

# THE 2<sup>ND</sup> NATIONAL BIOSOLIDS SURVEY PRELIMINARY RESULTS, TRENDS AND INTERESTING DEVELOPMENTS



Residuals & Biosolids Annual  
Conference

January 24, 2022

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NEBRA Executive Director

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NEIW PCC Environmental Analyst

## AGENDA

- ❖ Project Background
- ❖ Survey Topics
- ❖ Preliminary Results
- ❖ Next Steps

## NATIONAL BIOSOLIDS REGULATION, QUALITY, END USE & DISPOSAL PROJECT

- 1<sup>st</sup> Survey 2004 data outdated

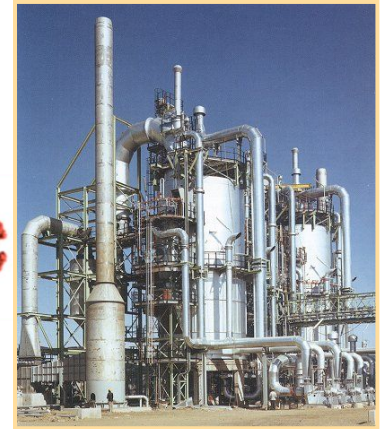
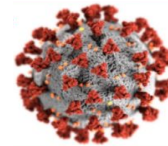


- Comprehensive Biosolids Update Needed
  - Regulation
  - Quality
  - End Use and Disposal Data

## NORTHEAST REGIONAL SLUDGE GENERATION PROJECT

- Stressors on Sludge Management

- Pandemic
- Aging Infrastructure
- Emerging Contaminants



- Northeast Region Sludge Disposal Options

- Incinerators
- Landfills
- Beneficial Reuse



# NORTHEAST REGIONAL SLUDGE GENERATION PROJECT

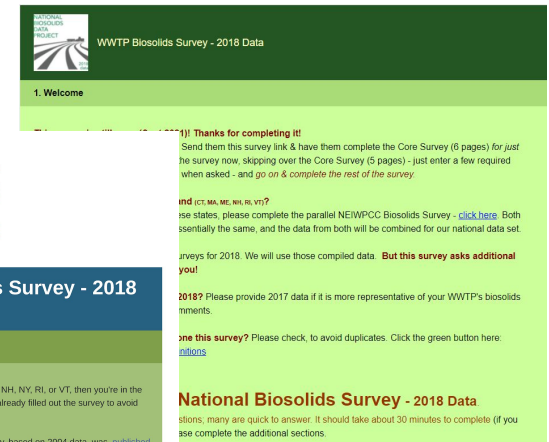
- Issues
  - Local Capacity
  - Regional Capacity
  - Wastewater Treatment Plant Operations
  - State Requests
  
- Coordinating with National Biosolids Survey #2
  - Administer National Biosolids Survey in NEIWPCC Member States
  - Case Studies



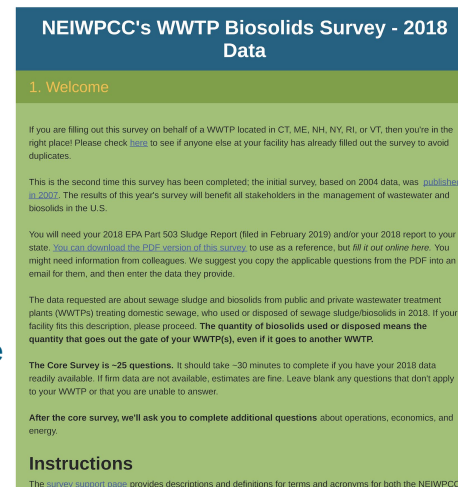
## NATIONAL BIOSOLIDS DATA PROJECT

- Biosolids Coordinators Survey – 2018 Data\*
  - Spreadsheet
  - Online Survey
- WWTP Survey – 2018 Data
  - Online Survey

\*2019 Data for Massachusetts and 2018 & 2019 data for Maine



The screenshot shows the '1. Welcome' page of the 'WWTP Biosolids Survey - 2018 Data'. It includes a logo for the National Biosolids Data Project and a '1. Welcome' heading. The main content area contains several paragraphs of text, including a 'Thank you for completing it!' message, a 'Did you know we are in it?' section, and a '2018? Please provide 2017 data' section. A green button labeled 'Continue' is visible at the bottom right of the main content area. The footer of the page contains the NEIWPCC logo and the text 'National Biosolids Survey - 2018 Data'.



