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A summary of commercial swine numbers in the Chesapeake Bay Watershed

Mark J. Estienne, Ph.D.
Professor and Swine Research Physiologist
Virginia Tech- Tidewater Agricultural Research and Extension Center
Suffolk, VA
(mestienn@vt.edu)

Introduction

The swine industry in Virginia has evolved into two production entities: 1) vertically integrated companies that control their own hog production through company-owned farms and contractual arrangements, and 2) Small-scale and niche market farms, the number of which is modestly growing. Smithfield Foods, Inc. is the primary integrator operating in the Commonwealth.

Hogs and pigs are located on farms in practically every county of the state. The objective of this report is to summarize hog numbers within Virginia, and particularly within the Chesapeake Bay Watershed. Swine farms in Virginia can be one of several types. For example, *farrow-to-wean* farms maintain a sow herd and at weaning, transport piglets farrowed on the premises to other farms. *Nursery pig* farms receive weaned pigs and grow them for 7 weeks until shipping to finishing farms. *Finishing* farms receive pigs from a nursery farm and feed the animals until achieving market weights of 250 to 260 pounds. Hogs are transported to slaughter plants at these weights. *Wean-to-finish* farms receive weaned pigs from farrow-to-wean farms and feed the animals until slaughtered at 250 to 260 pounds. For the purpose of this report and for consistency with language appearing in the USDA census and survey documents, the numbers of pigs on nursery, finishing, and wean-to-finish farms, are combined and called “other hogs and pigs” or “hogs and pigs sold”. Sows on farrow-to-wean farms are called, “hogs and pigs used or to be used for breeding”. Total hogs and pigs is the sum of hogs and pigs used or to be used for breeding and other hogs and pigs.

Methods

Sources of data used to determine the number of hogs and pigs in various counties in Virginia were: 1.) A list of swine farms with approved nutrient management plans as required by the Virginia Department of Environmental Quality (DEQ) for Virginia pollution abatement (VPA) permits (list provided by Mr. Bobby Long) and, 2.) A summary of swine numbers on company-owned and contract farms operating under the auspices of the Smithfield Hog Production Division (supplied by Mr. R.O. Britt). Swine inventory numbers were estimated using stocking densities supplied for farms in various counties and independent cities. The number of animals sold or marketed from various types of farms was estimated using the following equation:

Animals sold = Inventory x annual number of turns (in other words, the number of times farms were emptied and restocked) – the estimated number of animal deaths.

where, number of turns is equal to 2.7 for finishing operations, 2.1 for wean-to-finish operations, and 7 for nursery operations, and percent mortality equals 3.6% for nursery pigs, 5.0% for finishing and 7.6% for wean-to-finish (Knauer, M. and Hostetler, C. 2013. J. Swine Health Prod. 21(5):248-252).

Numbers generated using the above lists and equations were compared to values appearing in the 2012 USDA Census of Agriculture, and for 2016 USDA-NASS. Location of swine within the Chesapeake Bay watershed was confirmed using the Hydrologic Unit Explorer of the Virginia Department of Conservation and Recreation.

<http://dswcapps.dcr.virginia.gov/htdocs/maps/HUExplorer.htm>). It is important to state that within some counties, such as Prince Edward and Isle of Wight, some but not all swine operations lie within the Chesapeake Bay Watershed.

Results and Discussion

In general, the data contained in this report reflects large, commercial operations characteristic of the integrated swine industry and not small-scale and niche-market pig farms. With that in mind, focused upon are the following counties: Brunswick, Buckingham, Charles City, Charlotte, Dinwiddie, Frederick, Greensville, Halifax, Isle of Wight, Madison, Pittsylvania, Prince Edward, Southampton, Surry, and Sussex, and the cities of Suffolk and Virginia Beach.

Shown in Table 1 are statewide totals (i.e., totals for the 17 localities listed above) that were generated and how they compare with data contained in the 2012 Census.

Table 1. State total hogs and pigs, hogs and pigs used or to be used for breeding, and hogs and pigs sold.

Item:	Chesapeake Bay Watershed (CBW)	2012 USDA Census	CBW as percentage of USDA	2016 USDA-NASS	CBW as percentage of USDA-NASS
Total hogs and pigs	339,462	239,899	29.3% greater	250,000	26.4% greater
Hogs and pigs used or to be used for breeding	3,585	8,460	136.0% less	5,000	39.5% less
Other hogs and pigs ¹	335,877	231,439	31.1% greater	245,000	27.1% greater
Hogs and pigs sold ²	843,442	559,658	33.6% greater	N/A	N/A

¹Values represent pigs on nursery, finish, and wean-to-finish farms.

