Forest loss - annual (ha) - attributed to crops	Forest loss - annual (%) - attributed to crops	Total annual hardwood sawlog production	Sawlog volume exposed to deforestation risk (m3 per year)
Sunflower	20,791	526	105	0.506	0	0
Quitman	27,143	395	79	0.291	0	0
Bolivar	41,539	370	74	0.178	0	0
Coahoma	34,794	260	52	0.150	21,391	32

Agriculture is one of the foundational industries in Mississippi and is especially important in the Mississippi Delta, River floodplains and coastal plain farming regions.

The state combines large-scale row-crop agriculture, forestry, poultry, aquaculture, livestock production. Soybeans are one of Mississippi's largest crops by acreage and value. Soybeans are commonly rotated with corn, cotton and rice.

Table 37 Forest loss attribution (2020-2025): by crop type indicated for 2025 land use – loss in hectares attributed to this crop type

County	Corn	Cotton	Fallow / Idle Cropland	Pecans	Soy	Other crops / non-determined
Sunflower	11	1	127	183	53	150
Quitman	2			63	8	321
Bolivar	2		24	277	18	49
Coahoma	7		46	153	29	24

Forestry is extremely important in Mississippi. The state contains a mosaic of pine plantations, hardwood forests, pulpwood systems, sawmills and paper and wood-products industries. Much rural land is actively managed for timber production.

Mississippi also has beef cattle operations, hay production and pasture systems that are more common outside the Delta.

Mississippi landscapes often combine managed pine plantations, bottomland hardwoods, row crops, wetlands and pasture.

The main current drivers of deforestation or permanent forest conversion in Mississippi are generally considered to be:

- Agricultural expansion and land conversion,
- Urban and rural development,
- Forest fragmentation and parcelization,
- Infrastructure and industrial expansion,
- Some wetland and bottomland hardwood conversion pressures.⁸⁰

As in much of the south-eastern United States, it is critically important to distinguish between temporary timber harvest with regrowth and permanent conversion from forest to non-forest land use. Mississippi has a very large commercial forestry sector, and much apparent “forest loss” in satellite imagery reflects rotational timber harvesting rather than permanent deforestation.

Historically and currently, agriculture has been one of the most important drivers of permanent forest conversion in Mississippi. The most affected areas have often been the Mississippi Delta, in bottomland hardwood forests and in the floodplain forests. The USDA Forest Service has long identified bottomland hardwood conversion to agriculture as a major land-use change issue in the Mississippi Alluvial Valley.⁸¹

Bottomland hardwood forests and the floodplain forests have been extensively converted for mechanized agriculture, levee systems and drainage infrastructure. Although much of the large-scale clearing occurred historically, localized conversion pressures still exist.

Mississippi has intensive commercial forestry, and the state contains a mix of pine plantations, pulpwood systems, managed hardwood forests and a range of active timber industries.

Permanent forest loss also occurs from residential development, highway expansion, commercial construction and rural ‘parcelization’. Compared with some south-eastern states, Mississippi’s urbanization pressures are somewhat smaller, but still important locally.

Some forest clearing is associated with utility-scale solar projects, oil and gas infrastructure and transmission line expansion. These are generally smaller drivers compared with agriculture and forestry dynamics.

Along the Gulf Coast, forests face pressures from residential development, tourism infrastructure, wetland alteration, hurricane impacts and saltwater intrusion.

Mississippi forests are also affected by hurricanes, tornadoes, Southern pine beetle outbreaks, drought and fire. These may cause canopy loss but are not necessarily classified as permanent deforestation.

⁸⁰ <https://extension.msstate.edu/forestry>

⁸¹ <https://www.srs.fs.usda.gov/>

Pecan production in Mississippi

Mississippi is a significant pecan-producing state in the United States, although it is not among the very largest producers such as Georgia, Texas, or New Mexico. Pecan production is concentrated mainly in the southern and central parts of the state, with additional orchards in river-bottom areas where soils and moisture conditions are favourable.

Pecans are a relatively small component of Mississippi agriculture compared with row crops and commercial forestry.