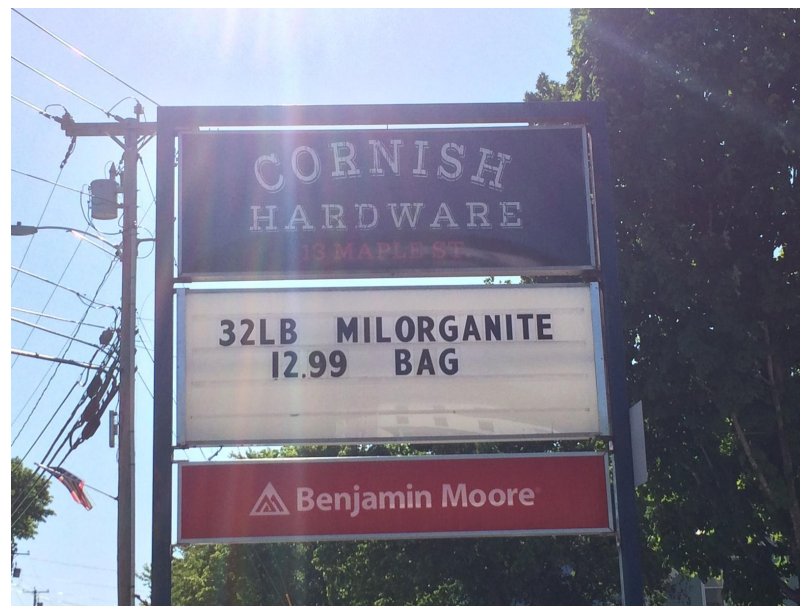
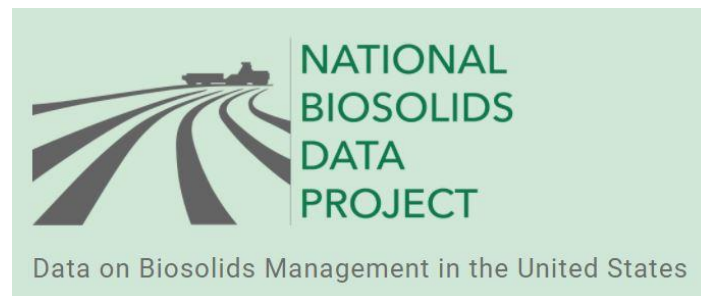
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# NATIONAL BIOSOLIDS DATA PROJECT

- WWTP Survey Topics
  - General
  - Sewage Sludge and Biosolids
  - Septage Received
  - Energy
  - Economic Data
  - Trends
  - Top 5 Pressures on Biosolids Management Program

# TRENDS FROM THE NATIONAL DATA SET FROM 2004 TO 2018

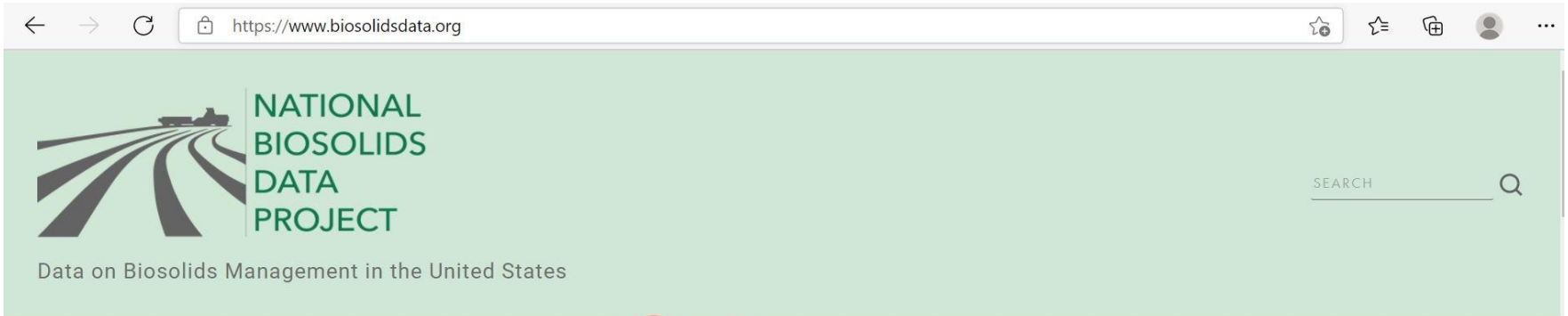
- More Class A biosolids being produced
- Decrease in biosolids being incinerated
- More pressures and incentives to divert from landfills
- Decrease in State FTEs





