

Most Counties Can Absorb Excess Nutrients of Individual Farms

We use the county nutrient analysis to illustrate where onfarm nutrient management or nearby cropland may not be sufficient to absorb manure nutrients. These areas may require alternatives to land application and also represent the areas at greatest risk of manure-based, water quality problems. Excess nutrients at the county level were estimated by summing all the onfarm manure nutrient production and comparing it to the potential assimilative capacity of all farms in the county.

In most counties, there is adequate land to physically apply manure nutrients in excess of the production farm's assimilative capacity. Within-county transfers could use as much as 46 percent of excess manure nitrogen and 51 percent of manure phosphorus, without considering producers' willingness to accept the manure or the costs (or benefits) of using manure on many operations where it is not now used.

In 155 counties (5 percent), the estimated manure nitrogen produced on confined livestock and poultry farms could provide at least half the entire county's total nitrogen need. This includes 68 counties where manure nitrogen levels exceed the assimilative capacity of all the county's crop and pasture land (fig. 17). These counties are located primarily in North Carolina, northern Georgia, Alabama, central Mississippi, and western Arkansas, and California.

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With such a large share of nitrogen available from confined animal manure, it will be increasingly difficult to find land available for manure spreading in the center of these areas.

Many more counties (152) have surplus phosphorus than have surplus nitrogen (fig. 18). This pattern holds for counties where manure phosphorus is at least half

of the county's total need—337 counties for phosphorus relative to 155 for nitrogen. These are areas where it may be difficult to find enough land within the county for spreading manure to avoid phosphorus accumulation in the soil. Areas of particular concern are eastern North Carolina, northern Georgia, northern Alabama, western Arkansas, central California, and western Washington. One implication of the greater

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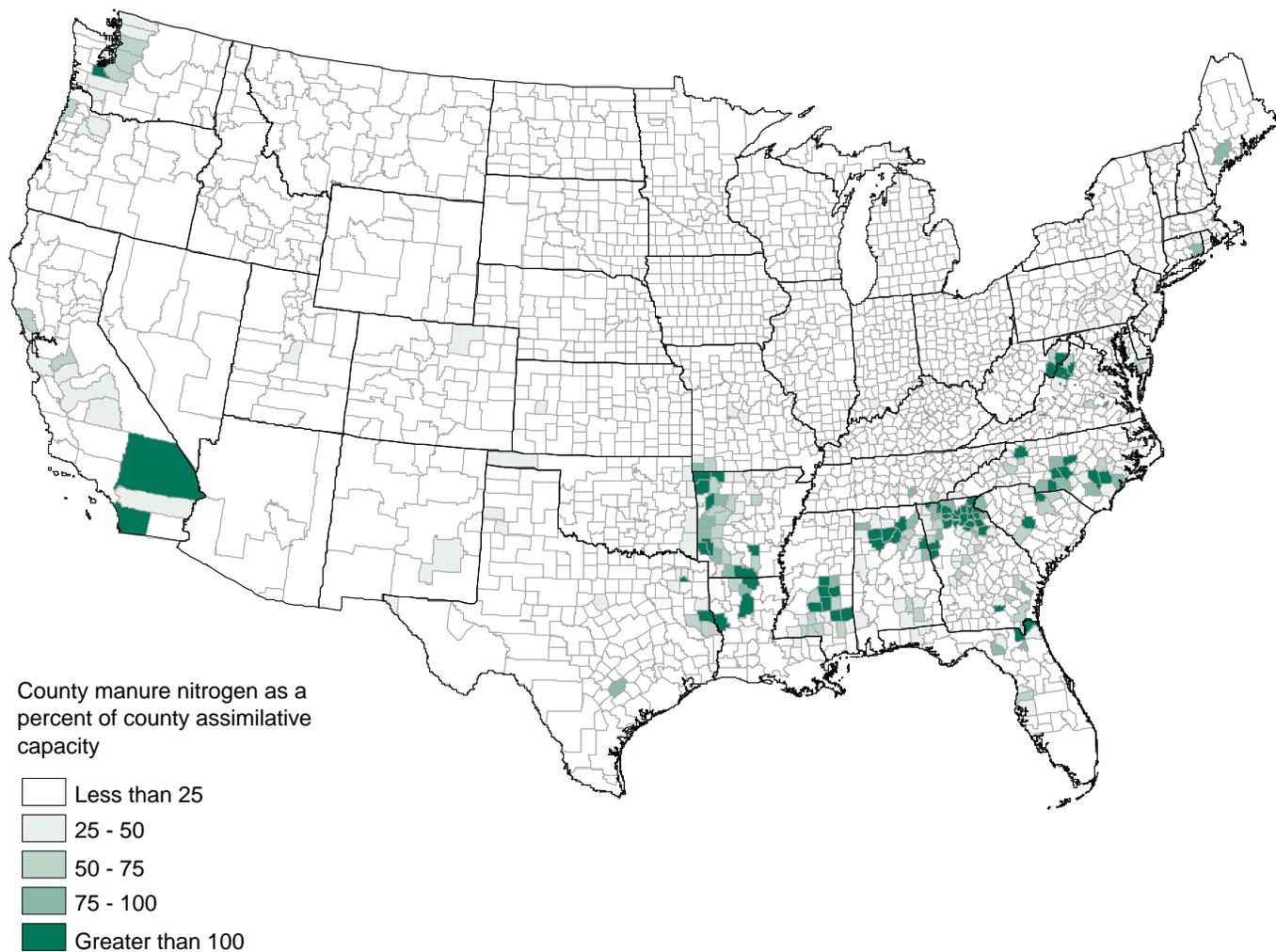
number of counties where manure phosphorus exceeds half the total county's need is that regulations limiting phosphorus applications will be more difficult for producers to meet than those based on nitrogen alone.

