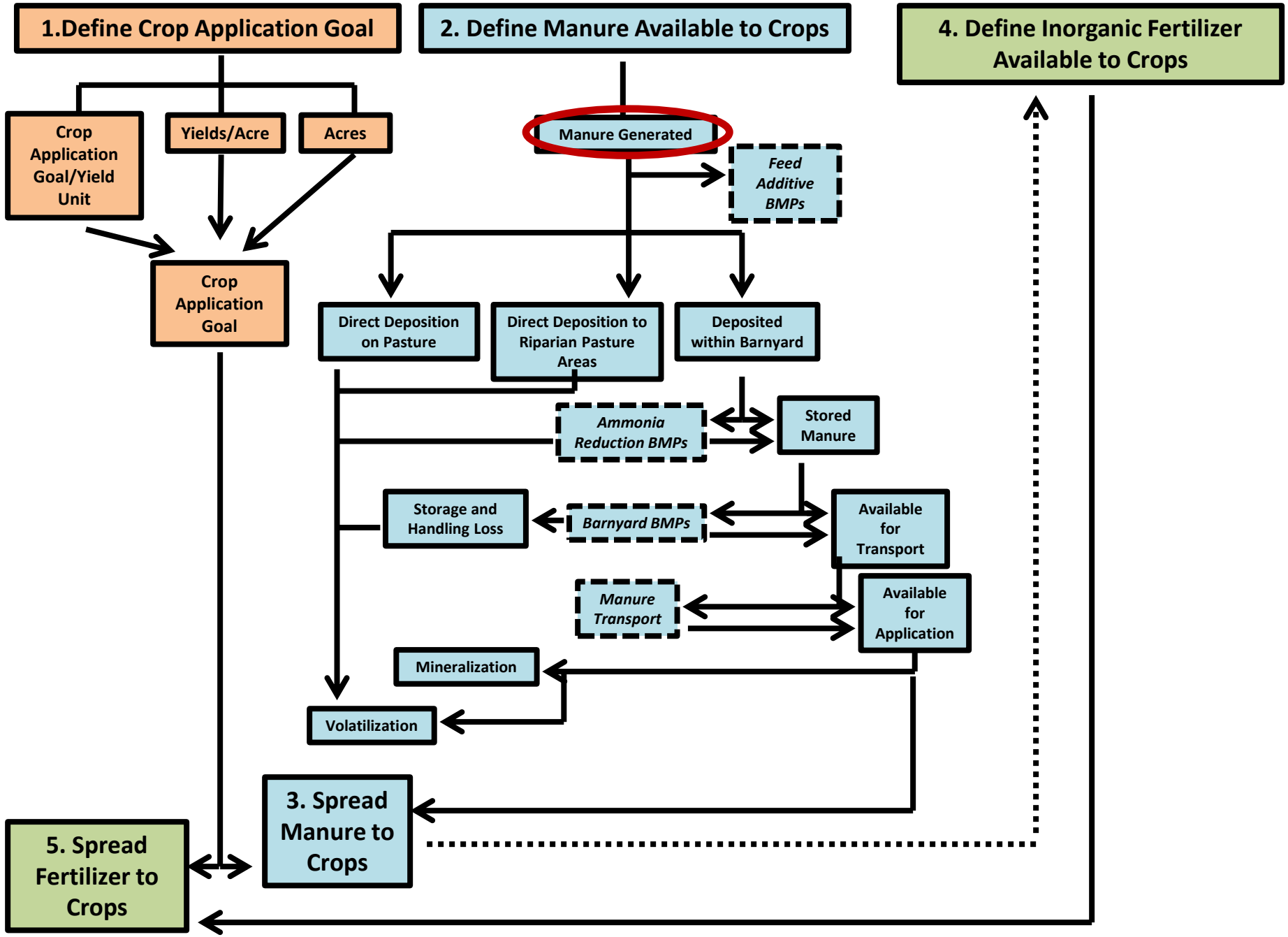
Potential Process to Update Manure Generation Data for Phase 6 Model

April 19th, 2018


1.Define Crop Application Goal
2. Define Manure Available to Crops
4. Define Inorganic Fertilizer Available to Crops
Crop Application Goal/Yield Unit
Yields/Acre
Acres
Crop Application Goal
Manure Generated
Feed Additive BMPs
Direct Deposition on Pasture
Direct Deposition to Riparian Pasture Areas
Deposited within Barnyard
Ammonia Reduction BMPs
Stored Manure
Storage and Handling Loss
Barnyard BMPs
Available for Transport
Manure Transport
Available for Application
Mineralization
Volatilization
3. Spread Manure to Crops
5. Spread Fertilizer to Crops

Manure Generation – Animal Populations

Manure Generated

Animal Type	Population Source
Swine	Census of Agriculture (Inventory and Sales)
Layers and Pullets	Census of Agriculture (Inventory and Sales)
Broilers and Turkeys	NASS Annual Poultry Production Survey
All Other Livestock	Census of Agriculture (Inventory)

**Distribution of TOTAL* statewide populations down to counties, regardless of population source, based upon Census of Agriculture distribution to counties*

- Source of ***TOTAL*** statewide populations will not change for Phase 6 Model.

- Source for ***distribution*** of statewide populations can change.
  - Example: Pennsylvania provides fraction of cattle in every county for the year 2019, and these fractions are used to distribute TOTAL statewide cattle populations from the Census of Agriculture.

