

**PENNSYLVANIA GAME COMMISSION  
BUREAU OF WILDLIFE MANAGEMENT  
PROJECT ANNUAL JOB REPORT**

**PROJECT CODE NO.:** 06230

**TITLE:** Statewide Wildlife Food Survey

**JOB CODE NO.:** 23000

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**PERIOD COVERED:** 1 July 2014 to 30 June 2015

**COOPERATING AGENCIES:** Pennsylvania Game Commission; Department of Conservation and Natural Resources' Bureau of State Parks and Bureau of Forestry

**WORK LOCATION(S):** Statewide

**PREPARED BY:** Mark Ternent

**DATE:** 22 June 2015

**ABSTRACT** Employees of the Pennsylvania Game Commission and Department of Conservation and Natural Resources Bureau of Forestry were asked to rate the abundance and productivity of 28 fruit and nut bearing plants during 2014. Three hundred seventeen surveys were returned. Respondents had an average of 12.8 years working in the area they reported about, and 71% said they spent more than half of their work-time outdoors. Eight foods had productivity ratings that were lower than in 2013, of which 6 are typically late summer to early fall-foods for wildlife (hickory, black cherry, beech, apples, hawthorn, and corn). Seventeen foods had productivity ratings that were similar to 2013, and 3 foods were rated higher (oaks and grapes). In fact, of all 28 foods surveyed, oaks had the greatest improvement from the previous year, with red oak species producing slightly better than white oak species. Nearly all soft mast species except for blackberry had crops that were similar to the previous year. Taking into account all available foods, overall food conditions were rated as similar to slightly better than in 2013. Fifty-three percent of respondents rated overall food conditions as average; 32% considered them above average, and 8% thought they were excellent. Few people (6%) rated overall conditions as less than average. This distribution was most similar to ratings reported in 2007, 2008 and 2013.

## **OBJECTIVE**

To describe the availability of wildlife foods during 2014 and monitor annual variation in food conditions.

## **METHODS**

A 2-page survey was electronically sent to employees of the Pennsylvania Game Commission (PGC) and the Pennsylvania Department of Conservation and Natural Resources (DCNR) Bureau of Forestry who routinely work outdoors. Recipients included foresters, Wildlife Conservation Officers, land managers, biologists, and surveyors. People received the survey by e-mail during the week of 8 September and were asked to return completed surveys using e-mail by 3 October.

The survey contained a list of 28 plants that provide food for wildlife in Pennsylvania. We asked recipients to rate the abundance of each plant in their primary work area (e.g., scarce or absent, uncommon, common, abundant, or very abundant) and the amount of food each produced during 2013 (none or almost none, below average, average, above average, or excellent; Noyce and Garshelis 1997). At the end of the survey, respondents were asked to select 1 rating that best described overall food conditions (excellent, above average, average, below average, or poor).

Respondents also were asked to record how many years they had worked in the area they were reporting about, how much of their time was spent in the field (almost daily, more than half, about half, less than half, or almost never), the level of rainfall (excellent, above average, average, below average, or poor), and any additional comments.

Survey results were entered into a database and mean productivity ratings were calculated by county using the following values for each response: scarce or absent = 0, uncommon = 1, common = 2, abundant = 3, and very abundant = 4. Maps depicting areas of poor (mean ratings < 1.5), average (mean ratings  $\geq 1.5$  and < 2.5), and above average (mean ratings  $\geq 2.5$ ) production were generated for 14 foods considered to be universally important to wildlife in Pennsylvania.

## **RESULTS**

### **Respondents**

We received 317 completed surveys; 272 (86%) were from PGC and 45 (14%) were from DCNR employees. Respondents had an average of 12.8 years working in the county they were reporting on, and 71% spent more than half of their work-time outdoors. Many (170 of 310) reported being outdoors almost daily.

When asked about timing of the survey, 83% indicated that late September was good for judging nut and berry production of most plants listed on the survey. Ten percent suggested the survey be returned 1 to 2 weeks later.

The mean number of surveys received per county was 4.7, with all counties being represented. Sixty-three counties had more than 1 survey.

