

AGRICULTURAL LANDS ASSESSMENT

Introduction

In the last 10 years, North Carolina has lost 4,600 farms, an 8% decrease. In addition, land in farms has decreased by 6.5%, a total loss of 600,000 acres. Agriculture makes up 17% of the state's income and employs 17% of the workforce. Farmlands also make up an integral part of our open space, wildlife habitat, and ground water recharge areas. These environmental services are an essential part of our quality of life as citizens of North Carolina.

Because of the economic and environmental importance of farmland to the state, the North Carolina Department of Agriculture and Consumer Services (NCDA&CS) has been directed by North Carolina General Statute to administer the Agricultural Development and Farmland Preservation Trust Fund (ADFP). The purpose of the ADFP fund is to:

1. Support the purchase of agricultural conservation easements, including transaction costs,
2. Fund private and public enterprise programs that will promote profitable and sustainable farms by assisting farmers in developing and implementing plans for production of food, fiber and value added products, agritourism activities, marketing and sales of agricultural products produced on the farm, and other agricultural business activities, and
3. Fund farmland conservation agreements targeted at the active production of food, fiber and other agricultural products.

In order to more successfully administer these funds, the ADFP Trust Fund Advisory Board has developed an assessment tool of all agricultural land in the state. This assessment tool helps prioritize the preservation of important agricultural working lands in North Carolina.

Methodology

The overall agricultural assessment is comprised of three separate evaluations:

- Government Policy
- Agribusiness Infrastructure
- Soils

The base layer for this assessment consists of parcels predicted to be in agricultural use. All scores are assigned at the parcel level. The base layer was derived from county tax parcels, the 2008 Common Land Units (CLU) layer produced by the U.S. Department of Agriculture (USDA) Farm Service Agency, and the Animal Health Programs (AHP) database maintained by the NCDA&CS.

To determine which parcels were in agricultural land use, all parcels that intersected CLU cropland fields and/or AHP farms were selected. Parcels that intersected CLU fields were labeled as agricultural lands only if the total parcel acreage was greater than two acres and the percent of the parcel with CLU fields was greater than 10%. All parcels that intersected AHP farms were labeled as agricultural land.

After visual inspection of the base layer, as well a comparison to several counties present use value parcels, the NCDA&CS is 90% confident that this base layer accurately reflects the land in NC that is in agriculture land use. Due to the outdated nature of the 2008 CLU data, areas of new residential or forested land on old agricultural fields may be included in this assessment as agricultural land, while newly cultivated agricultural lands may not be included. The NCDA&CS maintains an ongoing effort to update and correct errors in the base layer of agricultural parcels.

Points were assigned to each agricultural parcel based on the characteristics of the parcel relating to the layers that comprise the three evaluations. To obtain the overall assessment score, points were summed. Results are grouped into tiers based on Jenks natural breaks. For the overall assessment score, parcels in Tier I are considered to be the highest priority for conservation of working farmland. Within the individual assessments, parcels in Tier I represent the parcels that scored the best for each assessment alone.

Data Sources and Basis for Ranking

Government Policy

The Government Policy assessment aims to award points to parcels in areas with government policies that support the conservation of working farmland.

1. Underneath Military Training Route (MTR)

Goal: To protect working lands around military training areas because the less developed nature of working lands is compatible with the needs of the military training areas.

32 points	0 points
Parcel is underneath the MTR	Parcel is not underneath the MTR

The MTR is a military flight path and special use area overlying a portion of 18 Eastern NC Counties. Linking conservation, working lands, and national defense promotes long-term sustainable land use for both the military and civilian sector. The military needs enduring training areas without encroachment from sprawl which can inhibit training functionality.

2. Proximity to ADFP Preserved Farmlands

Goal: To protect viable farming communities as a whole and connect open spaces.

30 points	15 points	0 points
<1 mile	1-2 miles	>2 miles

As more funding becomes available to protect working lands, priority will be given to lands near or adjacent to other protected working lands in order to clump protected lands and preserve the entire agricultural economy and community. This helps restrict the “shotgun” approach and ties tracts of preserved lands together, limits fragmentation, and takes advantage of the environmental services these larger protected areas can provide.