Mississippi has a long tradition of small and medium-sized pecan orchards integrated into mixed farming systems. Native pecan groves may resemble natural bottomland hardwood forest in aerial imagery and satellite data. Managed pecan orchards usually show more regular tree spacing and understory management.

In some remote-sensing products, especially the USDA Cropland Data Layer (CDL), pecan orchards can occasionally be confused with hardwood forest, and vice versa. This is particularly relevant in the Mississippi Delta, where bottomland hardwood forests historically contained native pecan trees.

A2.13 North Carolina: Wayne

Wayne County is one of the most agriculturally important counties in North Carolina and ranks among the state's leading producers of livestock and poultry. Unlike many counties in the Midwest that are dominated by row crops, Wayne County's agricultural economy is heavily driven by pig, poultry, and livestock production, supported by substantial feed-grain and field-crop agriculture.⁸²

Occasionally, small woodlots, riparian forests, or field-edge forests may be cleared to expand existing fields, improve farm efficiency, and to consolidate agricultural operations.

However, compared with the historical conversion of forests to farmland, large-scale agricultural expansion is generally limited because most of the county's productive agricultural land has been in use for decades.

Urban and suburban development growth around Goldsboro and transportation corridors contributes to tree-cover loss through residential development, commercial construction, industrial sites, road widening and utility corridors. While Wayne County is not growing as rapidly as some metropolitan counties in North Carolina, development remains a localized source of permanent forest loss. Similar development-driven canopy loss has been documented elsewhere in the state.

Table 38 Profile of Unspecified Risk counties in North Carolina

County	2020 forest base hectares	Forest loss - 2020-2025 (ha) - attributed to crops	Forest loss - annual (ha) - attributed to crops	Forest loss - annual (%) - attributed to crops	Total annual hardwood sawlog production	Sawlog volume exposed to deforestation risk (m3 per year)
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⁸² https://www.nass.usda.gov/Publications/AgCensus/2022/Online_Resources/County_Profiles/North_Carolina/cp37191.pdf

Wayne	43,333	253	51	0.117	21,554	25
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Table 39 Forest loss attribution (2020-2025): by crop type indicated for 2025 land use – loss in hectares attributed to this crop type

County	Corn	Cotton	Fallow / Idle Cropland	Pecans	Soy	Sorghum	Other crops / non-determined
Wayne	27	13	6	7	49	5	145

Agriculture is a major part of the economy of North Carolina and within the state is one of the most diverse agricultural systems in the eastern United States. The state combines a complex mix of row-crop farming, livestock production, forestry, horticulture, and aquaculture. North Carolina is one of the top poultry-producing states in the U.S.

North Carolina is one of the nation’s leading pork-producing states. Historically, tobacco was North Carolina’s signature crop. Although acreage has declined, the state remains a major producer. North Carolina is the leading sweet potato-producing state in the United States. Major row crops include soybeans, corn, cotton, wheat and hay. These crops are common in the Coastal Plain and Piedmont regions.

Forestry is also economically significant. The state has pine plantations, hardwood forests, pulpwood production, sawmills, and biomass. The state has a large ornamental horticulture industry. Western North Carolina is especially important for Christmas tree production.

Agriculture and forestry overlap, and many landscapes often combine managed timberland, cropland, pasture, wetlands and agroforestry systems.

The main current drivers of deforestation or permanent forest conversion in North Carolina are generally considered to be:

- Urban and exurban development,
- Agricultural expansion and land conversion,
- Forestry-to-development conversion,
- Infrastructure growth,
- Coastal and energy-related development.⁸³

As in much of the south-eastern United States, an important distinction exists between temporary timber harvest with regrowth and permanent conversion of forest to non-forest land use. Most timber harvesting in North Carolina is not considered permanent deforestation because forests are usually regenerated.

The dominant long-term driver of permanent forest loss in North Carolina is generally considered to be housing development, expansion of metropolitan areas and rural residential fragmentation. Major growth corridors include: Raleigh–Durham, Charlotte, Wilmington, Asheville and Piedmont urban areas.

