

## 4 Perceived Risk and Experienced Hazard

Perceptions of risk are subjective assessments people use to understand and cope with danger and uncertainties in life. Risk assessments vary based on the problem identified, perceptions of probability of loss, type and accumulation of exposure to the risk, resources available to address risk, and involve both affective and reasoning responses (Slovic 2009). Farmers are continually assessing and managing risk in their agricultural enterprises. These risks include production risks (yield loss), price/market volatility, institutional change (regulations), and social norm expectations. When experiences are vivid and easy to recall, perceptions of risk and concern about impacts are often heightened. Experiences with hazards such as weed pressure, crop disease, extreme rains, heat stress, drought and saturated soils, soil erosion, nutrient and sediment loss into streams and rivers, and greenhouse gas emissions can lead to concern and judgments about whether the hazard is a problem or not.

The survey provided a list of potential impacts of climate change that climatologists predict for the Corn Belt region. Farmer concerns regarding climate-related risks were measured through a four-point scale ranging from “not concerned” (1) to “very concerned” (4). The survey also asked farmers if they had experienced any of a series of extreme weather events (e.g., floods) over the previous five years.

**Table 3. Concern<sup>1</sup> about various climate-related threats to farm operations, percent concerned or very concerned (n = 4,778)**

Watershed (HUC6)	Q5A <sup>a</sup>	Q5B <sup>b</sup>	Q5C <sup>c</sup>	Q5D <sup>d</sup>	Q5E <sup>e</sup>	Q5F <sup>f</sup>	Q5G <sup>g</sup>	Q5H <sup>h</sup>	Q5I <sup>i</sup>	Q5J <sup>j</sup>
Weighted Full Sample .....	25.6	58.5	48.8	49.8	50.4	49.6	41.7	52.3	32.8	37.6
Loup.....	14.4	67.6	55.9	48.7	59.2	34.2	19.1	51.4	24.3	30.9
Middle Platte.....	23.5	50.0	48.0	37.7	46.6	38.7	32.0	47.0	22.8	20.4
Elkhorn .....	17.9	63.1	40.6	44.4	46.3	37.4	27.6	55.3	24.7	29.8
Big Blue .....	7.3	69.9	51.7	42.4	53.9	31.1	13.6	60.7	23.6	34.5
Lower Platte.....	19.6	70.7	50.6	47.8	51.9	42.4	24.5	65.2	30.8	36.7
Big Sioux .....	24.3	54.1	47.5	49.4	50.3	37.0	37.9	45.0	31.9	34.3
Missouri-Little Sioux .....	22.4	63.9	50.5	53.5	56.8	38.7	29.1	53.6	27.7	30.0
Missouri-Nishnabotna.....	24.6	63.9	55.0	53.7	55.7	52.8	41.1	61.3	30.5	48.9
Minnesota .....	21.9	58.4	45.1	49.4	49.6	46.4	41.6	45.5	29.9	24.7
Des Moines.....	27.3	56.3	52.0	53.5	55.3	51.4	48.4	52.3	35.4	35.2
Iowa.....	19.6	51.4	50.0	57.0	54.5	49.4	40.8	46.5	24.6	38.8
Black Root.....	12.7	55.7	38.4	46.2	46.6	36.6	24.4	43.6	25.7	33.9
Skunk Wapsipicon .....	28.1	52.4	50.2	51.7	56.5	50.9	42.4	47.8	38.5	48.0
Maquoketa Plum.....	19.1	44.5	37.7	48.0	49.0	58.5	28.6	40.6	34.3	44.0
Lower Illinois.....	31.7	63.2	51.5	55.9	47.7	54.9	50.4	62.0	36.7	38.4
Rock .....	28.1	52.6	41.6	48.8	47.1	50.2	44.9	44.0	31.9	34.1
Kaskaskia .....	35.1	66.8	66.2	50.0	47.9	62.2	56.5	63.0	38.5	54.2
Upper Illinois.....	34.1	51.3	44.4	46.8	42.1	49.6	49.1	52.4	33.5	30.2
Wabash .....	34.8	59.7	53.0	42.4	48.3	58.4	56.4	60.3	42.0	43.1
Patoka-White.....	43.2	68.2	48.2	44.9	43.2	67.2	56.6	59.9	39.4	50.0
Southeastern Lake Michigan...	17.4	58.8	43.9	48.0	46.1	43.6	40.0	46.0	22.3	29.5
Western Lake Erie.....	41.6	62.8	52.4	50.8	45.0	71.9	64.4	55.4	54.0	49.8

<sup>1</sup>4-point concern scale: not concerned, somewhat concerned, concerned, very concerned.

<sup>a</sup>Increased flooding.

<sup>b</sup>Longer dry periods and drought.

<sup>c</sup>Increased weed pressure.

<sup>d</sup>Increased insect pressure.

<sup>e</sup>Higher incidence of crop disease.

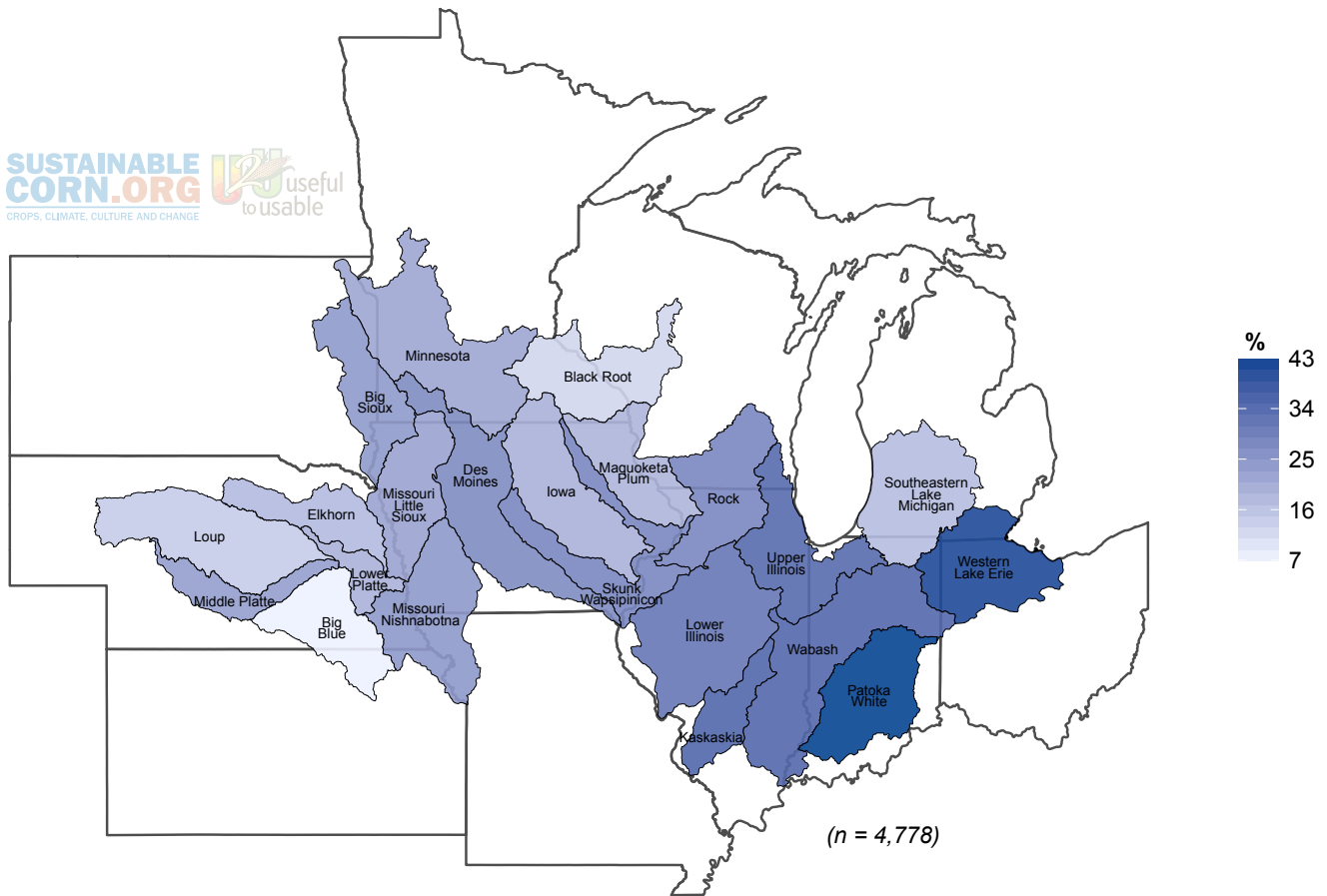
<sup>f</sup>More frequent extreme rains.