3. Counties with a Farmland Protection Plan

Goal: To give funding priority to counties that have a prepared farmland protection plan.

30 points	0 points
Parcel is in a county that has a Farmland Protection Plan	Parcel is in a county that does not have a Farmland Protection Plan

In order to focus on the efforts of local communities, additional points are given to parcels in counties that have prepared a farmland protection plan. These farmland protection plans assess the state of farming in the county, coordinate activities, agencies, and funding for farmland and forestland preservation, and lower the matching percentage required for funds received from ADFP Trust Fund.

4. Proximity to Military Bases

Goal: To protect working lands around military bases because the less developed nature of working lands is compatible with the needs of the military bases.

20 points	12 points	6 points	0 points
<1 mile	1-2 miles	2-5 miles	>5 miles

Development around military bases inhibits their functionality and begins to affect the training that can take place on the bases. It has been determined by the Department of Defense and NCDA&CS that in order to protect these bases and their functionality, we must work together to protect the working lands around each base in North Carolina. Therefore, the advisory committee has agreed to partner with the Department of Defense to protect these working lands.

5. Counties with an Enhanced Voluntary Agricultural District (EVAD)

Goal: To place emphasis on counties that have established enhanced voluntary agricultural districts.

20 points	0 points
Parcel is in a county with an EVAD	Parcel is not in a county with an EVAD

Many counties have already established agricultural districts. The purpose of the Agricultural District Program is to encourage the preservation and protection of farmland from non-farm development. In Chapter 106, Article 61 of the North Carolina General Statutes, the North Carolina General Assembly authorized counties to undertake a series of programs to encourage the preservation of farmland. As a result, counties throughout the state of North Carolina have begun to adopt Voluntary Agricultural District Ordinances (VAD) and Enhanced Voluntary Agricultural District Ordinances (EVAD). The ordinance provides for the creation of an Agricultural Advisory Board to administer this program, which also acts as advisor to the governing board of the county or city on

projects, programs, or issues affecting the agricultural economy or way of life within the county or city. The Board reviews and approves applications for qualifying farmland, as well as establishing the agricultural district. These ordinances can also increase protection from nuisance suits, provide a waiver of water and sewer assessments, establish public hearings required for proposed farmland condemnation, and can increase eligibility for funding.

6. Counties with a Volunteer Agriculture Districts (VAD)

Goal: To place emphasis on counties that have established voluntary agricultural districts.

12 points	0 Points
Parcel is in a county with an VAD	Parcel is not in a county with an VAD

7. Proximity to CREP Easements

Goal: To place emphasis on areas where working lands can add conservation value to existing open space.

10 points	5 points	0 points
< 1mile	1-2 miles	>2 miles

The Conservation Reserve Enhancement Program (CREP) is a voluntary program utilizing federal and state resources to achieve long-term protection of environmentally sensitive cropland and marginal pastureland. These voluntary protection measures are accomplished through 10-, 15-, 30-year and permanent conservation easements.

Agricultural Infrastructure

The Agricultural Infrastructure assessment aims to award points to parcels in areas that have a strong agricultural business infrastructure. As farm operations that use agribusinesses diminish, the agribusinesses themselves go out of production due to the lost revenue. The remaining farm operations then need to travel further to get supplies. This puts more financial stress on farm operations and can cause the operation to go out of business because of the lack of services it can acquire. In order to halt this trend which has negatively affected many of our rural economies, we look to preserve the land base that supports the agribusiness infrastructure in North Carolina to limit the stress factor that contributes to farm operation failure.

8. Crop County Cash Receipts/ Farm Acres in County

Goal: To give funding priority to counties which have the largest agricultural economies for crops in the state.

44 points	33 points	22 points	11 points	0 points
Top 20 counties	Upper middle 20 counties	Middle 20 counties	Low middle 20 counties	Lowest 20 counties

9. Livestock County Cash Receipts/Farm Acres in County

Goal: To give funding priority to counties which have the largest agricultural economies for livestock, dairy, and poultry in the state.