### **Precipitation**

Twenty-three percent considered rainfall average in 2014 (31% in 2013), 49% considered it above average (same in 2013), and 14% considered it excellent (9% in 2013; Fig. 1). This distribution was most comparable to results in 2006 and 2013. Despite being rated as above-

average, several respondents did comment that rainfall during 2014 may actually have been excessive and detrimental to fruit quality.

### **Food Production**

*Overall Food Conditions.*--Ratings of overall food conditions were slightly lower than in 2013, with more average, and fewer above-average, ratings (Fig. 2). However, conditions were still good; 53% of respondents rated overall food conditions as average; 32% considered them above average, and 8% thought they were excellent. Few people (6%) rated overall conditions as less than average. The distribution of overall food ratings in 2014 was most similar to conditions reported in 2007 and 2013. The geographic distribution of how overall food conditions were rated is provided in Figure 3.

*Individual Food Scores.*--Eighty-two percent of the foods listed on the survey were rated as common to abundant. Holly, gooseberry, arrow-wood, Hercules club, and cucumber tree were rated as uncommon. Assessments of abundance were identical to those reported in 2013.

Eight foods had productivity ratings that were lower than in 2013, of which 6 are typically late summer to early fall-foods for wildlife (hickory, black cherry, beech, apples, hawthorn, and corn). Seventeen foods had productivity ratings that were similar to 2013, and 3 foods were rated higher (Fig. 4). Acorns, which are the most important fall food for wildlife in Pennsylvania, showed the greatest improvement from the previous year, with red oak species producing slightly better than white oak species. Nearly all soft mast species except for blackberry had crops that were similar to the previous year (Fig. 4).

The distribution of productivity ratings for 14 primary foods is provided in Figures 5, 6, 7, 8, 9, 10, and 11. Food species with similar ripening or physical characteristics are paired together to simplify interpretations (Figs. 5, 6, 7, 8, 9, 10, 11).

### **RECOMMENDATIONS**

1. This survey should be distributed again in mid to late September 2015.
2. The return date for surveys should continue to be early October.

### **LITERATURE CITED**

Noyce, K. V., and D. L. Garshelis. 1997. Influence of natural food abundance on black bear harvests in Minnesota. *Journal of Wildlife Management* 61:1067–1074.

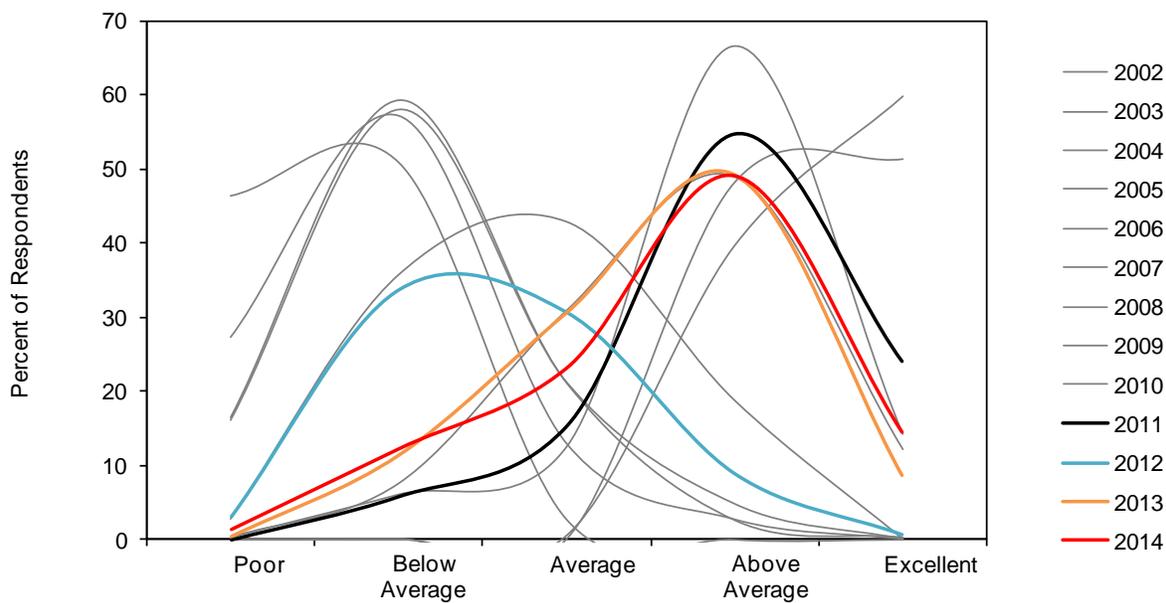


Figure 1. Precipitation (rainfall) ratings, 2002-2014.