<sup>g</sup>Increases in saturated soils and ponded water.

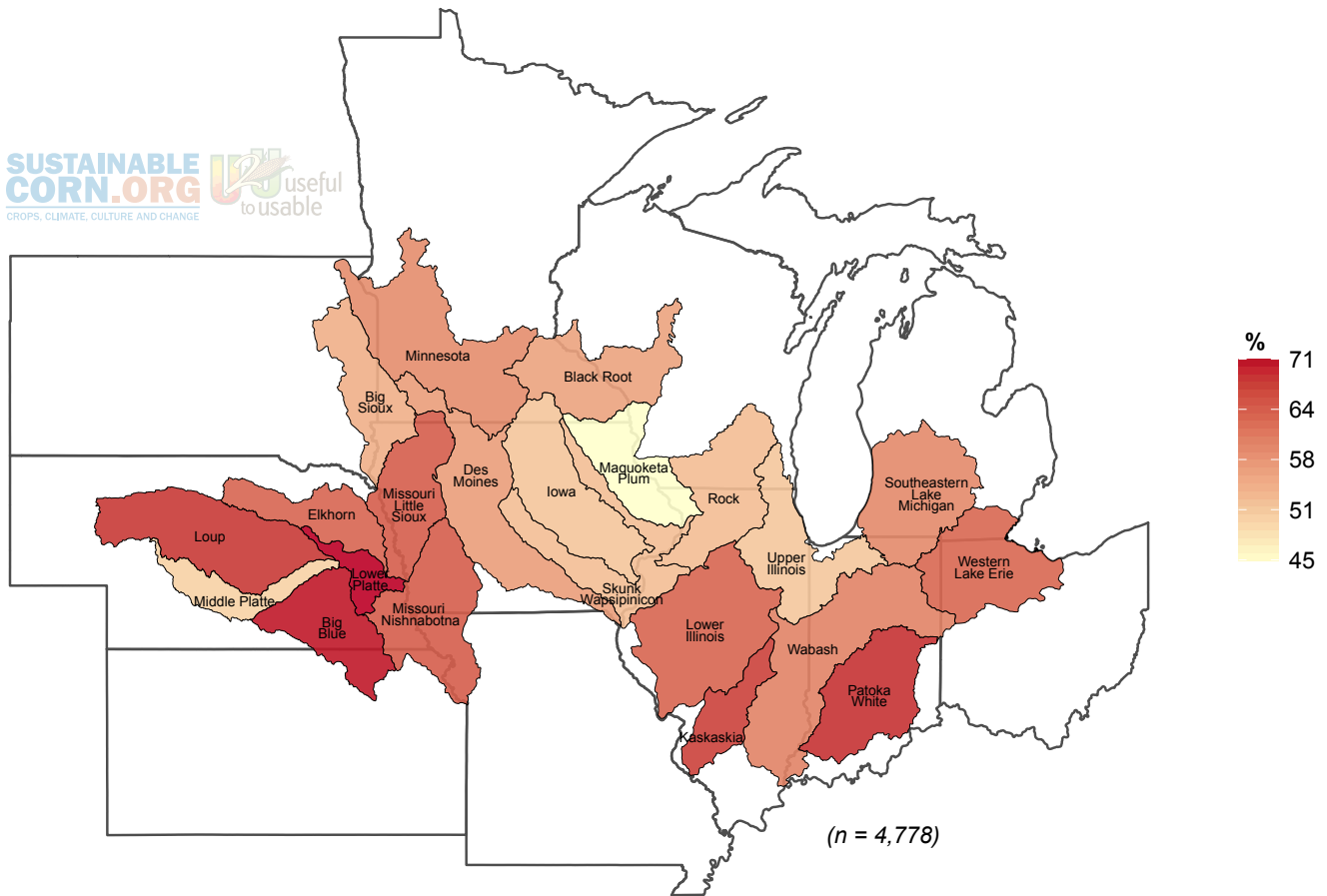
<sup>h</sup>Increased heat stress on crops.

<sup>i</sup>Increased loss of nutrients into waterways.

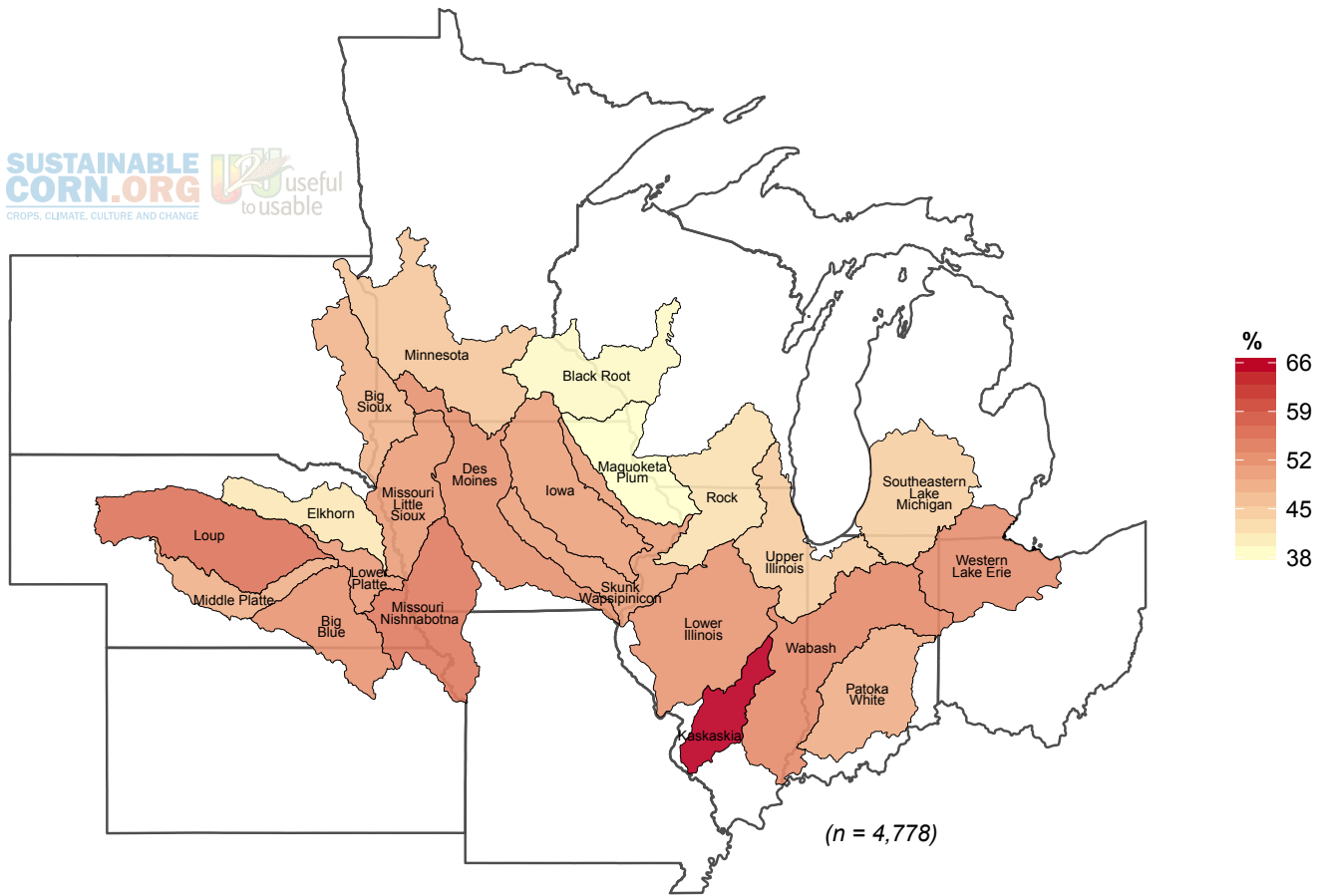
<sup>j</sup>Increased soil erosion.