# PRELIMINARY RESULTS, TRENDS & INTERESTING DEVELOPMENTS

## RESULTS AT [WWW.BIOSOLIDSDATA.ORG](https://www.biosolidsdata.org)



Home National Reports **State Summaries** Data Downloads About NBDP Contact Us

How are biosolids used & managed in the United States?



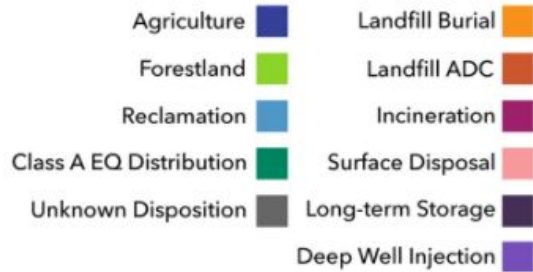
## RESULTS AT [WWW.BIOSOLIDSDATA.ORG](http://WWW.BIOSOLIDSDATA.ORG)

### State Summaries

2018 Data    2004 Data

Click on a state below for a summary and details of its 2018 biosolids management. For state data from 2004, compiled in the first survey on National Biosolids Regulation, Quality, and Use and Disposal, click on Appendix D of that report (19886) at v.1.2022.

#### BIOSOLIDS USE & DISPOSAL IN 2018



APPENDIX D, STATE BY STATE DATA



## OREGON

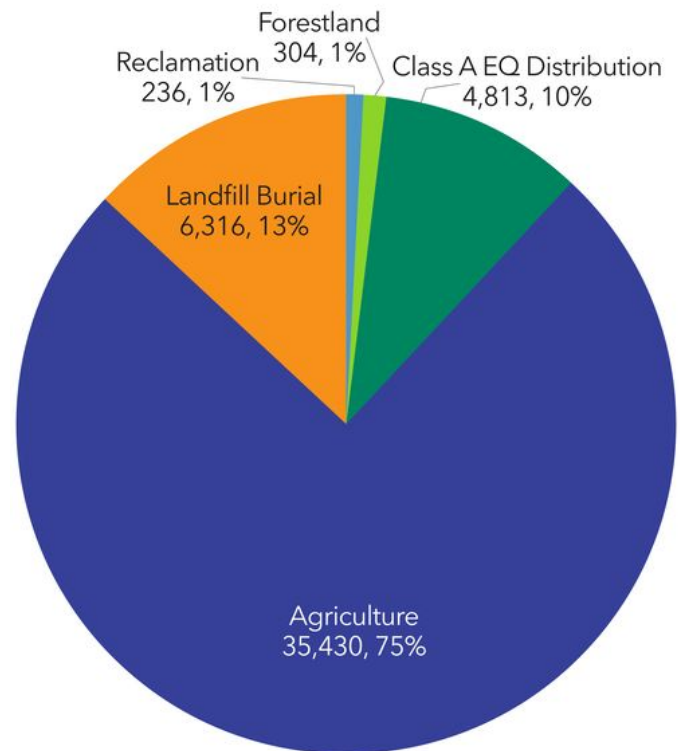
### Demographics & Wastewater

Avg population served per WRRF	7,928
Avg wastewater flow statewide (MGD, Seiple)	416
WRRFs treating >75% WW flow	16
% of population served by on-site (septic) systems	30
Biosolids used or disposed / person in 2018 (lbs)	22