32 points	24 points	16 points	8 points	0 points
Top 20 counties	Upper middle 20 counties	Middle 20 counties	Low middle 20 counties	Lowest 20 counties

10. Proximity to Slaughter Facilities

Goal: To place emphasis on agricultural lands which support slaughter facilities.

10 points	5 points	2 points	0 point
<15 miles	15-30 miles	30-45 miles	>45 miles

Slaughter facilities are businesses that slaughter and/or process meat in North Carolina, and are important components of agribusiness that serves livestock and poultry farming operations. This data does not include USDA regulated facilities operated by individual meat or poultry corporations.

Soils

11. Realistic Yield

Goal: To place emphasis on parcels that have the best soils for agricultural use.

60x RYE Number

Realistic yield goals are those average yield levels that produce the greatest difference between the value of the crop and the cost of producing the crop. The soil score was calculated in the following manner:

$$\begin{aligned}
 & \frac{\text{Realistic Yield for Corn Grain on Parcel}}{\text{Statewide Highest Realistic Yield for Corn Grain on a Parcel}} \\
 & + \\
 & \frac{\text{Realistic Yield for Wheat Grain on Parcel}}{\text{Statewide Highest Realistic Yield for Wheat Grain on a Parcel}} = \text{RYE_NORM} \\
 & + \\
 & \frac{\text{Realistic Yield for Full Season Soybeans on Parcel}}{\text{Statewide Highest Realistic Yield for Full Season Soybeans on a Parcel}} \\
 & \frac{\text{RYE_NORM}}{\text{Statewide Highest RYE_NORM}} = \text{RYE_NORM2}
 \end{aligned}$$

$$\text{RYE_NORM2} \times 60 = \text{RYE_SCORE} = \text{SOIL_SCORE}$$

GIS Datalayers Used to Assign Scores in the Agricultural Lands Assessment					
Layer	Model	Possible Values	Max Value	Max Value Percentage of Overall Assessment	Scoring Method
Realistic Yield	Soils	0-60	60	20.0%	60 x RYE number (if parcel is 100% best soil in the state for all three crops, score would be 60)
Crop County Cash Receipts / farm acres in that county	Agribusiness Infrastructure	44, 33, 22, 11, 0	44	14.7%	Top 20 counties= 44, Next 20 = 33, Next 20 = 22, Next 20= 11, Last 20 = 0
Livestock County Cash Receipts / farm acres in that county	Agribusiness Infrastructure	32, 24, 16, 8, 0	32	10.7%	Top 20 counties = 32, Next 20 = 24, Next 20 =16, Next 20 = 8, Last 20 = 0
Military Training Route	Governmental policy	32, 0	32	10.7%	All parcels that fall under the military training route receive 32.
ADFP Preserved Farmlands	Governmental policy	30, 15, 0	30	10.0%	Within 1 mile of easement = 30, Between 1-2 miles away = 15
Counties with a Farmland Protection Plan	Governmental policy	30, 0	30	10.0%	All parcels in a county with a farmland protection plan receive 30
Military Bases	Governmental policy	20, 12, 6, 0	20	6.7%	Within 1 mile of military base = 20, Between 1-2 miles away = 12, Between 2-5 miles away = 6
Counties with a EVAD	Governmental policy	20, 0	20	6.7%	All parcels in a county with an EVAD receive 20
Counties with a VAD	Governmental policy	12, 0	12	4.0%	All parcels in a county with a VAD receive 12
Slaughter Plants	Agribusiness Infrastructure	10, 5, 2, 0	10	3.3%	Within 15 miles of a slaughter plant = 10, Between 15-30 miles away = 5, Between 30-45 miles away = 2
CREP Easement	Governmental policy	10, 5, 0	10	3.3%	Within 1 mile of an easement = 10, Between 1-2 miles of an easement = 5