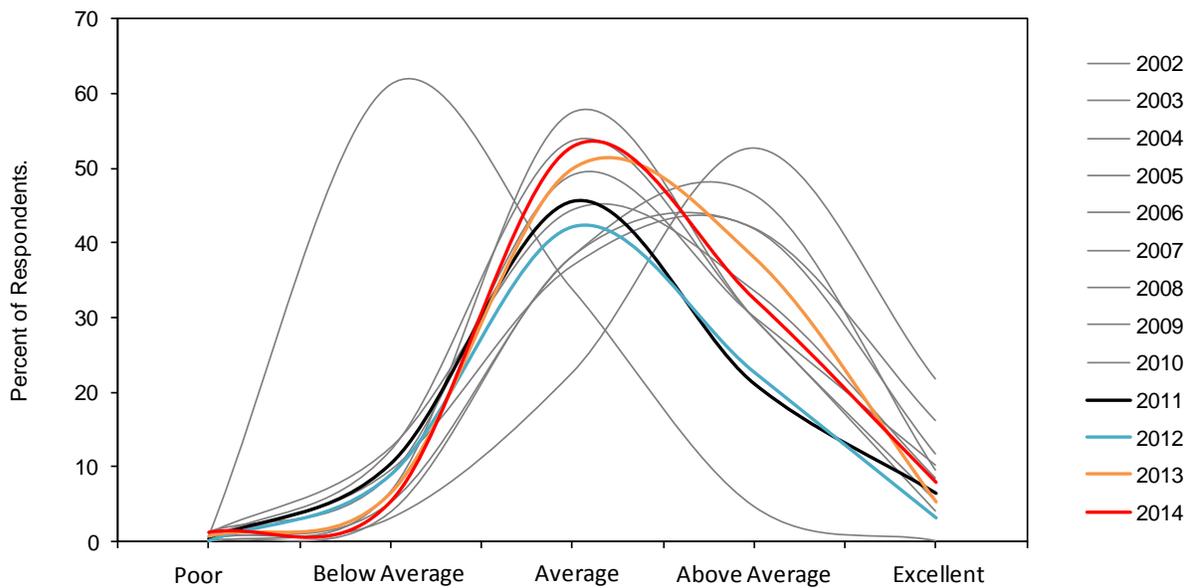


Figure 2. Ratings of overall food conditions, 2002-2014.