The North Carolina Forest Service⁸⁴ has repeatedly identified ‘parcelization’, land conversion and development pressure as major threats to forestland. Agriculture remains an important

⁸³ <https://forestry.ces.ncsu.edu/>

⁸⁴ <https://www.ncforestservice.gov/>

localized driver of forest conversion. Common conversions include poultry-associated farmland expansion, pig production landscapes, row crops, pasture and specialty crops.

Most commercial harvesting is rotational forestry. The state has extensive pine plantations, managed timberland and active pulp and sawn wood timber industries.

Forest conversion also occurs through highway construction, utility corridors, industrial facilities and logistics and warehousing growth. Transportation expansion around rapidly growing metropolitan areas contributes significantly to forest fragmentation. Along the coast, forests are increasingly affected by residential development and creation of tourism infrastructure.

North Carolina forests are also affected by storms, insects and disease, fire and saltwater intrusion in coastal forests. These may cause canopy loss or degradation without necessarily constituting permanent deforestation. A notable issue in eastern North Carolina is “ghost forests” caused by sea-level rise and saltwater intrusion.

A2.14 Oklahoma: Washington, Jefferson, Tulsa & Ottawa

Tulsa County is one of Oklahoma’s most urbanized counties, but agriculture remains an important land use on the county’s rural fringe. Compared with major farming counties in western and central Oklahoma, Tulsa County agriculture is smaller in scale and more diversified, with a mix of cattle operations, hay production, nursery crops, and limited row cropping.

Forest loss in Tulsa County, is driven primarily by urban and suburban development, with additional pressure from transportation and infrastructure expansion, fragmentation, wildfire, and conversion to pasture or other agricultural uses. Because Tulsa County includes the Tulsa metropolitan area, development pressure is a much more important driver than large-scale agricultural clearing.

The leading cause of forest loss in Tulsa County is conversion of wooded land to residential subdivisions, commercial and industrial sites, roads, utilities, schools and public facilities. Growth in communities such as Tulsa, Broken Arrow, Bixby, Jenks, Owasso, and Sand Springs has reduced forest cover, especially along river corridors and wooded hillsides. The Tulsa Urban Forest Master Plan emphasizes the importance of protecting and expanding tree canopy in a rapidly growing metropolitan area.⁸⁵

Expansion of highways, arterial roads, pipelines, and utility corridors often removes wooded areas and fragments remaining forest patches. Where trees remain, forests are increasingly broken into smaller parcels. In the county’s rural areas, some woodland is cleared for cattle pasture, horse properties and small acreage “ranchettes”. This pressure is modest compared with metropolitan development, but still important on the urban fringe.

⁸⁵ https://upwithtrees.org/tulsa-master-plan?utm_source

The principal driver of forest loss in Tulsa County is the continued expansion of the Tulsa metropolitan area. Residential and commercial development, roads, and utilities convert and fragment wooded areas, while wildfire, invasive species, and limited clearing for pasture add additional pressure to the county's remaining forests.⁸⁶

Ottawa County is located in the far north-eastern corner of Oklahoma within the Ozark Plateau transition zone. Forest cover is concentrated along streams, hills, and less intensively farmed land, with a mix of oak-hickory hardwoods and eastern redcedar.

The main causes of forest loss in recent decades are typically a combination of factors. Historically, the largest source of permanent forest conversion in Ottawa County has been the clearing of woodland for grazing land and cattle production and small-scale cropland expansion. Much of north-eastern Oklahoma's forest loss has occurred where woodland or savanna was converted to agricultural use, particularly on gentler terrain. Growth around communities such as Miami and along transportation corridors has resulted in localized forest clearing for residential development, commercial sites, roads and utilities.

Most major mining-related deforestation occurred decades ago, but the legacy landscape still affects land-use patterns today.

A somewhat unusual feature of Oklahoma is the spread of eastern redcedar (*Juniperus virginiana*) into grasslands and open woodlands. Landowners often clear these trees to restore pasture, improve grazing and reduce wildfire risk. Depending on the forest dataset used, such clearing can sometimes appear as "forest loss" even though it may represent restoration of historic grassland rather than conversion of natural forest.