All GIS Datalayers Present in the Agricultural Lands Assessment Shapefile							
Layer	Included in Final Model	GIS Field Name	Status	Definition	Data Source	Data Date	Data Coverage
Voluntary Agricultural Districts	Yes	VAD_COUNTY	Government Policy		NCDA&CS, Environmental Programs	2012	Statewide, but not specific boundaries
Enhanced Voluntary Agricultural Districts	Yes	EVAD_COUNTY	Government Policy		NCDA&CS, Environmental Programs	2012	Statewide
Military Bases	Yes	MILITARY_BASE	Government Policy		CGIA and NCDOA	2010	Statewide
Other Conservation Lands	No	MAREA	Government Policy	Federal and State land, including parks, game lands, refuges, historic sites, recreation areas and other land managed for conservation or preservation.	NCDENR, Natural Heritage Program	2012	Statewide
Preserved Farmlands (ADFP)	Yes	FARM_PRES	Government Policy		NCDA&CS, Environmental Programs		Statewide
Preserved Farmlands (CREP)	Yes	CREP	Government Policy		NCDA&CS, Soil & Water Conservation		Statewide
Military Training Route	Yes	MTR	Government Policy			2012	Statewide
Farmland Classification	No	PFL_SCORE	Soils	Identifies the locations of the land most suitable for producing food, feed, fiber, forage, and oilseed crops.	USDA, NRCS, National Soil Survey	Varies, most recent	99 Counties, all but Caswell
Land Capability Classification	No	CC_SCORE_NEW	Soils	System of grouping soils primarily on the basis of their capability to produce common cultivated crops and pasture plants without deteriorating over time.	USDA, NRCS, National Soil Survey	Varies, most recent	99 Counties, all but Caswell
Swine Buyout Program	No	SWINE_BUYOUT	Government Policy	Easements to keeping commercial swine operation out of flood plains.	NCDA&CS		Statewide

Layer	Included in Final Model	GIS Field Name	Status	Definition	Data Source	Data Date	Data Coverage
Slaughter Plants	Yes	SLAUGHTER	Agribusiness Infrastructure		NCDA&CS, Meat & Poultry Inspection	2012	Only those regulated by NCDA&CS
Grain Elevators	No	GRAIN_ELE	Agribusiness Infrastructure	Grain elevators that accept grains from farmers and are assessed by NCDA&CS. Does not include private, corporate grain elevators.	NCDA&CS, Marketing	2012	Only those assessed by NCDA&CS
Livestock Markets	No	LIVE_MARKET	Agribusiness Infrastructure	Livestock markets are places where farmers can go to sell their livestock.	NCDA&CS	2012	Statewide
Fertilizer dealers	No	FERT_DEALER	Agribusiness Infrastructure	Locations of retail fertilizer dealers.	NCDA&CS, Plant Industries	2012	Statewide
Pesticide dealers	No	PEST_DEALER	Agribusiness Infrastructure	Locations of dealers that sell restricted use pesticides.	NCDA&CS, Plant Industries	2012	Statewide
Countywide Farmland Protection Plan	Yes	FARM_PLAN	Government Policy		NCDA&CS, Environmental Programs	2012	Statewide
Total county agricultural cash receipts / farm acres in that county	No	CASH_RECEIPT	Agribusiness Infrastructure	Cash receipts per acre of farmland was calculated by adding livestock, dairy, poultry, and crops cash receipts and dividing by the total acres in farms by county.	NCDA&CS, Agricultural Statistics	Receipts: 2010, Acreage Data:2007	Statewide
Total county livestock cash receipts / farm acres county	Yes	LIVE_RECEIPT	Agribusiness Infrastructure		NCDA&CS, Agricultural Statistics	Receipts: 2010, Acreage Data:2007	Statewide
Total county crop cash receipts / farm acres county	Yes	CROPS_RECEIPT	Agribusiness Infrastructure		NCDA&CS, Agricultural Statistics	Receipts: 2010, Acreage Data:2007	Statewide
Realistic Yield	Yes	RYE_SCORE	Soils		NCSU		Statewide