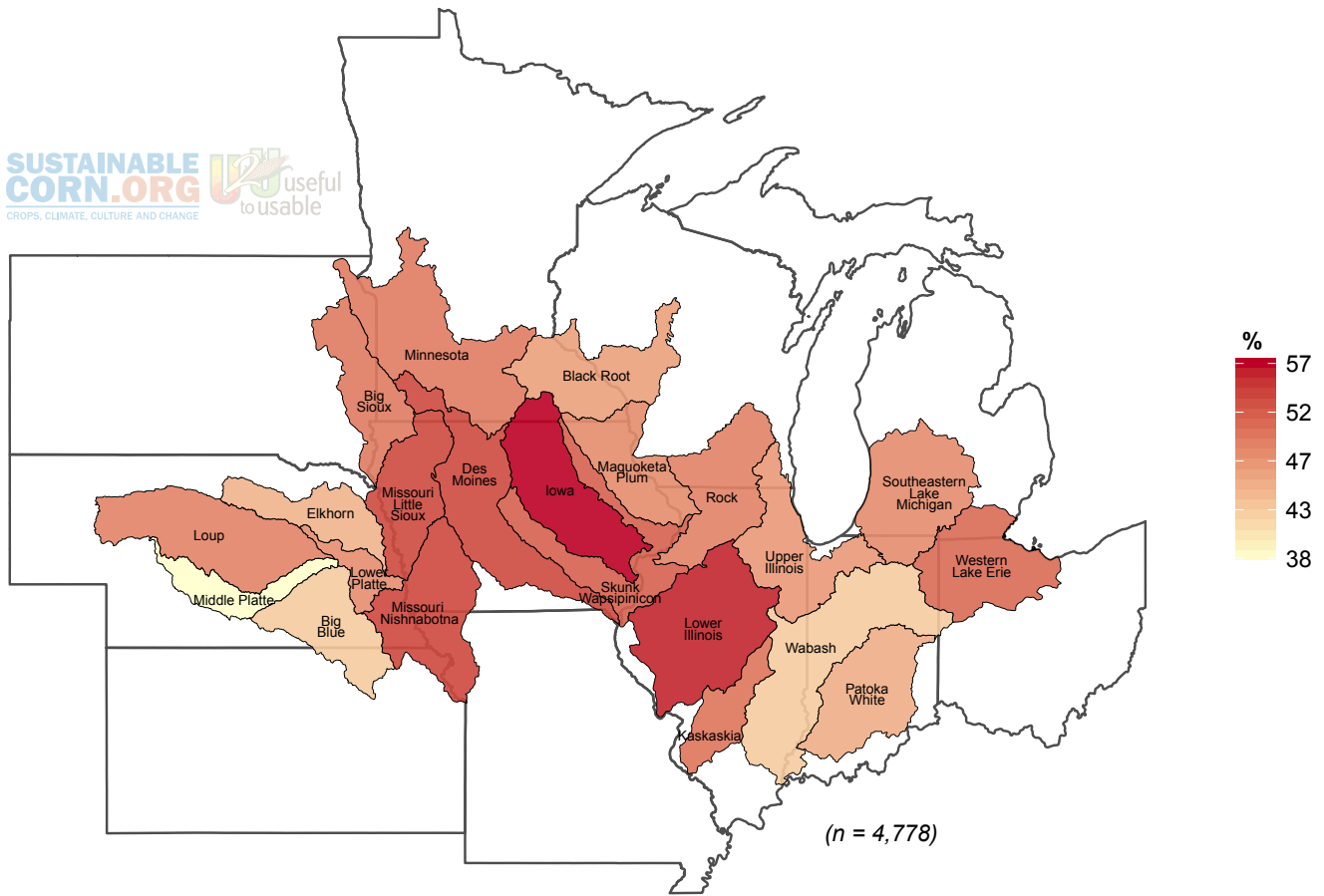
Map 21. Increased flooding (Q5A), percent concerned or very concerned.



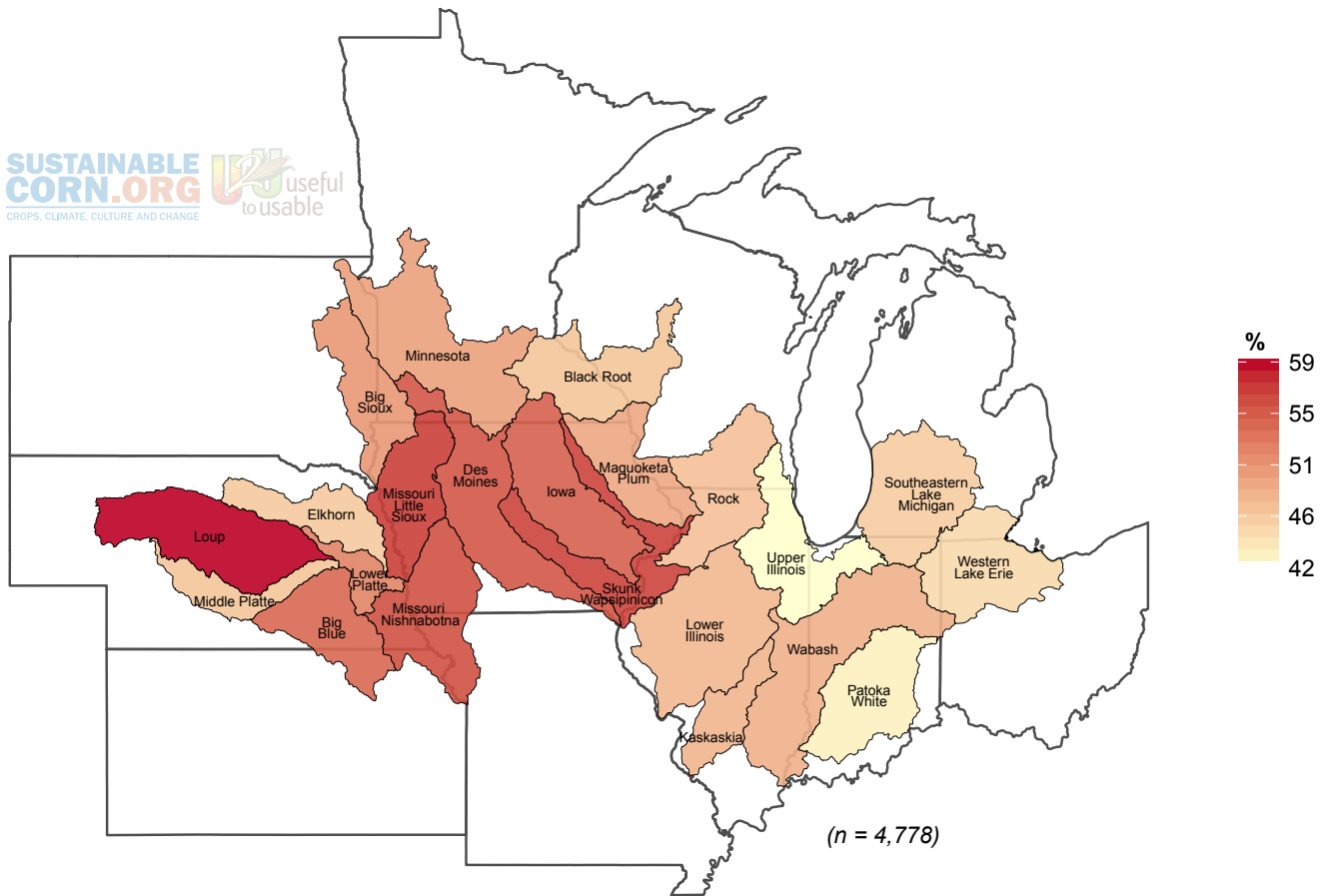
Map 22. Longer dry periods and drought (Q5B), percent concerned or very concerned.