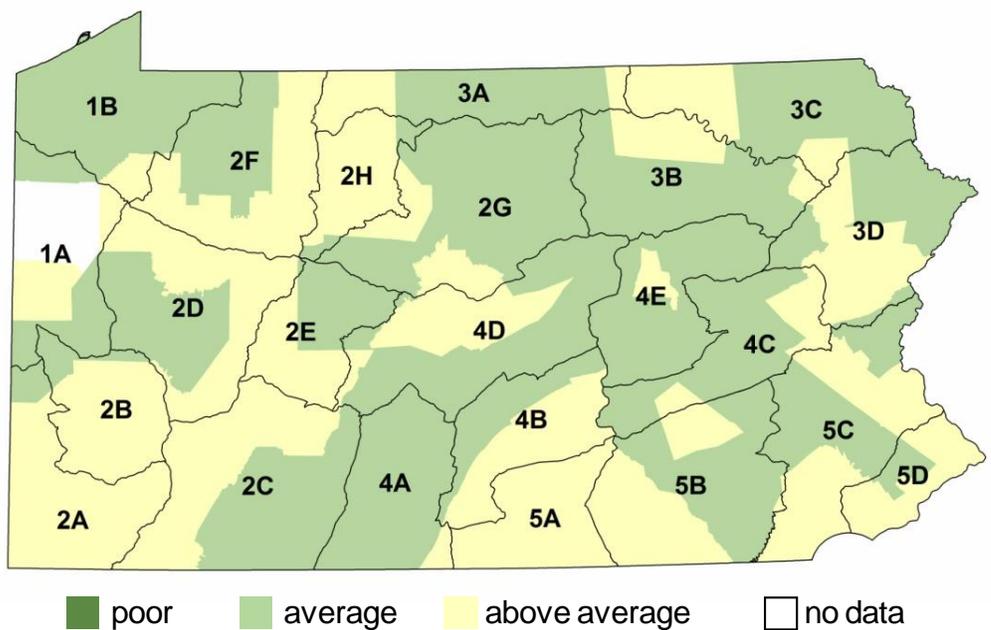


Figure 3. Distribution of how respondents rated overall food conditions in 2014.

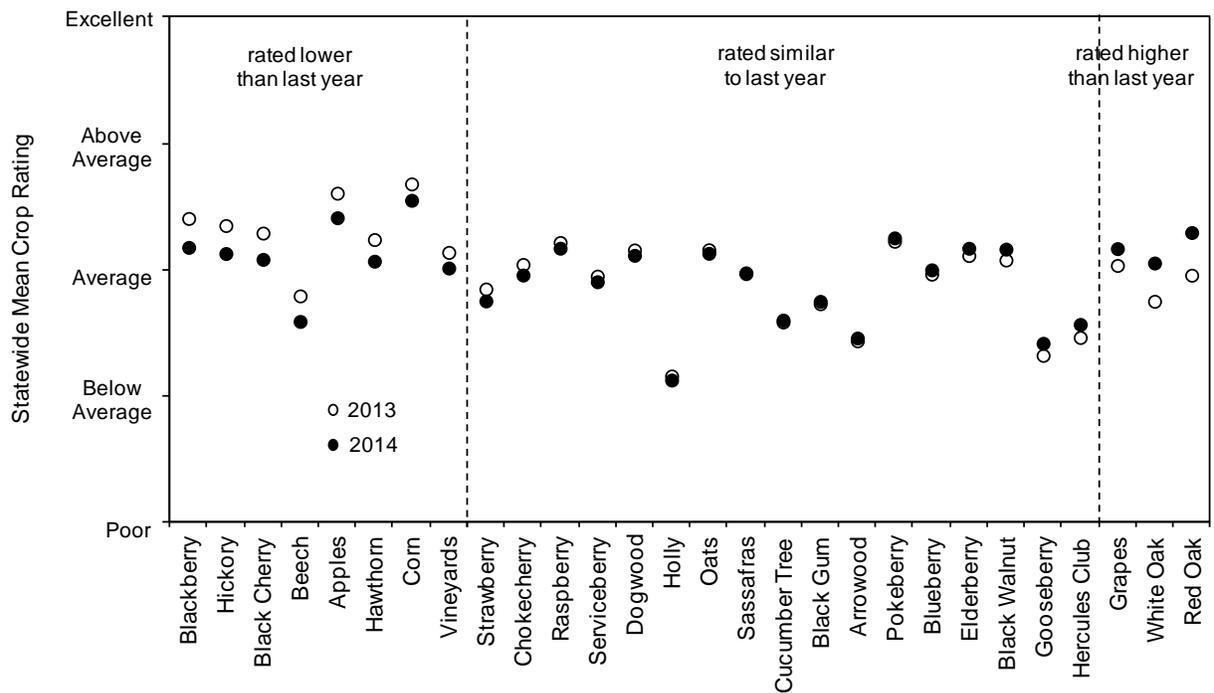


Figure 4. Perceived crop size for 28 wildlife foods based on results of an annual survey completed by field personnel throughout the state during 2014.