### Biosolids Application

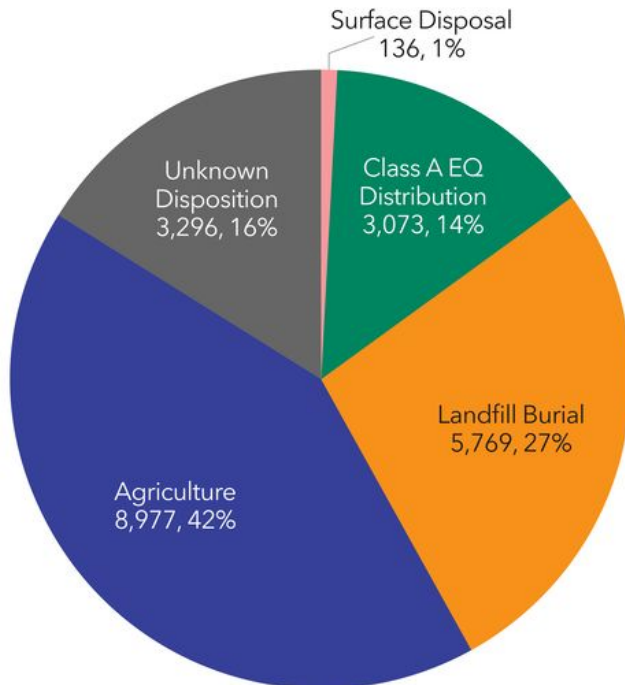
% of state area in cropland	8.00
% cropland to which biosolids were applied	0.44
application rate if all state biosolids were applied to cropland (dt/acre)	0.01
% cropland needed if all biosolids were applied at typical rate of ~3dt/acre	0.33
If all state's biosolids applied, what % of state's applied N would come from biosolids?	0.80
If all state's biosolids applied, what % of state's applied P would come from biosolids?	2.10

Oregon Biosolids Use & Disposal 2018  
(dry US tons, %)  
Total: 47,100

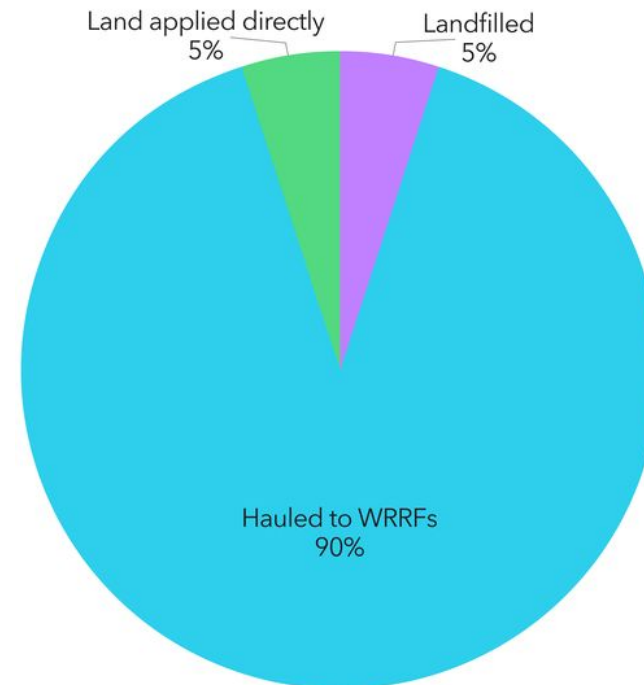


## IDAHO

Idaho Biosolids Use & Disposal 2018  
(dry US tons, %)  
Total: 21,300



Idaho Septage Management 2018  
(% estimated)  
Total: 6,600,000 gallons



## NEW ENGLAND USE & DISPOSAL TRENDS



Sources:

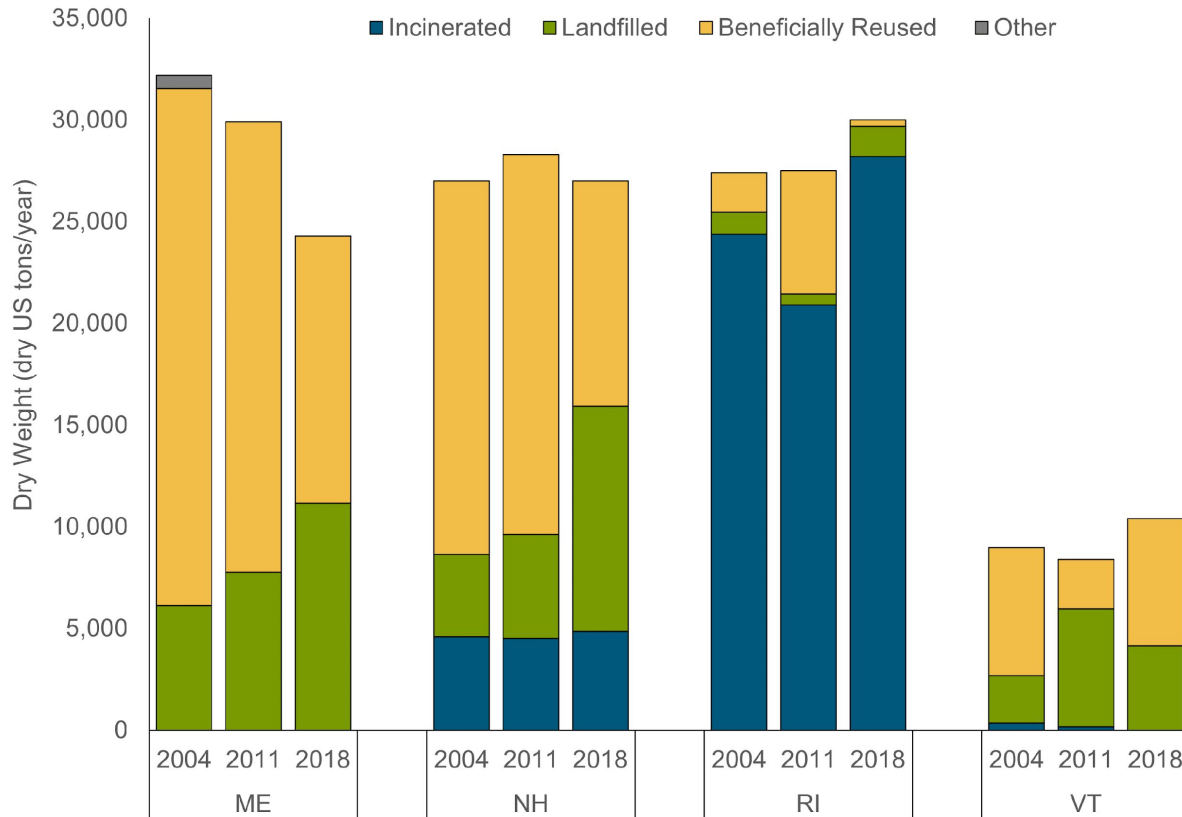
2004 Data - NEBRA, A National Biosolids Regulation, Quality, End Use & Disposal Survey, July 20, 2007

2011 Data - VTDEC, Report on the Management of Wastewater Treatment Sludge and Septage in Vermont: An Analysis of the Current Status and Alternatives to Land Application, January 16, 2016

2018 CT Data - NEIWPCC, Draft Biosolids Coordinator Survey Data, 2021

2018 MA Data - NEBRA, The Mass Sludge Survey 2018 v.1.1 Wastewater Solids Generation and Management in Massachusetts, September 2019