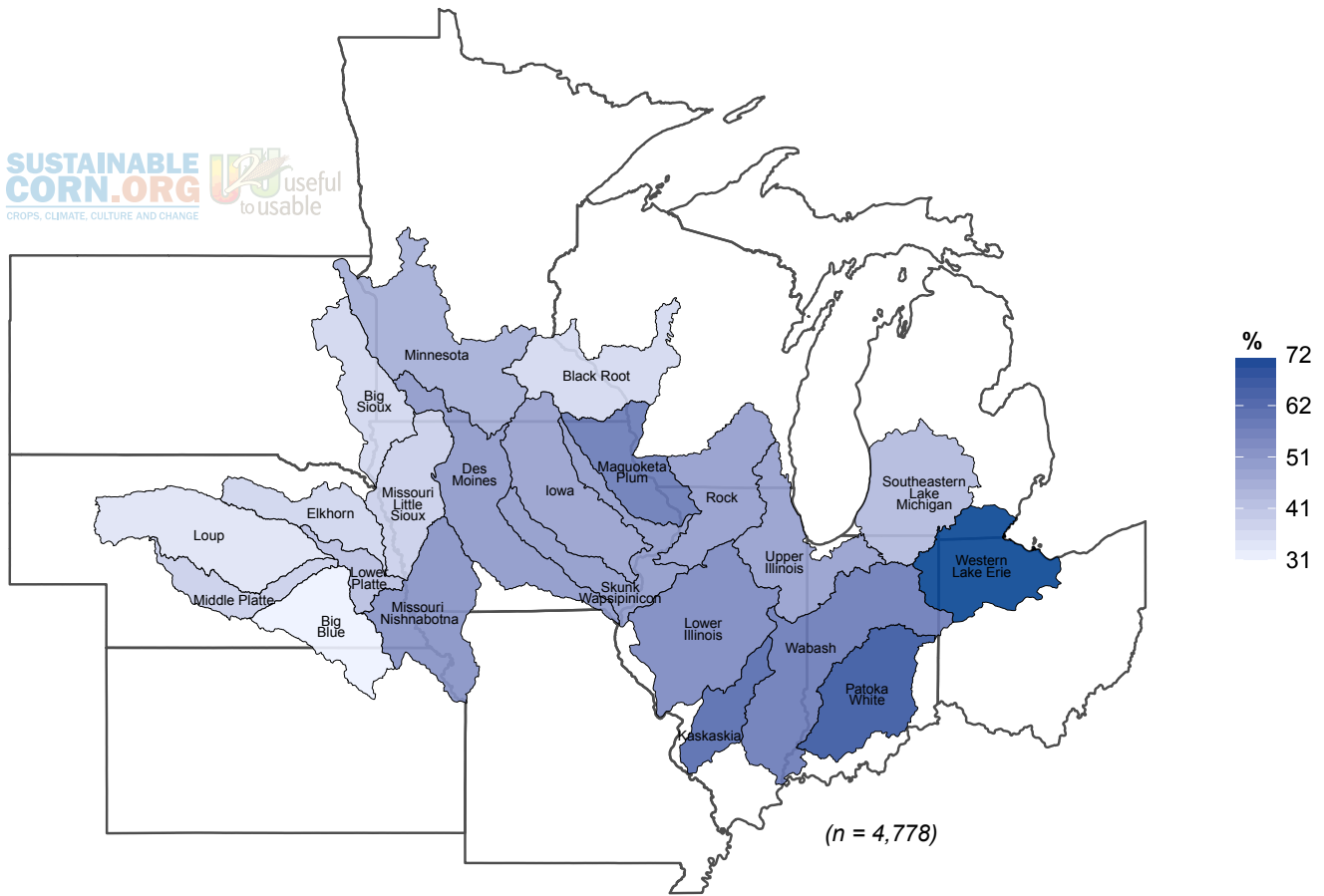
Map 23. Increased weed pressure (Q5C), percent concerned or very concerned.



**Map 24. Increased insect pressure (Q5D), percent concerned or very concerned.**

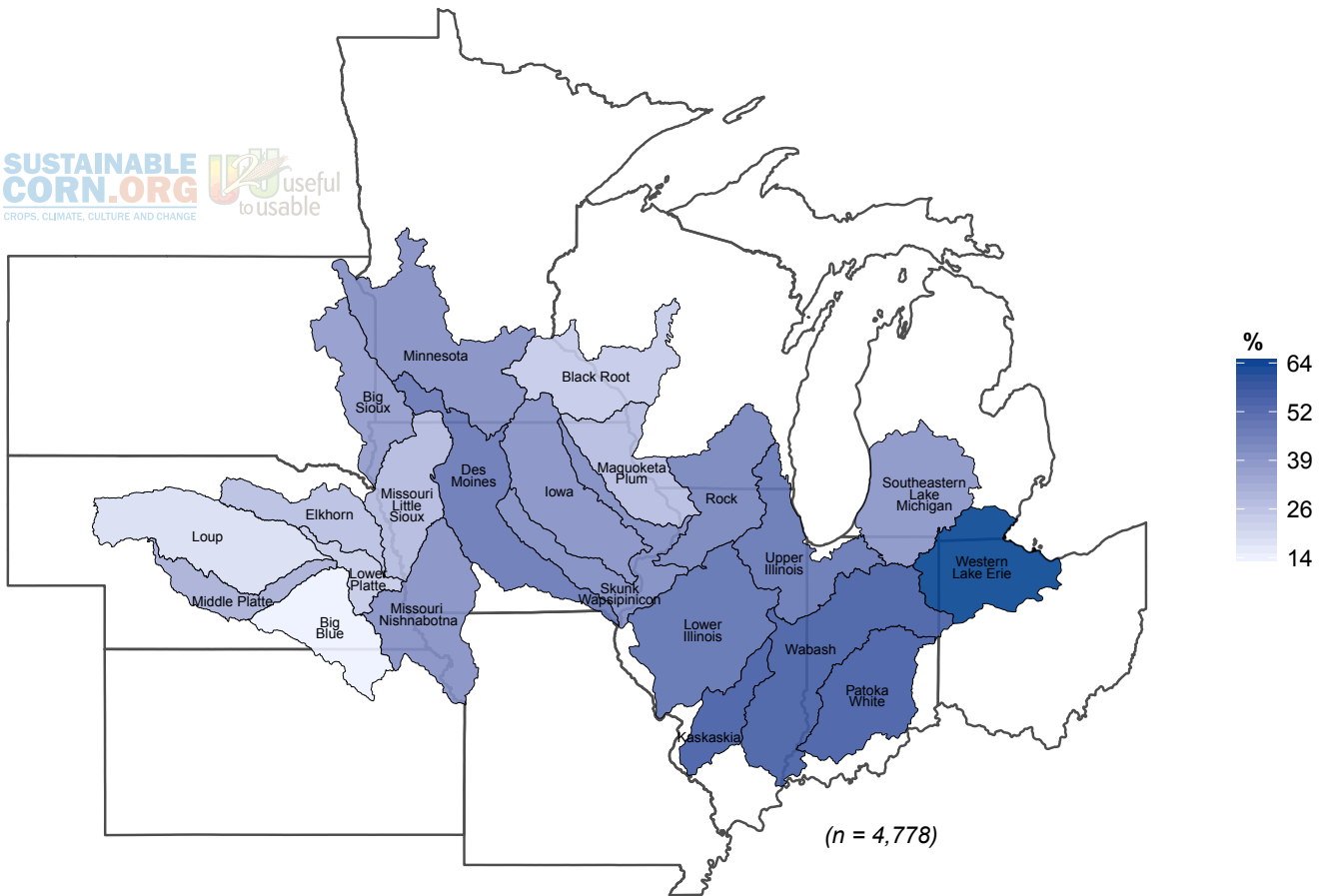


Map 25. Higher incidence of crop disease (Q5E), percent concerned or very concerned.

