Chatham County Agricultural Operations and Water Use

Presented to the
Chatham Planning Board
Well Subcommittee

2/17/21

2017 USDA Census of Agriculture

- 1,116 ag operations (down 2%)
- 105,995 acres in farms (down 5%)
  - 29% Cropland
  - 36% Pastureland
  - 27% Woodland
  - 8% Other
- 295 acres irrigated
- $171,150,000 Market Value of Products Sold
  - $11,205,000 Crops
  - $159,945,000 Livestock/Poultry and Products (eggs, milk, wool, etc)

USDA Farm Service Agency

2020 Crop Reporting

- Voluntary programs with farmers using USDA programs
- Nearly 25,000 acres planted
  - Decrease from 2019 (Hurricane Disaster Funds)
- Major crops are corn, soybean, wheat, hay and pasture
- Reported crops that may be irrigated:
  - Corn
  - Strawberries
  - Tomatoes, cucumber, pepper
  - Grapes
  - Nursery
  - Home garden

2018 Forestry Contributions

- 266,742 acres of privately owned timberland
  - Not including state or federally owned
- Harvest value of $7,300,000.
- Forestry industry in Chatham (timber, logging, forest products) contributes $422,800,000 to local economy.

Chatham PUV

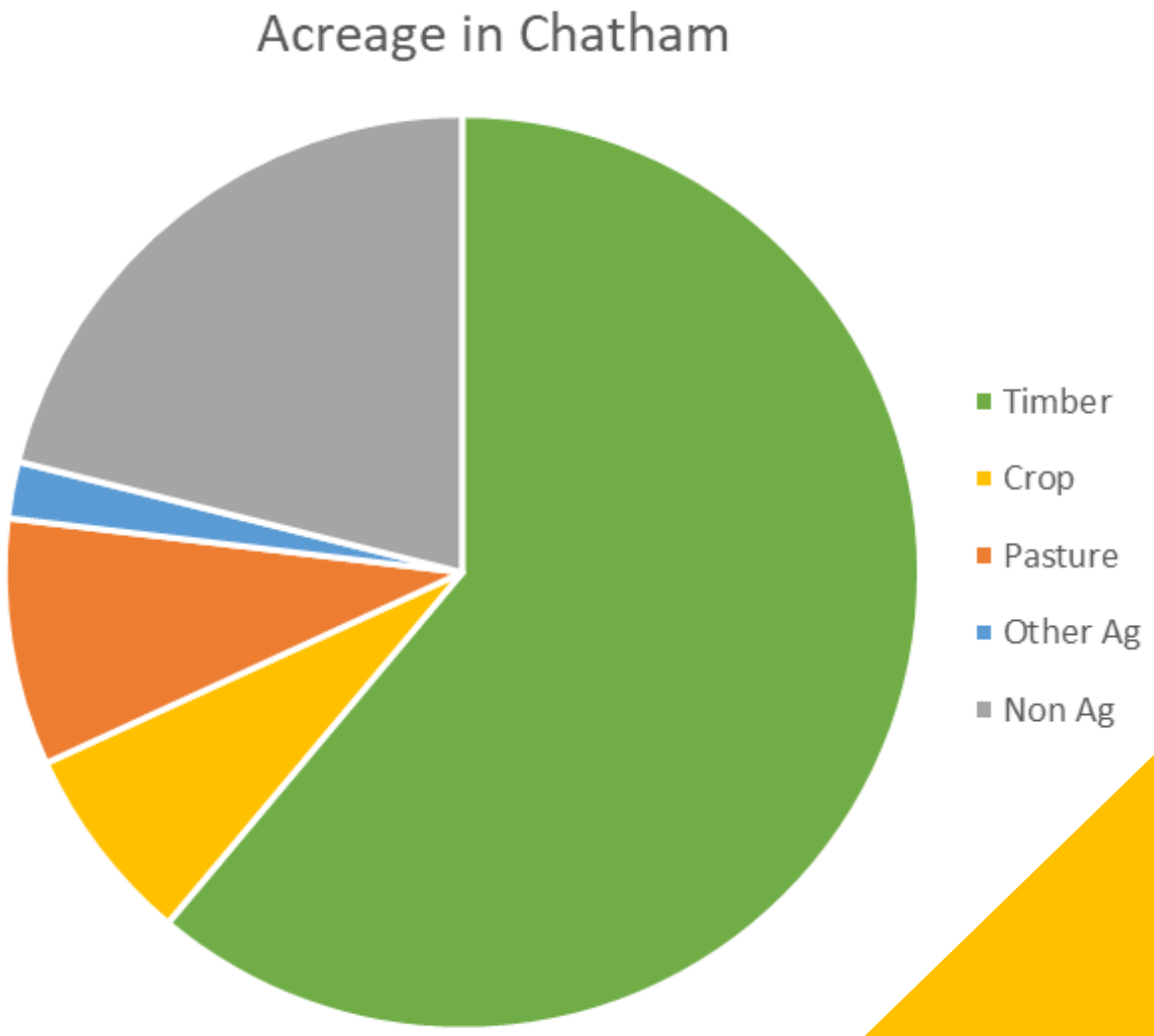