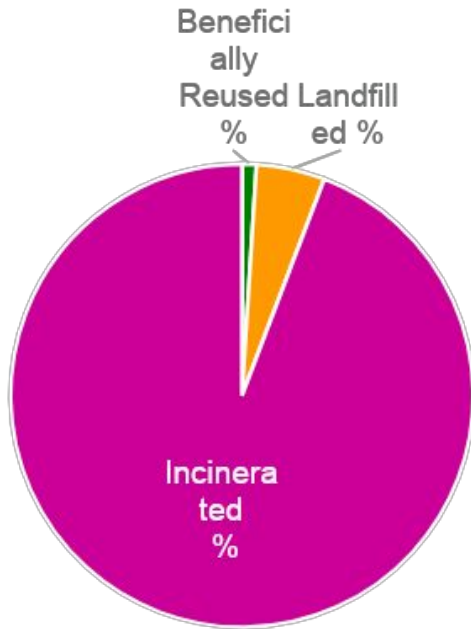
## NEW ENGLAND USE & DISPOSAL TRENDS



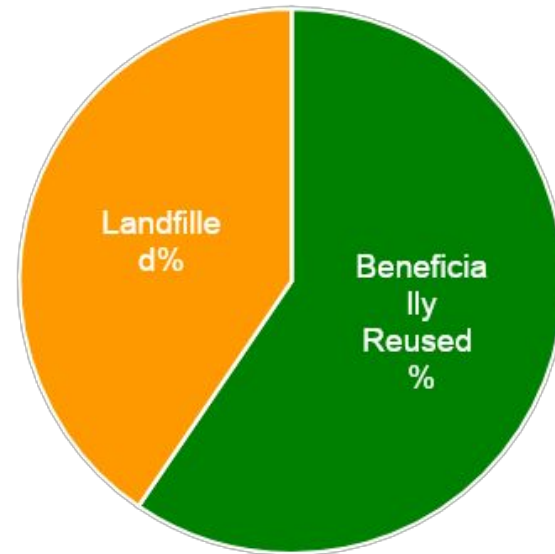
Sources:  
 2004 Data - NEBRA, A National Biosolids Regulation, Quality, End Use & Disposal Survey, July 20, 2007  
 2011 Data - VTDEC, Report on the Management of Wastewater Treatment Sludge and Septage in Vermont: An Analysis of the Current Status and Alternatives to Land Application, January 16, 2016  
 2018 Data - NEIWPCC, Draft Biosolids Coordinator Survey Data, 2021

# RHODE ISLAND AND VERMONT

Rhode Island Biosolids Use & Disposal 2018  
Total = 33,100 Dry US Tons



Vermont Biosolids Use & Disposal 2018  
Total = 10,400 Dry US Tons



## VERMONT

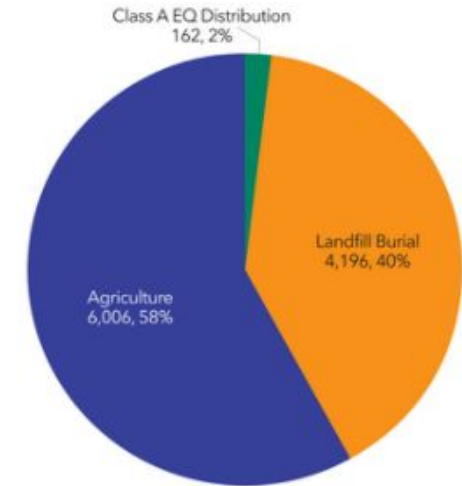
### Demographics & Wastewater

Avg population served per WRRF	3,060
Avg wastewater flow statewide (MGD, Seiple)	46
WRRFs treating >75% WW flow	20
% of population served by on-site (septic) systems	58
Biosolids used or disposed / person in 2018 (lbs)	33

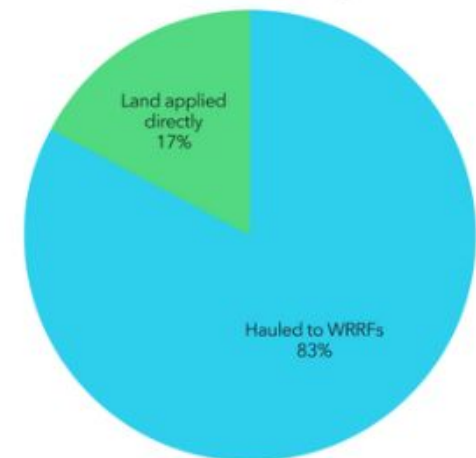
### Biosolids Application

% of state area in cropland	8.13
% cropland to which biosolids were applied	0.03
application rate if all state biosolids were applied to cropland (dt/acre)	0.02
% cropland needed if all biosolids were applied at typical rate of ~3dt/acre	0.72
If all state's biosolids applied, what % of state's applied N would come from biosolids?	1.84
If all state's biosolids applied, what % of state's applied P would come from biosolids?	4.65