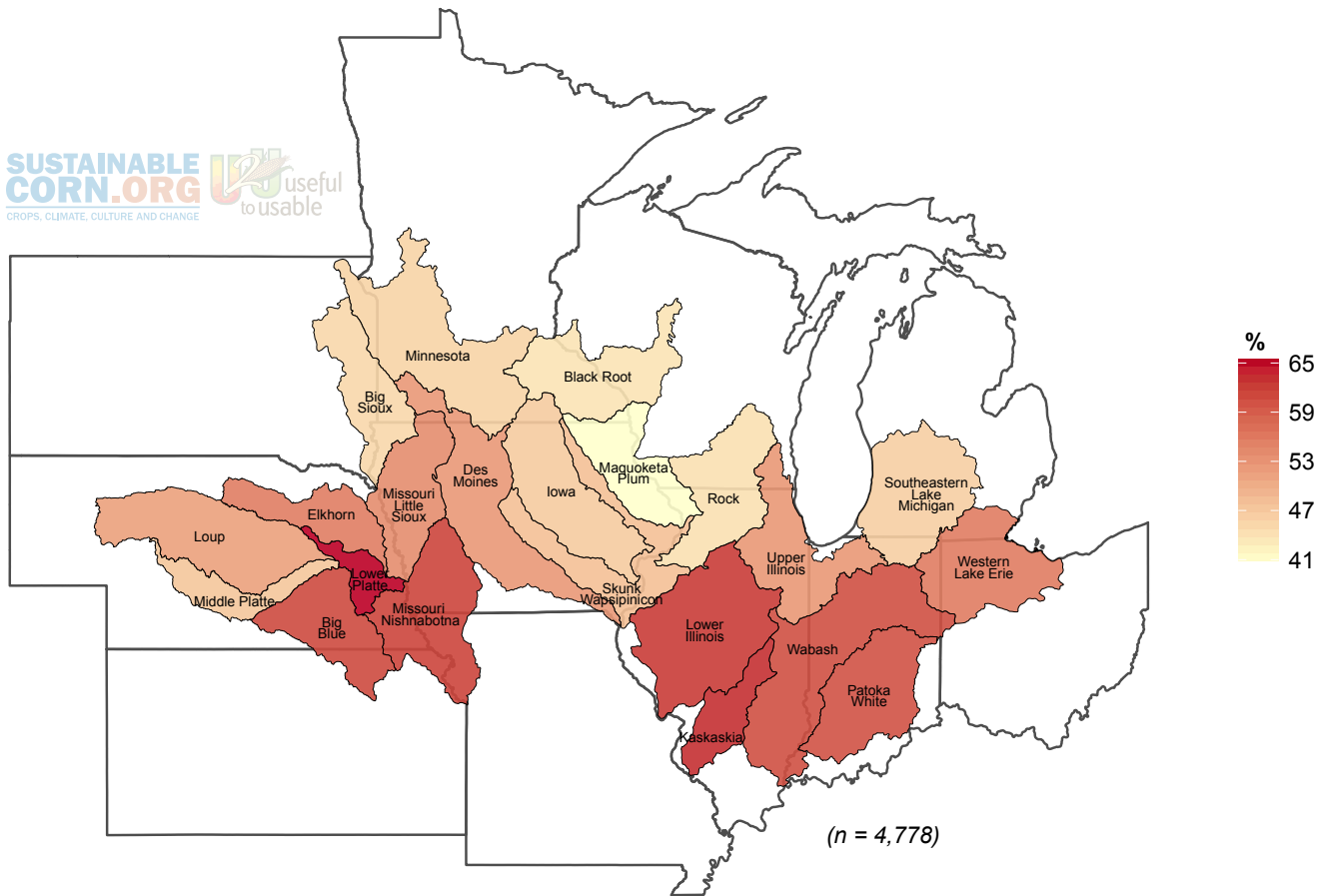


Map 26. More frequent extreme rains (Q5F), percent concerned or very concerned.