Present Use Value Tax Deferral Program

Eligible farms that meet program requirements pay a reduced tax rate

Total of 210,258 acres are currently enrolled = 48% of total land

- 65,580 acres Agricultural
- 253 acres Horticultural
- 144,425 acres Forestry

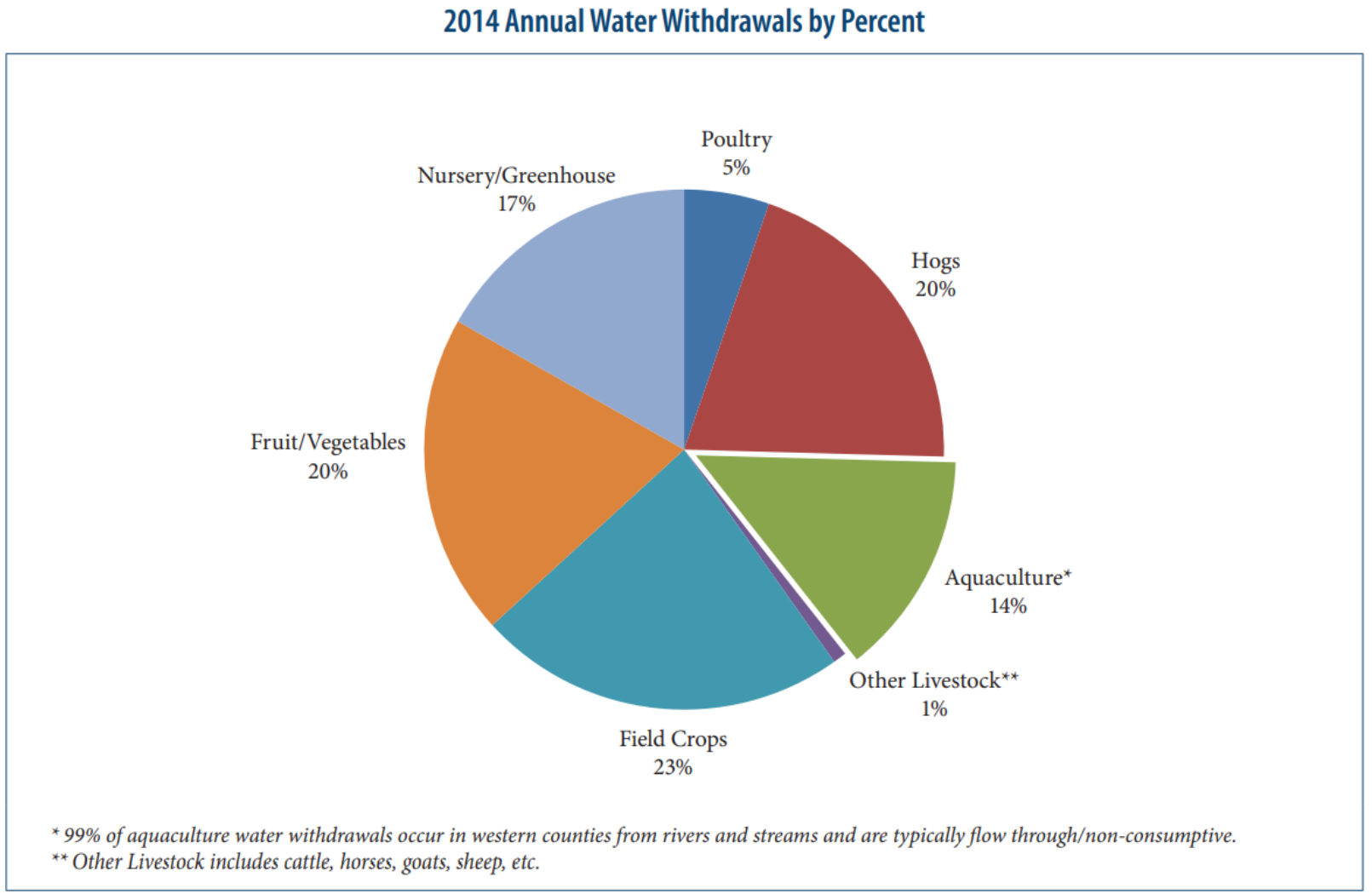
Distribution of Ag Land



Ag Operations that Require Water

- Livestock watering
- Poultry house cooling
- Market farmers (high production with crop diversity)
- Horticulture, plant nurseries
- Greenhouse operations
- Specialty crops
  - Strawberries, vineyard, hemp, hops, etc
- Some conventional row crops
- Aquaculture
- Value added products

NCDA&CS Ag Water Withdrawn in North Carolina



Water Sources for Ag Use

Municipal/County

- Incomplete county coverage
- Upfront fees plus usage rates
- Reliable (but drought restrictions concerns)

Surface Water (pond/stream)

- Quantity inconsistent seasonally/weather
- Pathogens (GAP requirements, Avian Flu, etc)
- No/little infrastructure required

Groundwater

- Upfront costs
- Quality and quantity is fairly reliable

Haul In

- Uncommon, not viable

How much water is needed?