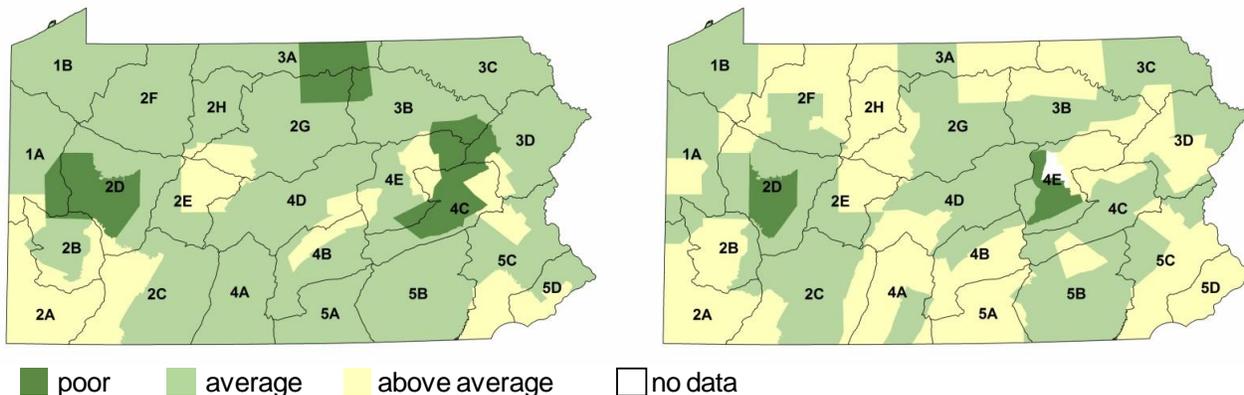


Figure 5. White oak (left) and red oak (right) production during 2014.

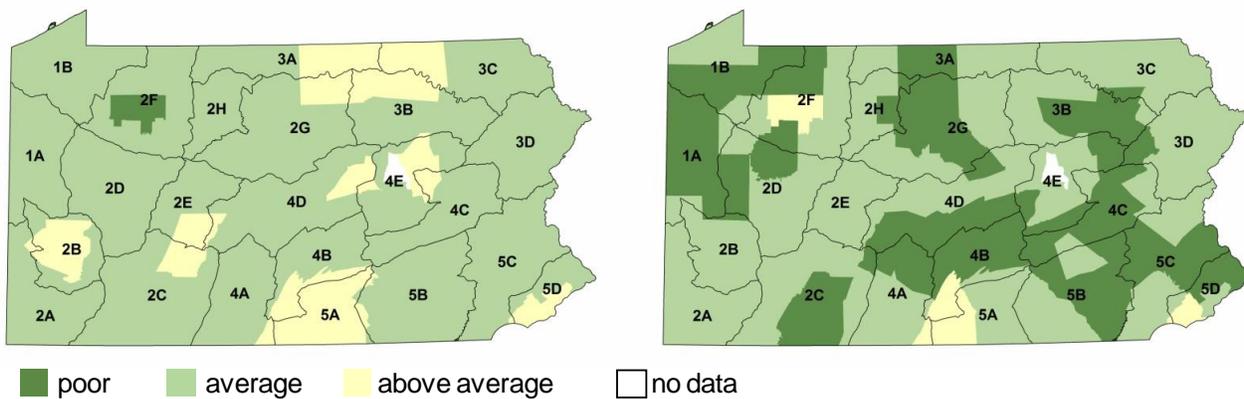


Figure 6. Hickory (left) and beech (right) production during 2014.