Vermont Biosolids Use & Disposal 2018  
(dry US tons, %)  
Total: 10,400



Vermont Septage Management 2018  
(% estimated)  
Total: 37,663,800 gal





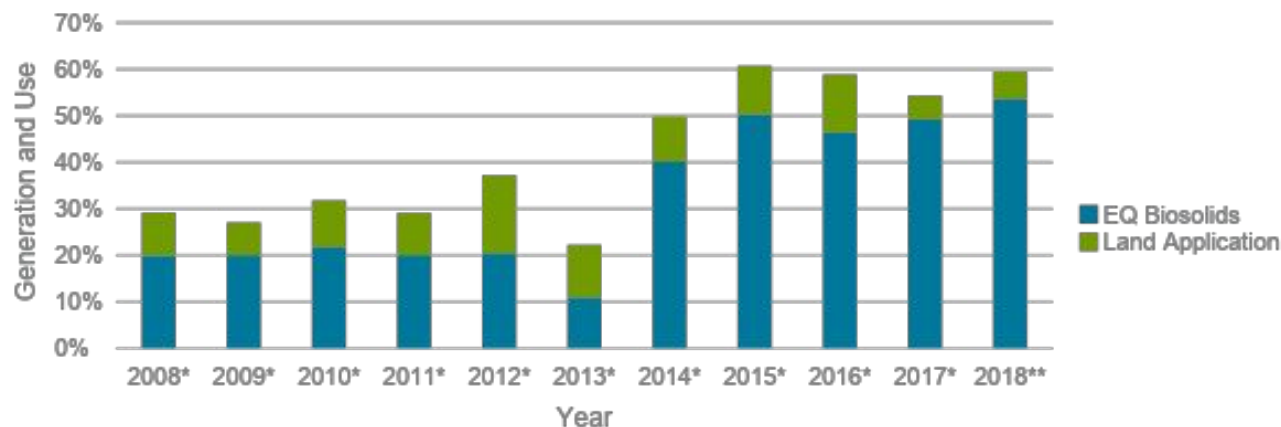
## VT BIOSOLIDS GENERATION AND USE DATA

	2008*	2009*	2010*	2011*	2012*	2013*	2014*	2015*	2016*	2017*	2018**
<b>Landfill</b>	67.88%	71.05%	66.51%	69.55%	60.90%	75.75%	48.61%	38.16%	40.58%	45.32%	40.49%
<b>Incineration</b>	2.95%	1.87%	1.66%	1.33%	1.87%	1.97%	1.49%	1.09%	0.52%	0.34%	0.00%
<b>EQ</b>	20.01%	20.10%	21.85%	20.11%	20.48%	10.94%	40.19%	50.34%	46.43%	49.29%	53.68%
<b>Land App</b>	9.16%	6.99%	9.98%	9.01%	16.75%	11.33%	9.71%	10.41%	12.47%	5.05%	5.83%
<b>TOTAL DRY TONS</b>	11,225	11,200	12,533	12,656	10,287	8,062	9,887	10,061	11,109	12,432	10,364
<b>WWTF FLOW (M gal.)</b>	17,778.7	15,909.6	15,802.2	19,115.8	14,030.3	16,270.6	15,402.9	14,101.9	13,191.7	15,247.7	15,330

Sources:

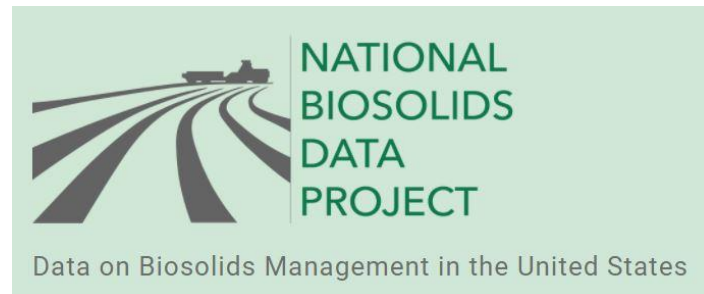
\* VTDEC, Report on the Management of Wastewater Treatment Sludge and Septage in Vermont: An Analysis of the Current Status and Alternatives to Land Application, January 16, 2016

\*\* NEIWPCC, Biosolids Coordinator Survey Data, 2021



## INTERESTING FACTS & FIGURES

- Average per capita biosolids generation is 42 pounds per year!
- Less than 1% of U.S. cropland needed for land application of all biosolids
- Septage management – Still Not a lot of Data...