²Values represent animals marketed from nursery, finish, and wean-to-finish farms.

N/A = not available

Beginning in 2012, Smithfield Hog Production Division, the major integrator in the Commonwealth, began converting all company-owned farms within the state from farrow-to-finish, to wean-to-finish facilities. When the 2012 census occurred, many barns were empty for renovations. This accounts for the large discrepancies in the numbers generated in this report compared to Census values. Additionally, CBW inventory numbers are based on stocking densities of the various facilities. Disease issues including porcine epidemic diarrhea virus (**PEDV**) and porcine reproduction and respiratory syndrome (**PRSS**) likely contribute to CBW values being greater than USDA Census or survey data.

The CBW value for hogs and pigs sold was 33.6% greater than the corresponding value from the 2012 USDA census. Pigs on nursery farms in Virginia likely move to finishing facilities also located in Virginia. Thus, there is the potential for “double counted” pigs sold in the CBW data. If nursery pigs are removed from the CBW data then Hogs and pigs sold is reduced to 636,426, only 12.1% greater than USDA census data for 2012. Shown in Table 2 are CBW generated values for total hogs and pigs, hogs and pigs used for or to be used for breeding, and hogs and pigs sold in various counties in Virginia.

Table 2. County total hogs and pigs, hogs and pigs used or to be used for breeding, and hogs and pigs sold in Virginia.

County:	Total Hogs and Pigs		Hogs and pigs used or to be used for breeding		Other hogs and pigs		Hogs and pigs sold	
	CBW	USDA	CBW	USDA	CBW	USDA	CBW	USDA
Brunswick	9,192	D	0	D	9,192	D	23,577	D
Buckingham	22,240	21,480	0	D	22,240	D	72,439	70,794
Charles City	4,440	D	0	-	4,440	D	11,389	D
Charlotte	14,110	D	0	16	14,112	D	56,270	D
Dinwiddie	1,850	2,130	0	54	1,850	2,076	12,484	2,076
Frederick	2,100	2,417	0	52	2,100	2,237	5,387	573
Greensville	5,100	-	0	-	5,100	-	13,082	-
Halifax	17,693	8,386	3,485	50	14,208	8,336	36,444	31,054
Isle of Wight	64,207	D	0	31	64,207	D	131,899	74,408
Madison	500	724	100	152	400	572	1,026	1,061
Pittsylvania	2,664	3,985	0	209	2,664	3,776	6,833	4,051
Prince Edward	13,514	D	0	38	13,514	D	74,820	D
Southampton	40,381	31,687	0	D	40,381	D	74,464	66,923
Suffolk City	2,460	1,165	0	171	2,460	994	6,310	1,158
Surry	63,000	D	0	D	63,000	D	122,245	D
Sussex	70,104	D	0	D	70,104	D	170,183	D
Virginia Beach City	5,905	D	0	D	5,905	D	0	D

¹ Data as per December 31 of census year.

² Any tabulated item that identifies data reported by a respondent or allows a respondent's data to be accurately estimated or derived was suppressed and coded with a “D”.

Finally, Table 3 summarizes swine numbers for various counties located in the Chesapeake Bay watershed. As noted, less than 20% of the State's hogs and pigs, hogs and pigs used or to be used for breeding, and hogs and pigs sold reside on farms in this area.

Table 3. County total hogs and pigs, hogs and pigs used or to be used for breeding, and hogs and pigs sold in the Chesapeake Bay Watershed (CBW).

County:	Total Hogs and Pigs		Hogs and pigs used or to be used for breeding		Other hogs and pigs		Hogs and pigs sold	
	CBW	USDA	CBW	USDA	CBW	USDA	CBW	USDA
Buckingham	22,240	21,480	0	D	22,240	D	72,439	70,794
Charles City	4,440	D	0	-	4,400	D	11,389	D
Frederick	2,100	2,417	0	52	2,100	2,100	5,387	573
Isle of Wight	11,707	D	0	31	11,707	D	21,820	30,028
Madison	500	724	100	152	400	572	1,026	1,061
Prince Edward	7,794	D	0	38	7,794	D	36,222	D
Suffolk City	2,460	1,165	0	171	2,460	994	6,310	1,158
<i>CBW Total</i>	51,241		100		51,141		162,800	
<i>State Total</i>	339,462		3,585		335,877		843,442	
<i>CBW/State</i>	15.1%		2.8%		15.2%		19.3%	

¹ Data as per December 31 of census year.

² Any tabulated item that identifies data reported by a respondent or allows a respondent's data to be accurately estimated or derived was suppressed and coded with a "D".