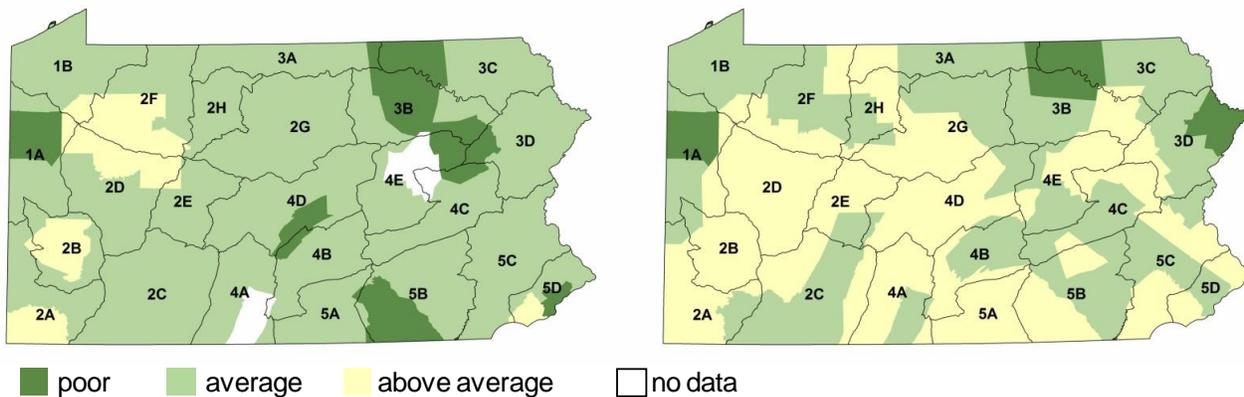


Figure 7. Hawthorn (left) and apple (right) production during 2014.

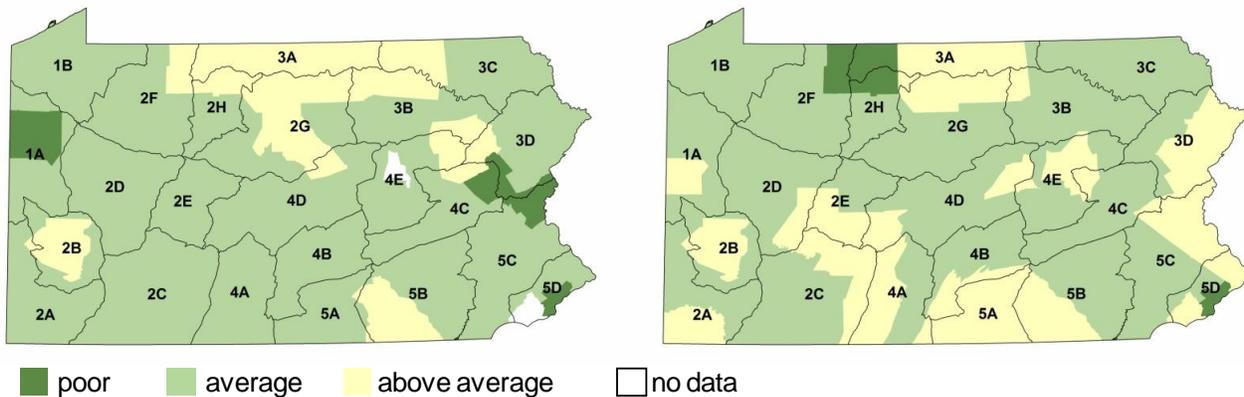


Figure 8. Black cherry (left) and grape (right) production during 2014.

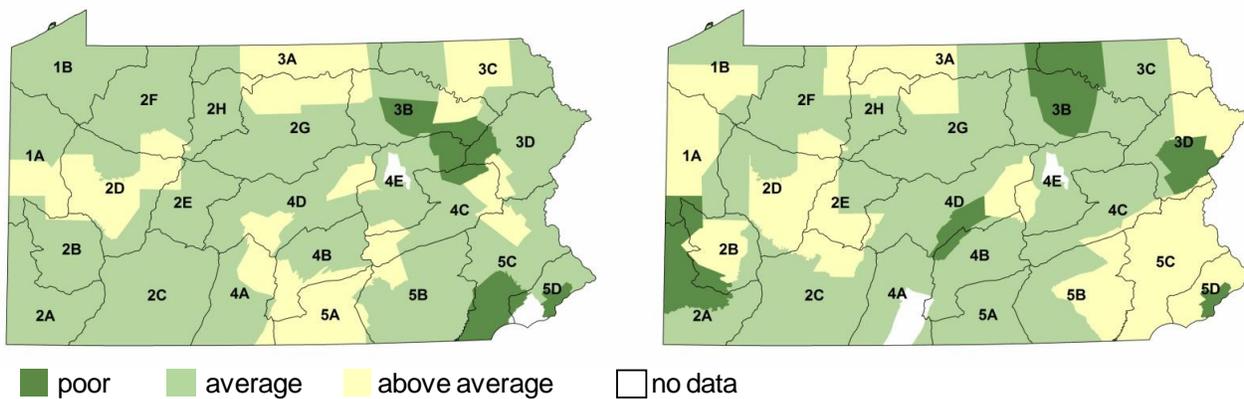


Figure 9. Elderberry (left) and pokeberry (right) production during 2014.