# PRELIMINARY RESULTS, TRENDS & INTERESTING DEVELOPMENTS



NATIONAL  
BIOSOLIDS  
DATA  
PROJECT

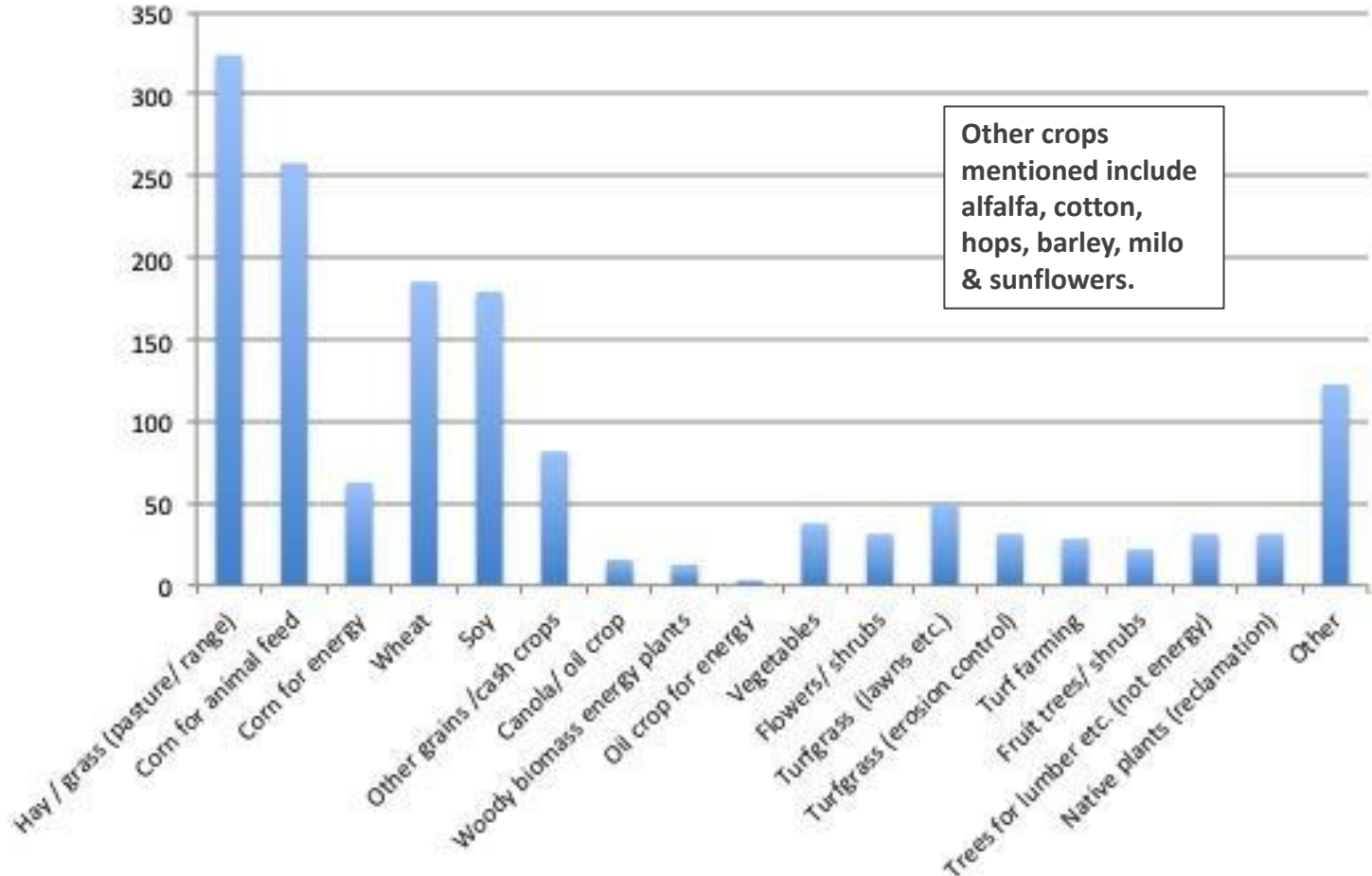
Data on Biosolids Management in the United States

## WHAT CROPS ARE GROWN WITH BIOSOLIDS?

Number of U.S. biosolids programs growing each crop  
(extrapolated nationwide estimate based on 197 respondents)

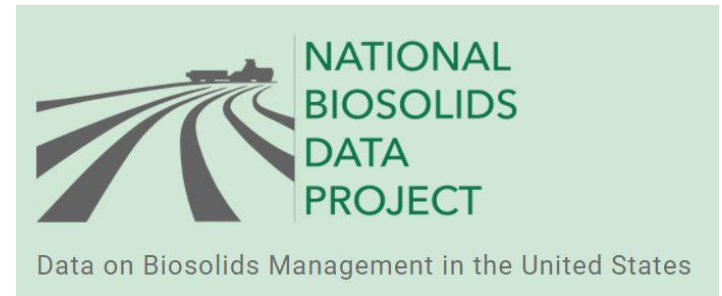
These numbers are low-end estimates.

What is accurate is the relative abundance of the different crops.



# APPLYING THE DATA

- Assess Capacity Issues
- Understand Local and Regional Markets
- Regional Planning
- Develop recommendations for short-term and long-term actions



# QUESTIONS?

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