Areas with a regional excess of manure nutrients have the greatest need for off-farm alternatives to land application, such as treatment to reduce the volume (composting) or industrial processes that can use manure as a feedstock (fertilizer manufacturing and power generation). The conditions that will define successful technical and viable economic processes to handle manure with centralized treatment facilities need more exploration, as evidenced by the relatively few centralized facilities currently in operation. In addition to the placement of facilities in animal production areas, the location of centralized treatment facilities may influence the size, location, and structure of the animal feeding industry.

Examining counties on the basis of their nutrient-to-assimilative-capacity ratio indicates those counties that produce a disproportionate share of excess nutrients. While only 2 percent of the counties had a nitrogen ratio greater than 1 in 1997, these counties produced 14 percent of the total recoverable manure nitrogen and 20 percent of the excess manure nitrogen (table 4). The 5 percent of counties with a phosphorus ratio greater than 1 produced 19 percent of the recoverable phosphorus and 23 percent of the Nation's total excess phosphorus in 1997. Alternatively, counties with nitrogen ratios of less than 0.25 account for 90 percent of all counties, and while individual farms may need

Figure 17

Excess manure nitrogen as a share of county assimilative capacity, 1997

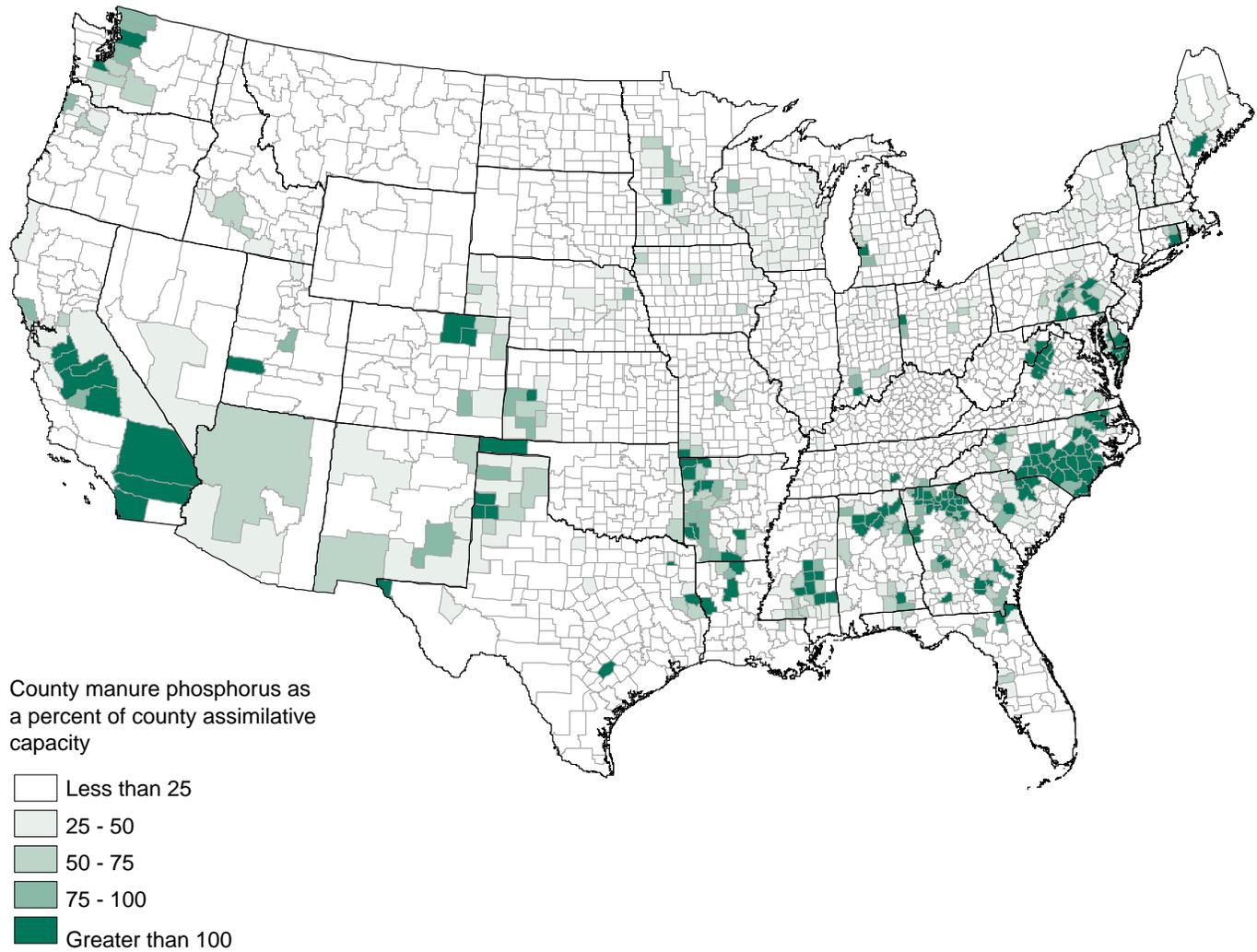


Some counties are combined to meet disclosure criteria.

Source: Economic Research Service, USDA.

Figure 18

Excess manure phosphorus as a share of county assimilative capacity, 1997