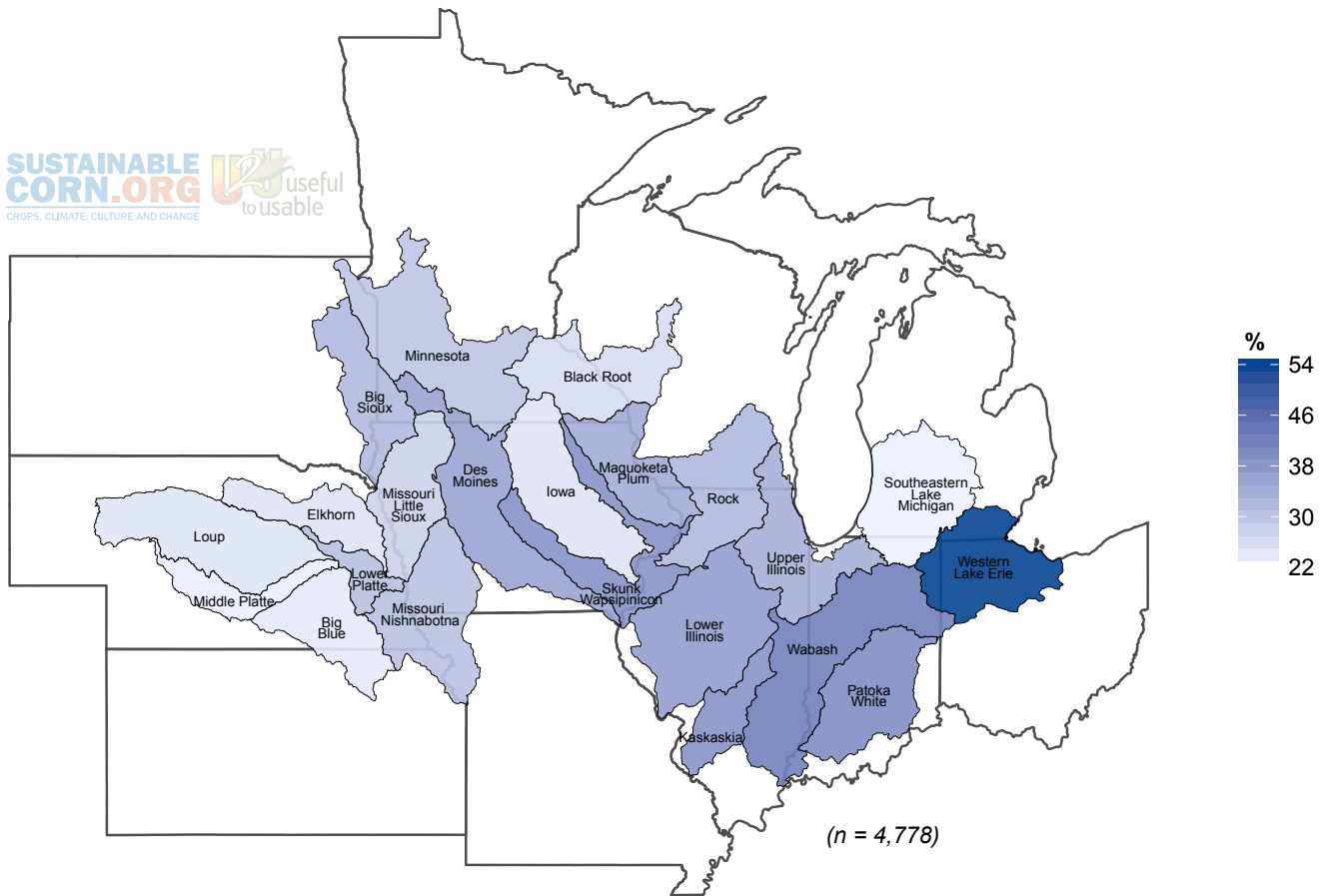




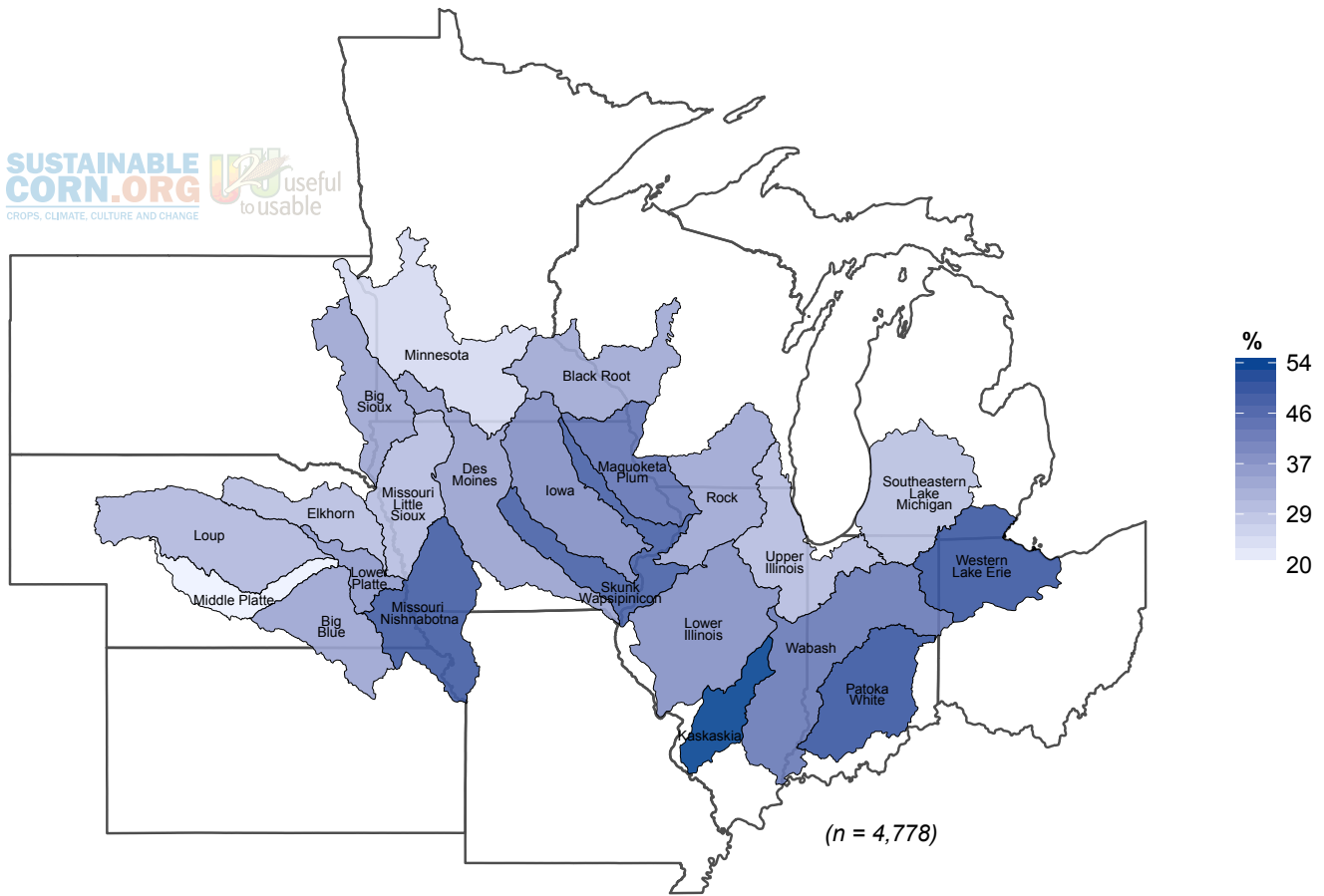
Map 27. Increases in saturated soils and ponded water (Q5G), percent concerned or very concerned.



Map 28. Increased heat stress on crops (Q5H), percent concerned or very concerned.



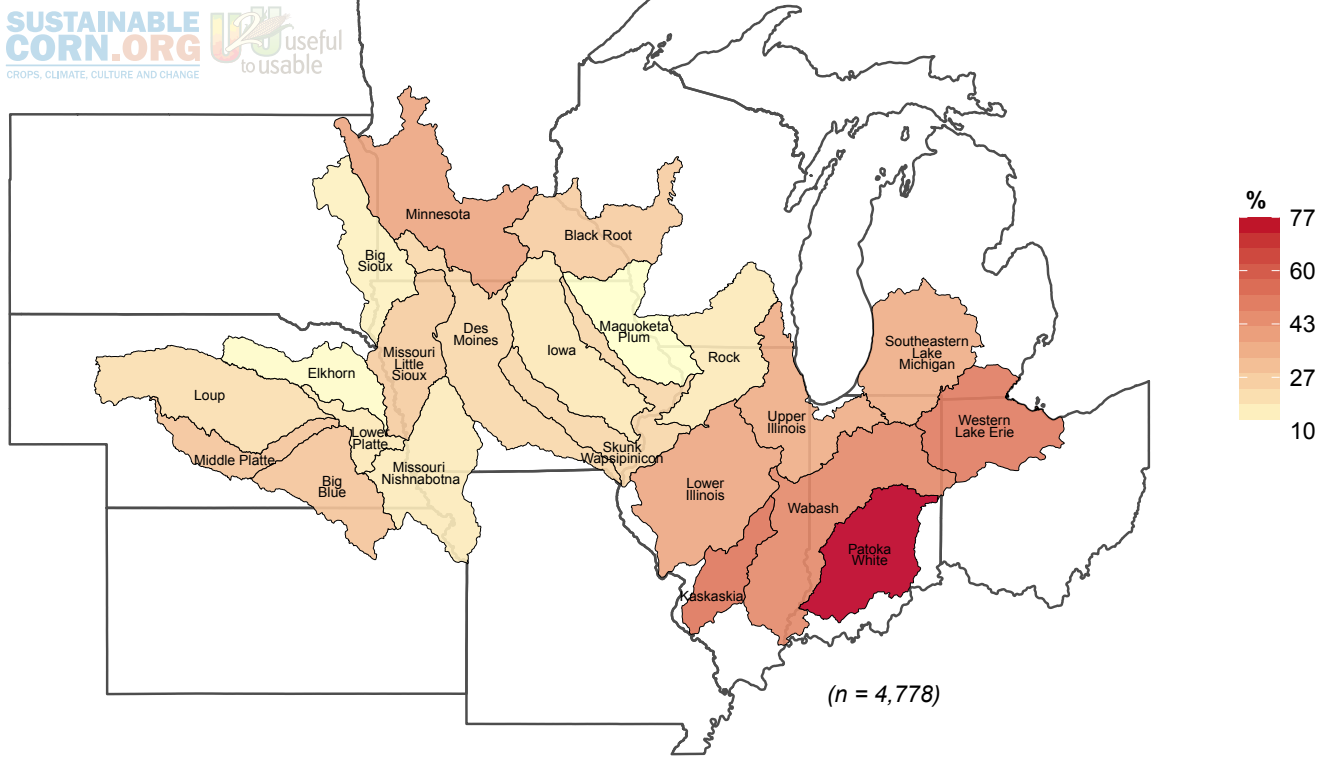
Map 29. Increased loss of nutrients into waterways (Q5I), percent concerned or very concerned.



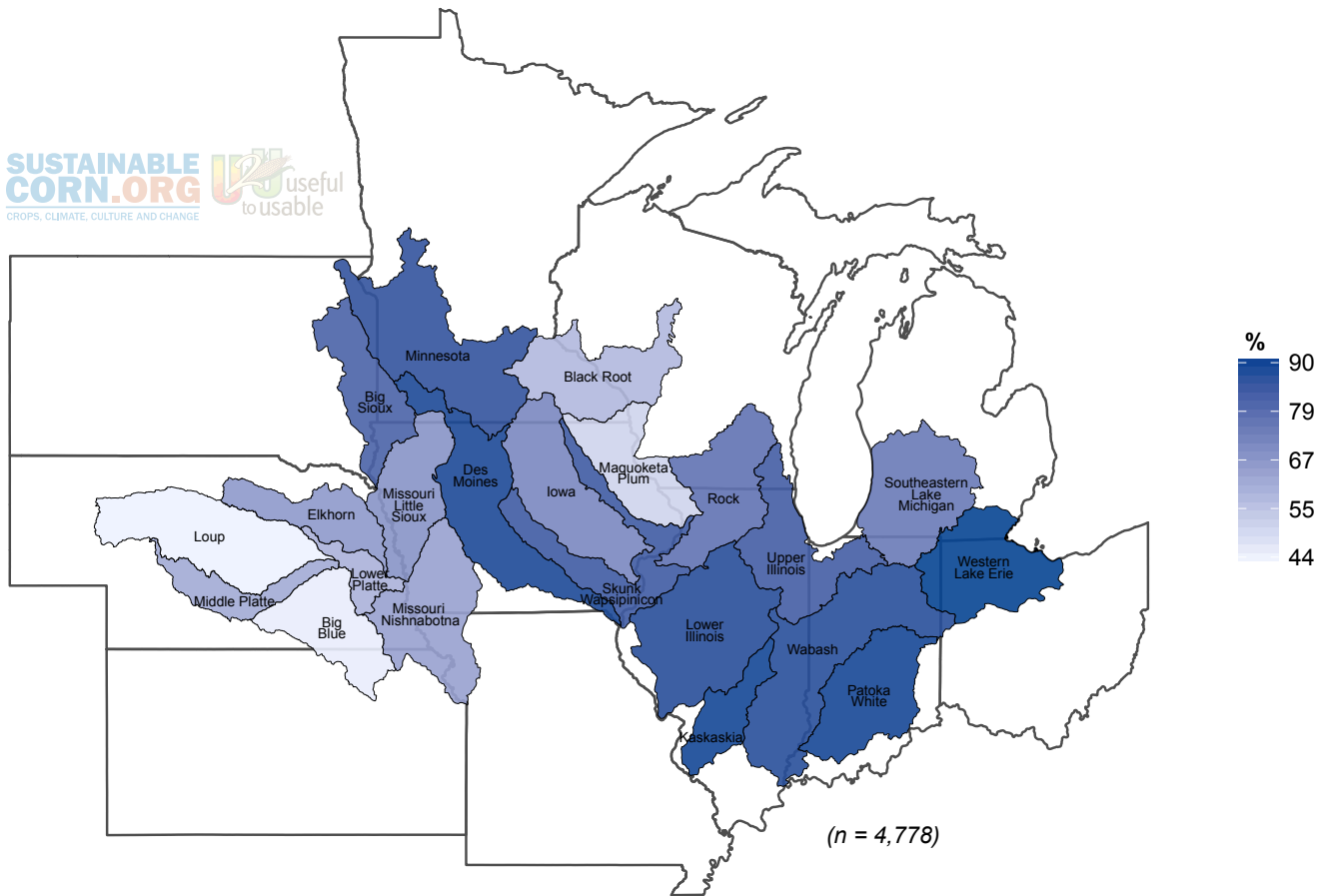
Map 30. Increased soil erosion (Q5J), percent concerned or very concerned.