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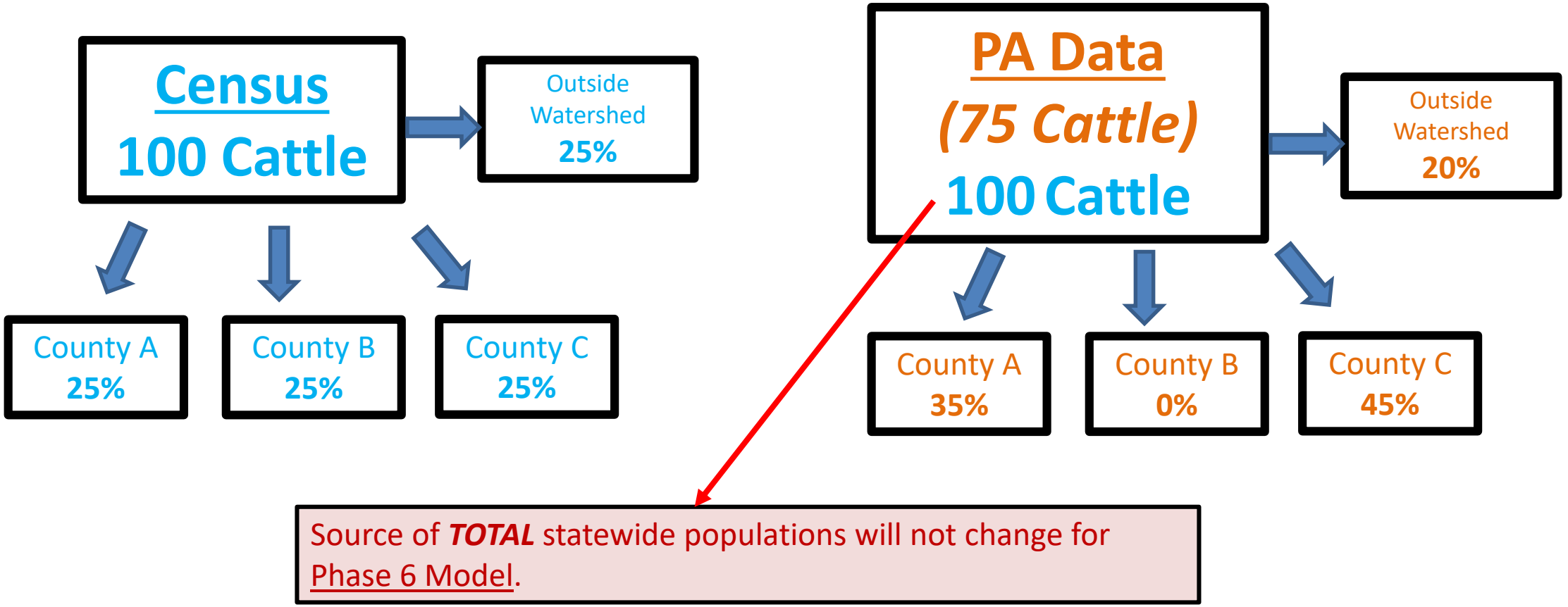

Manure Generation – Nutrient Content

Data Currently Used in the Phase 6.0 Model

Manure Generated

Animal TypeZ	Manure Source	Lbs Dry Manure/Animal/Yr	Lbs TN/Lb Dry Manure	LbsTP/Lb Dry Manure
Beef	Use Beef - Cow (confinement) from ASAE 2005 for manure values	5,475.00	0.028788	0.006467
Dairy	Use Lactating Cow, Dry Cow and Heifer from ASAE 2005 for manure values	4,404.33	0.042221	0.006764
Other Cattle	Estimated based upon weighted average combination of Beef and Dairy from Census of Agriculture	1,605.07	0.035504	0.006616
Horses	Use average of Horse- Sedentary and Horse - Intense Exercise from ASAE 2005 for manure values	3,102.50	0.031672	0.005941
Hogs for Breeding	Swine Characterization Report;	220.62	.294653	Varies
Hogs for Slaughter	Swine Characterization Report;	97.09	0.106841	Varies
Sheep and Lambs	Use ASAE 2003 for manure values	240.9	0.038182	0.007909
Goats	Use ASAE 2003 for manure values	680.91	0.034615	0.008462
Pullets	PLS Report; See Appendix A	12.95	Varies	Varies
Layers	PLS Report; See Appendix A	17.89	Varies	Varies
Broilers	PLS Report; See Appendix A	Varies	Varies	Varies
Turkeys	Turkey Characterization Report;	7.62	Varies	Varies

3-year trends (up or down) can be applied to existing values in this table.

(requires 3 consecutive years of data)

Data must be collected in a similar fashion as was done for:

- Poultry Litter Subcommittee report
- Swine Characterization Study
- Turkey Characterization Study

Timeline for 2020 Updates to Phase 6 Model

April 30, 2019

Deadline for Submitting Data for Ag Workgroup Consideration

May 1-July 31, 2019

Review Process Begins

- CBPO will collect and analyze data, and/or characterization studies

August 2019

Review Process Concludes

- Ag Workgroup reviews findings and recommends changes if needed

October 2019

CBPO will release **revised agricultural model data**

- Planned Revisions:
  - Fertilizer sales post-2012
  - 2017 Census of Agriculture
  - Annual NASS crop yields for major crops
  - Annual NASS population for turkeys and broilers
- *Potential* Revisions (reliant on relevant data collection and submission)
  - Populations: County-specific percent population for any livestock (e.g., 80% of DE broilers in 2019 are in Sussex County)
  - Nutrient Generation and Concentrations: 3 year + trends (up or down) for any livestock. Analysis must follow Poultry Litter Subcommittee Report format