Table 407 Profile of Unspecified Risk counties in Oklahoma

County	2020 forest base hectares	Forest loss - 2020-2025 (ha) - attributed to crops	Forest loss - annual (ha) - attributed to crops	Forest loss - annual (%) - attributed to crops	Total annual hardwood sawlog production	Sawlog volume exposed to deforestation risk (m3 per year)
Washington	23,759	510	102	0.430	0	0
Jefferson	20,827	415	83	0.399	0	0
Tulsa	30,126	350	70	0.232	7,035	16
Ottawa	35,248	348	70	0.197	3,581	7

Table 8 Forest loss attribution (2020-2025): by crop type indicated for 2025 land use – loss in hectares attributed to this crop type

County	Pecans	Soy	Sorghum	Other crops / non-determined
Washington	428	1		81
Jefferson	345		1	70
Tulsa	279	8		62
Ottawa	278			50

⁸⁶ https://ag.ok.gov/divisions/forestry-services/?utm_source

Pecan production in Oklahoma

Oklahoma is one of the leading pecan-producing states in the U.S., with production concentrated in eastern and central parts of the state. Major commercial pecan regions include counties along the Arkansas River and its tributaries, particularly in eastern Oklahoma. The state contains both native pecan groves and improved orchard plantings of grafted cultivars.

Ottawa and Tulsa counties have some pecan production but are not one of Oklahoma's major pecan-producing counties. Pecan orchards occur on a limited scale, often along river bottoms and alluvial soils associated with the Spring River, Neosho River, and associated floodplains, where conditions are favourable for pecan growth.

In Ottawa County pecan production is generally a minor agricultural activity and most pecan acreage consists of small orchards or scattered groves rather than large commercial operations. Native pecan trees may also occur within riparian forests and bottomland hardwood systems.

Pecan trees can sometimes appear in agricultural land records and orchard inventories and also within forested landscapes. This is important when interpreting the USDA Cropland Data Layer (CDL) (CDL). A CDL classification of "Pecans" does not necessarily indicate a newly established commercial orchard or recent forest conversion. It also does not indicate intensive agricultural production.

In eastern Oklahoma, a "Pecans" classification may correspond to established orchards, managed native pecan groves or mixed tree-crop systems. Occasionally there can be misclassification of bottomland hardwood forest where canopy characteristics resemble pecan stands.

This issue is particularly relevant where pecan trees occur within broader hardwood landscapes and where CDL classifications are being used to identify potential forest-to-agriculture conversion.

A2.15 Tennessee: Crockett

Crockett County is located in western Tennessee, within the highly productive agricultural region of the Mississippi Alluvial Plain and adjacent uplands. Agriculture is the dominant land use across much of the county and is characterized by intensive row-crop production, particularly soybeans, corn, and cotton.

The county is part of Tennessee's major row-crop production belt extending across the western portion of the state. The county's relatively flat terrain and productive soils support highly mechanized farming operations. Soybeans are typically the largest crop by acreage and are often grown in rotation with corn and cotton.

Although agriculture dominates the landscape, forest remains present in riparian corridors, small woodlots, streamside hardwood stands and on less productive soils. Common forest types include oak-hickory forests, mixed hardwood forests and bottomland hardwoods in low-lying areas. Forest occupies a much smaller proportion of the landscape than cropland.

Most current cropland has been in agricultural use for many decades. Large-scale agricultural conversion largely occurred during the 19th and 20th centuries. Recent land-use changes are

more likely to involve field enlargement, conversion of small woodlots and residential development.

Crockett County is generally considered a long-established agricultural landscape rather than an area of recent agricultural frontier expansion. From a land-use perspective, Crockett County is typical of the highly productive row-crop region of western Tennessee, where agriculture is dominated by existing cropland rather than ongoing conversion of large areas of forest to agriculture.