**Table 4. Experience with various hazards on land farmed, last five years (2007–2011), percent (n = 4,778)**

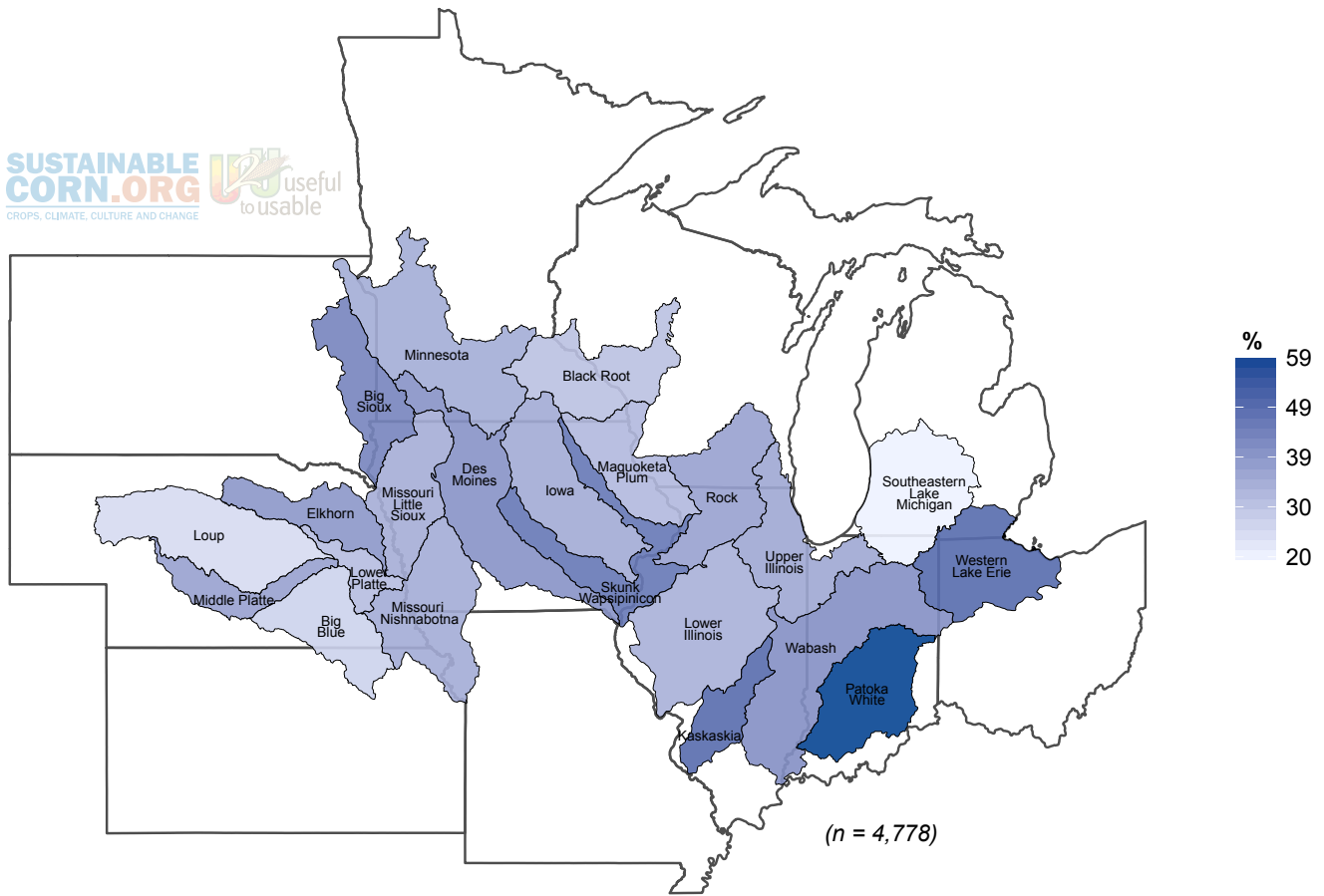
<b>Watershed (HUC6)</b>	<b>Drought</b>	<b>Saturated Soils</b>	<b>Flood</b>	<b>Erosion</b>
Weighted Full Sample .....	29.5	75.9	37.1	26.5
Loup.....	20.3	43.8	24.5	15.4
Middle Platte.....	28.0	61.7	36.9	10.3
Elkhorn .....	11.0	66.3	39.3	16.9
Big Blue .....	27.9	45.0	26.3	17.1
Lower Platte.....	17.0	59.8	30.8	36.8
Big Sioux .....	14.2	81.3	43.3	24.4
Missouri-Little Sioux .....	25.9	67.7	34.1	22.9
Missouri-Nishnabotna.....	16.2	64.1	34.5	37.3
Minnesota .....	37.8	85.7	34.5	14.0
Des Moines.....	22.3	88.8	40.1	26.9
Iowa .....	17.2	71.0	34.8	23.2
Black Root .....	25.6	58.0	30.0	15.4
Skunk Wapsipinicon .....	22.7	83.3	46.5	45.2
Maquoketa Plum.....	10.1	51.2	31.7	35.3
Lower Illinois.....	37.4	87.4	33.6	32.3
Rock .....	16.7	76.7	37.0	23.0
Kaskaskia .....	52.6	89.5	49.2	47.3
Upper Illinois.....	35.5	82.7	35.5	21.2
Wabash .....	46.8	87.2	40.9	31.8
Patoka-White .....	76.8	89.3	59.3	38.9
Southeastern Lake Michigan .....	35.7	74.6	19.7	17.0
Western Lake Erie .....	50.8	90.4	49.4	25.0



Map 31. Experienced significant drought over the past five years (2007–2011), percent.

