

# **Merrimac Farms 2019 Soybean Grain Yield Report**

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## **Project Summary**

In the past year, work has focused on soybean yield data as part of a regional project to evaluate soil type-specific yield potentials on individual farms and to develop a yield potential database for soybeans, which currently does not exist. Yield monitor data allow for the evaluation of both spatial and temporal yield variability for all fields, soil types, and management zones within a specific farm. This information will help identify areas of high yield potential, areas of stable yield versus variable yield over time. The latter is useful for the development of management zones that can lead to increased yield and yield stability over time. When three years or more of data are available, the yield data can then be used to develop yield stability maps for farmers for improvements in nutrient management.

This report shows the yield for (1) the farm per year of data submitted, (2) each of the fields for which we received yield records in the current year, and (3) yields per soil type within a field (current year as well). Calculated acres per field were derived from actual cleaned data points and hence will not match with the overall field acres based on the boundary file. Yield data are then grouped by soil type to generate “frequency distributions or histograms” so averages per soil type can be determined.

We are grateful for your submission of farm yield data to us for the purpose of creating a yield potential database for soybean. Your data are added to a larger and growing database of yield values for specific soil types and once we have sufficient amounts of yield data, yield potentials per soil type can be derived. This project will be strengthened by large participation by farmers across the state and is expected to grow in size over time as funding is secured and more farms participate.

## 2019 Yield Data Summary

Yield monitor soybean data from 8 fields harvested in 2019 were analyzed. The tables and figures that follow present annual yield (bu/acre) at the whole farm level; yield at the field level and soil type within field level (presented in Appendix I and II); and yield at soil type level within the farm (presented in figure at the end). In Appendix II, predominant or major soil for a particular field is the one with the largest area shown in the last column.

In total, 346 acres were analyzed in 2019, based on the whole field dataset that we received. Once headlands were removed, 307 acres remained. Because fields vary greatly in size, an area weighted Soybean grain yield was calculated to represent the whole farm yield value. Based on the whole field dataset for the farm, the area weighted average farm yield was 50.1 bu/acre (whole fields including headlands) and 51.9 bu/acre (whole field excluding headlands). Yield on a per field basis ranged from 35.9 to 55.7 bu/acre for WF and from 38.2 to 56.6 bu/acre for WFNH.

Table 1. 2019 Soybean grain yield (bu/acre) and area summary for whole farm. Area weighted averages across 8 fields. WF=Whole field with headlands. WFNH=Whole field with headlands excluded.

| Year | Average yield WF | Area WF | Average yield WFNH | Area WFNH | Headland impact on WF average yield (WF-WFNH) | Area headland |
|------|------------------|---------|--------------------|-----------|---|---------------|
|      | bu/acre          | acres   | bu/acre            | acres     | bu/acre                                       | acres         |
| 2018 | 50.7             | 322     | 53.0               | 251       | -2.3  | 71            |
| 2019 | 50.1             | 346     | 51.9               | 307       | -1.8  | 39            |

Appendix I. 2019 Soybean grain yield (bu/acre) and area summary by field. WFNH=Whole field with no headlands included. WF=Whole field with headlands.

| Field                      | Area in Acres (as planted) | Yield WF (bu/acre) | Area WF (acre) | Yield NH (bu/acre) | Area NH (acre) | Yield Difference (WF - WFNH) (bu/acre) | Area Headland (acre) |
|----------------------------|----------------------------|--------------------|----------------|--------------------|----------------|--|----------------------|
| Brooke_East                |                            | 43.3               | 9.7            | 44.1               | 3.0            | -0.8                                   | 6.6                  |
| Brooke South               |                            | 44.8               | 79.7           | 45.1               | 65.9           | -0.4                                   | 13.8                 |
| Culbertson_South_Calf_Barn |                            | 52.0               | 33.2           | 52.0               | 29.0           | 0.0                                    | 4.3                  |
| Culbertson_West_Barn       |                            | 54.3               | 37.4           | 54.5               | 33.0           | -0.2                                   | 4.4                  |
| Ford_East_Groveland        |                            | 52.1               | 78.8           | 53.7               | 93.7           | -1.6                                   | -15.0                |
| Hampton_Strips             |                            | 35.9               | 5.8            | 38.2               | 3.9            | -2.4                                   | 1.9                  |
| Seldon_South               |                            | 37.7               | 20.6           | 41.0               | 7.5            | -3.3                                   | 13.1                 |
| Wiley_Magee_85             |                            | 55.7               | 80.8           | 56.6               | 71.1           | -1.0                                   | 9.7                  |

Appendix II. 2019 Soybean grain yield (bu/acre) by soil type. Predominant soil type of each field is also listed in the table.

| Field                      | Soil type      | Major soil | Yield soil type (bu/acre) | Area soil type (acre) |
|----------------------------|----------------|------------|---------------------------|-----------------------|
| Brooke_East                | Ovid           | Ovid       | 44.2                      | 2.5                   |
| Brooke_South               | Alluvial       | Ovid       | 43.3                      | 0.7                   |
| Brooke_South               | Odessa         | Ovid       | 44.0                      | 19.8                  |
| Brooke_South               | Ovid           | Ovid       | 46.3                      | 24.2                  |
| Brooke_South               | Conesus        | Ovid       | 46.0                      | 10.3                  |
| Brooke_South               | Lakemont       | Ovid       | 45.3                      | 10.9                  |
| Culbertson_South_Calf_Barn | Conesus        | Conesus    | 51.4                      | 17.4                  |
| Culbertson_South_Calf_Barn | Kendaia        | Conesus    | 51.4                      | 0.8                   |
| Culbertson_South_Calf_Barn | Lima           | Conesus    | 52.4                      | 1.2                   |
| Culbertson_South_Calf_Barn | Ontario        | Conesus    | 53.0                      | 6.4                   |
| Culbertson_South_Calf_Barn | Ontario-Hilton | Conesus    | 51.9                      | 3.2                   |
| Culbertson_West_Barn       | Conesus        | Lima       | 55.9                      | 4.6                   |
| Culbertson_West_Barn       | Kendaia        | Lima       | 52.0                      | 6.2                   |
| Culbertson_West_Barn       | Lima           | Lima       | 54.9                      | 22.2                  |
| Ford_East_Groveland        | Conesus        | Rhinebeck  | 54.7                      | 1.5                   |
| Ford_East_Groveland        | Lima           | Rhinebeck  | 52.7                      | 40.1                  |
| Ford_East_Groveland        | Rhinebeck      | Rhinebeck  | 53.4                      | 46.8                  |
| Ford_East_Groveland        | Toledo         | Rhinebeck  | 54.6                      | 5.3                   |
| Hampton_Strips             | Odessa         | Ovid       | 35.0                      | 0.9                   |
| Hampton_Strips             | Ovid           | Ovid       | 39.2                      | 3.0                   |
| Seldon_South               | Genesee        | Genesee    | 41.0                      | 7.5                   |
| Wiley_Magee_85             | Conesus        | Conesus    | 56.1                      | 48.0                  |
| Wiley_Magee_85             | Kendaia        | Conesus    | 53.4                      | 5.0                   |
| Wiley_Magee_85             | Lima           | Conesus    | 57.6                      | 13.0                  |
| Wiley_Magee_85             | Ontario-Hilton | Conesus    | 55.9                      | 4.6                   |