Table 9 Profile of Unspecified Risk counties in Tennessee

County	2020 forest base hectares	Forest loss - 2020-2025 (ha) - attributed to crops	Forest loss - annual (ha) - attributed to crops	Forest loss - annual (%) - attributed to crops	Total annual hardwood sawlog production	Sawlog volume exposed to deforestation risk (m3 per year)
Crockett	10,984	57	11	0.103	0	0

Table 10 Forest loss attribution (2020-2025): by crop type indicated for 2025 land use – loss in hectares attributed to this crop type

County	Corn	Cotton	Fallow / Idle Cropland	Soy	Other crops / non-determined
Crockett	5	4	40	8	

A2.16 Texas: Kleberg, Galveston, Gaines & Cameron

Kleberg County is located in South Texas along the Gulf Coast and is dominated by large ranching operations. Agriculture is centred on livestock production, irrigated row crops, and wildlife management.

Major agricultural activities aside from the dominant beef cattle ranching include cotton, sorghum, corn and hunting and wildlife enterprises. Most agricultural land has been in ranching use for many decades.

Galveston County lies on the Texas Gulf Coast within the Houston metropolitan area. Urbanization has significantly reduced the agricultural footprint, although farming remains important in western and southern portions of the county. Urban expansion is generally a more important land-use driver than agricultural expansion.

Gaines County is one of the most agriculturally productive counties in Texas and among the leading agricultural counties in the United States by value of production. Agriculture is highly intensive and commercially oriented, supported by extensive irrigation from the Ogallala Aquifer. Cotton and dairy production dominate the agricultural economy. Agriculture occurs primarily on long-established cropland.

Cameron County occupies the southernmost tip of Texas along the Mexican border and is one of the most diverse agricultural regions in the state. The county is one of Texas' most important producers of citrus fruit and vegetables.

All four counties differ markedly from the heavily forested states as forest cover is naturally sparse or limited and agriculture is long established. Recent land-use change is more often associated with urban development, irrigation changes, or agricultural intensification than forest conversion.

Table 11 Profile of Unspecified Risk counties in Texas

County	2020 forest base hectares	Forest loss - 2020-2025 (ha) - attributed to crops	Forest loss - annual (ha) - attributed to crops	Forest loss - annual (%) - attributed to crops	Total annual hardwood sawlog production	Sawlog volume exposed to deforestation risk (m3 per year)
Gaines	12	1	0	1.775	0	0
Kleberg	28,753	1,648	330	1.147	0	0
Galveston	4,973	99	20	0.396	0	0
Cameron	9,946	85	17	0.171	0	0

Table 12 Forest loss attribution (2020-2025): by crop type indicated for 2025 land use – loss in hectares attributed to this crop type

County	Corn	Cotton	Fallow / Idle Cropland	Soy	Sorghum	Other crops / non-determined
Gaines		1				
Kleberg	7	345			1,213	83
Galveston			71	13		15
Cameron	8	1	41		15	19

A2.17 Washington: Benton

Agriculture in **Benton** County is a major, highly productive sector shaped by irrigation from the Columbia Basin Project, a dry climate, and a strong mix of field crops, specialty crops, and wine production. The county produces a wide range of commodities, typically divided into irrigated row crops, orchard/vine crops, and dryland farming.

Table 13 Profile of Unspecified Risk counties in Washington

County	2020 forest base hectares	Forest loss - 2020-2025 (ha) - attributed to crops	Forest loss - annual (ha) - attributed to crops	Forest loss - annual (%) - attributed to crops	Total annual hardwood sawlog production	Sawlog volume exposed to deforestation risk (m3 per year)
Benton	572	3	1	0.102	0	0

The biggest cause of tree cover loss is land clearing for farming and grazing. Native vegetation in Benton County is mostly shrub-steppe (sagebrush, bunchgrass) with limited natural woodland. Riparian forests along the Yakima River and Columbia River have been cleared or reduced to expand irrigated cropland (grapes, orchards, vegetables, alfalfa) and grazing lands. Land levelling, irrigation infrastructure, and field expansion have further reduced tree cover along river corridors and slopes.

In semi-arid systems, even small riparian forests are often the only “true forest patches,” so agricultural expansion has a disproportionate impact. The forest base area in Benton is extremely small at 572 ha and as such a potential deforestation rate at around 1 ha per year has placed the county in the Unspecified Risk category.