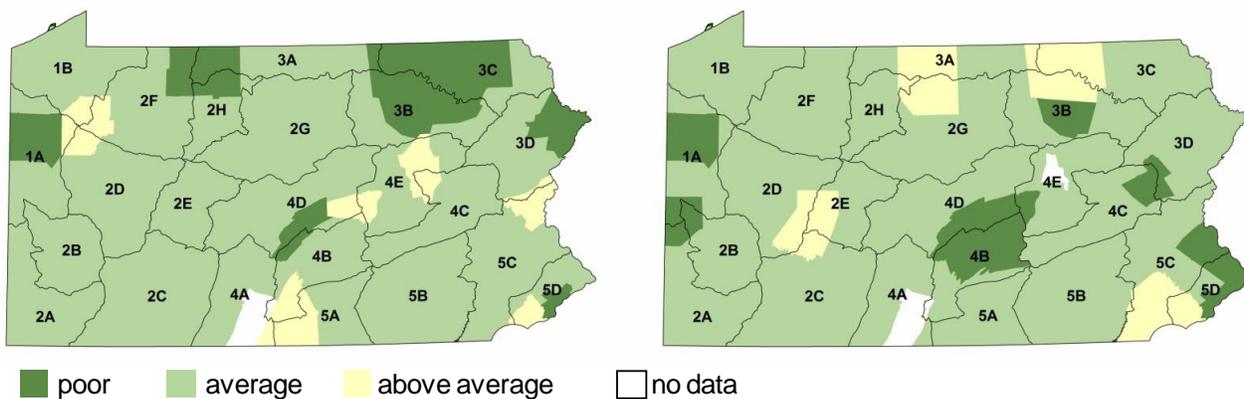


Figure 10. Sassafras (left) and chokecherry (right) production during 2014.

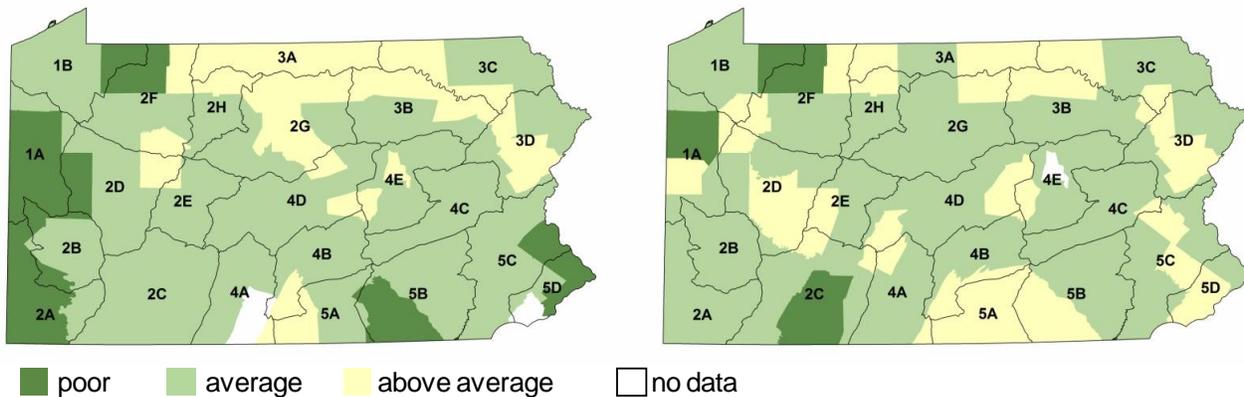


Figure 11. Blueberry (left) and blackberry (right) production during 2014.