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Source: Economic Research Service, USDA.

Table 4—County-level manure nutrients from confined animals relative to the assimilative capacity of crop and pastureland, 1997

County ratio ¹	Counties		Quantity of recoverable nutrient	Quantity of excess nutrient
	<i>Number</i>	<i>Percent</i>	----- <i>Percent</i> -----	
Nitrogen:				
Greater than 1.0	68	2	14	20
0.5 to 1.0	87	3	10	14
0.25 to 0.5	140	5	18	21
Less than 0.25	2,775	90	58	45
Total	3,070	100	100	100
Phosphorus:				
Greater than 1.0	152	5	19	23
0.5 to 1.0	185	6	10	12
0.25 to 0.5	382	12	13	10
Less than 0.25	2,351	77	58	55
Total	3,070	100	100	100

¹ A county ratio greater than 1 implies that the recoverable manure nutrients will exceed the nutrient needs of all the county's crop and pastureland.

Source: Economic Research Service, USDA.

improvements in manure management, there should be adequate land to apply manure nitrogen (likely at a higher cost). Phosphorus ratios of less than 0.25 account for most counties, 77 percent, but clearly more areas will have difficulty finding land on which to apply manure phosphorus.

Figures 17 and 18 indicate areas where nutrients in regional excess may trigger manure management requirements for animal operations of any size. The greater the amount of excess nutrients in an area, the

greater the risk of water quality impairment. The Unified Strategy and TMDL regulations require nutrient management for any confined feeding operation if excess nutrients are linked to water quality impairments. While water quality problems may occur in any county where manure is improperly managed, figures 17 and 18 indicate areas of greater water quality risk from excess manure nutrient production relative to the potential land on which to apply manure.