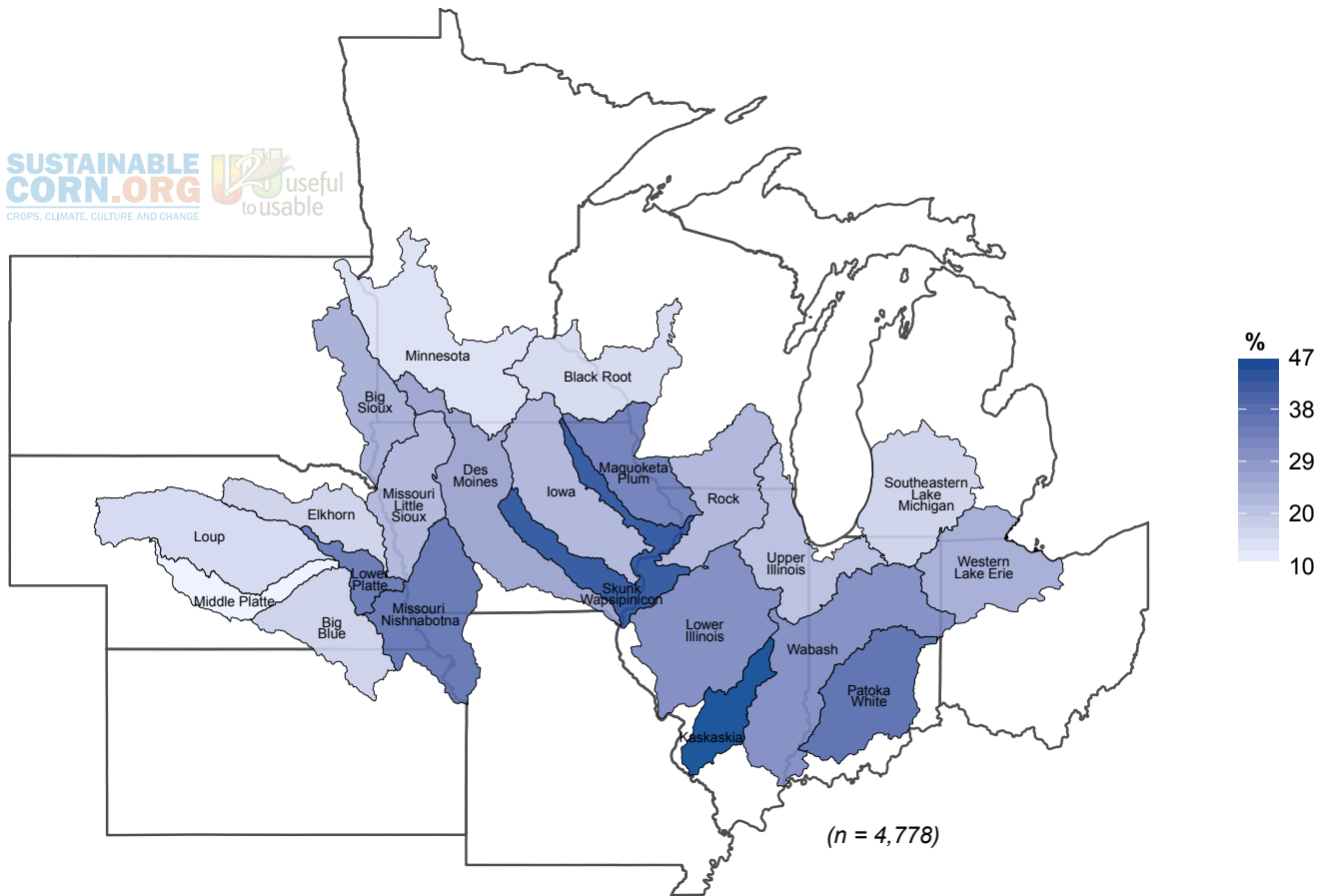


**Map 32. Experienced significant problems with saturated soils or ponding over the past five years (2007–2011), percent.**



Map 33. Experienced significant flooding over the past five years (2007–2011), percent.



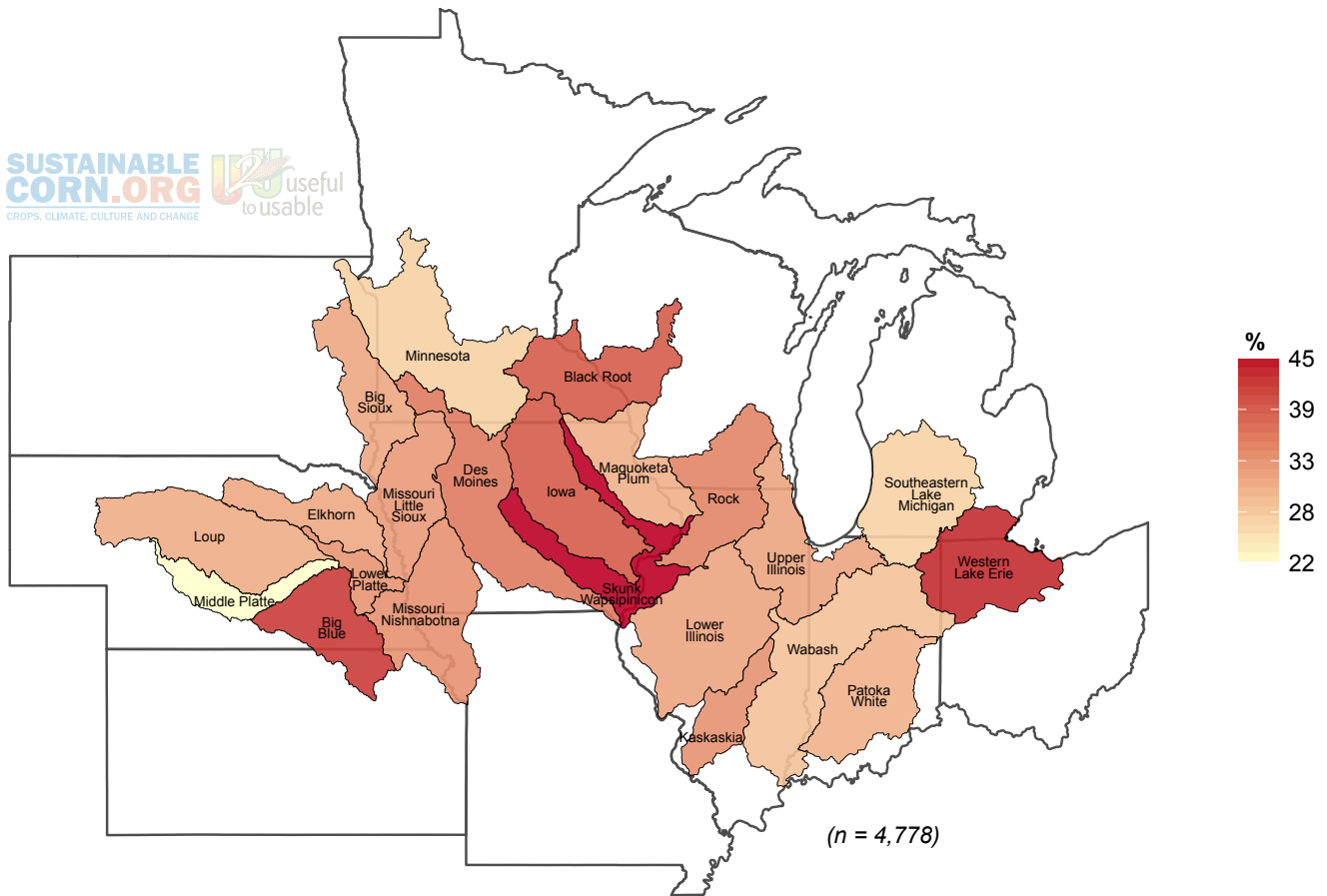


Map 34. Experienced significant erosion on at least some of my land over the past five years (2007–2011), percent.

**Table 5. Awareness of negative impacts of nutrients and sediment from agriculture on water quality (n = 4,778)**

Watershed (HUC6)	Percent Agree <sup>1</sup>
Full Weighted Sample .....	33.7
Loup.....	30.6
Middle Platte.....	22.2
Elkhorn .....	31.2
Big Blue .....	41.9
Lower Platte.....	33.3
Big Sioux .....	31.3
Missouri-Little Sioux .....	32.7
Missouri-Nishnabotna.....	33.6
Minnesota .....	27.0
Des Moines.....	36.0
Iowa.....	39.0
Black Root .....	39.0
Skunk Wapsipinicon .....	44.7
Maquoketa Plum.....	30.3
Lower Illinois.....	31.6
Rock .....	34.8
Kaskaskia .....	33.5
Upper Illinois.....	31.5
Wabash .....	28.6
Patoka-White.....	30.2
Southeastern Lake Michigan.....	26.9
Western Lake Erie .....	42.9

<sup>1</sup>Includes those respondents who either agree or strongly agree on a 5-point scale.



**Map 35. Nutrients and sediment from agriculture have negative impacts on water quality in my state, percent agree or strongly agree.**