There are no two operations the same!

Different species and breeds of livestock as well as herd composition have different requirements.

Irrigation of crops must consider crop requirements, irrigation equipment, soil infiltration rates, season and weather.

Additional on-farm water needs include freeze protection, washing, rinsing, production.

Will there be enough water at peak demand?

Livestock needs

(gallons per day)

Beef Cattle

- 10 gpd (calf) to 20 gpd (lactating cow)

Dairy Cattle

- 15 gpd (calf and dry cow) to 35 gpd (lactating cow)

Hogs

- 1 gpd (nursery) to 7 gpd (lactating sow)

Goats & Sheep – 2 gpd

Horses – 8 gpd

Broiler Poultry – 70 to 85 gpd per 1,000 birds

Layer Poultry – 25 gpd (pullet) up to 65 gpd (full production) per 1,000 birds

Livestock Operation Hypotheticals

A 50-acre cow/calf beef operation of 20 pairs will need 600 gallons of water per day. A lower production well with a good pressure tank and pump would be adequate. Some small cattle operations use their household wells to supply water tanks. Many still use surface water (ponds and creeks).

A 4-house, 64,000 broiler operation would need almost 5,500 gallons/day at the peak production plus 10,000 gallons for cooling on the hottest days. Some poultry operations are connected to municipal water and use wells to supplement each source. Well water is preferred due to the cost of buying municipal water and the fear of restrictions in the event of drought.

Crop Operation Hypotheticals

1 acre of corn under irrigation needs nearly 8,000 gallons/day at peak. I am not aware of any Chatham County conventional crop operations irrigating from wells however, surface water is pumped and used on a few operations. High production, larger diameter wells are used down east for conventional crop irrigation.

1 acre of mixed summer vegetables under irrigation needs approximately 6,500 gallons/day at peak. This is extremely variable based on the irrigation equipment efficiency, soils and crop.

Chatham SWCD Takeaways

Ag Wells are commonly installed through our cost share programs.

10 years' worth of projects show extreme variability in amount and depth of groundwater across the county.

- 22 wells drilled, 4 attempts were dry and well site was relocated
- Depths ranged from 140 feet to 800 feet
- Gallons per minute ranged from 2 to 60
- Most projects for cattle exclusion from surface waters, a few for crop or nursery irrigation and poultry water supply

Farmers' water supply concerns:

- Increasing frequency of drought
- Independence from municipal water systems
  - Cost
  - Restrictions
- Increasing groundwater use from non-agricultural users

Programs for Financial Assistance

Chatham Soil & Water Conservation District

- NC Agricultural Cost Share Assistance Program (ACSP)
  - Addresses water *quality* concerns – example: Livestock Exclusion System plus supporting practices including well, pump, waterline and water tanks. Benefit includes improved water quality.
- NC Agricultural Water Resources Program (AgWRAP)
  - Addresses water *quantity* concerns – example: not enough water available for livestock or crop production. Benefit includes increased water supply.
- NC Disaster Funding
  - Drought emergency response when available.

USDA Natural Resources Conservation Service (NRCS)

- Environmental Quality Incentives Program (EQIP)
  - Addresses water quality concerns – example: Livestock Exclusion System plus supporting practices including well, pump, waterline and water tanks.
  - Benefit includes improved water quality.

References

2017 USDA Census of Agriculture County Profile

https://www.nass.usda.gov/Publications/AgCensus/2017/Online_Resources/County_Profiles/North_Carolina/cp37037.pdf

2018 Chatham County Forestry Contributions

https://content.ces.ncsu.edu/chatham-county-forestry-impacts-2018

Chatham GIS PUV

https://opendata-chathamncgis.opendata.arcgis.com/datasets/chatham-county-present-use-parcels/data?geometry=-80.375%2C35.501%2C-78.091%2C35.891

2014 NCDA&CS NC Agricultural Water Use Report

https://www.ncwater.org/Reports_and_Publications/GWMS_Reports/AgStatReports/AgWaterUseNC-WU2014.pdf

USGS Water Use Data for NC

https://waterdata.usgs.gov/nc/nwis/water_use/

NC Irrigation Guide

https://efotg.sc.egov.usda.gov/references/public/NC/NC_Irrigation_Guide_Apr_2010.pdf

Livestock Water Needs

https://content.ces.ncsu.edu/water-needs-assessment-tool-a-guide-for-technical-specialists

Questions or Comments?

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