## Sponsor and Project Name

Sponsor Name: UNL TAPS

Project Name: Streamlining TAPS Data

## Poster Description

The team was tasked with creating a solution to create a streamlined process for the addition of data to Excel files. When a participant or UNL TAPS member submits data for a competition, this project allows the data to automatically be updated in the respective Excel files stored in Sharepoint. Also, allowing for the data to be searchable so people can see the information that comes from the competitions is a long-term goal of the project.

## Year in Review Report Description

The University of Nebraska-Lincoln's Testing Ag Performance Solutions (TAPS) program was started as a new way to engage agricultural producers. The TAPS program is a unique farm management competition that promotes profitability and efficiency through peer-to-peer interaction. Participants are responsible for making input decisions including hybrid selection and seeding rate, irrigation, insurance selection, marketing strategy, and nitrogen fertilizer management. The data is stored in Excel files that hold the information for a single farm in a competition or information about all the farms in a competition. The data is being input manually into these Excel files.

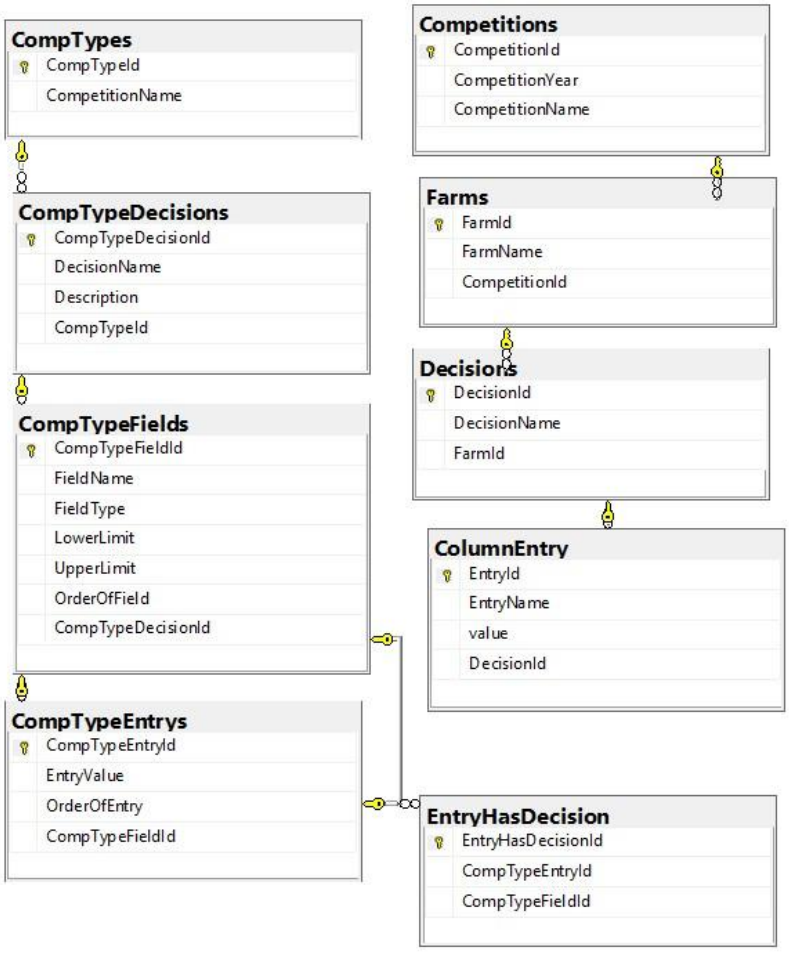
The team was tasked with creating a streamlined process for the recording of submitted decision data into the Excel files for the competitions. This was done by redesigning the way competitions are created in order to acquire all the necessary information about the competition. Then when a participant or UNL TAPS member submits new data, the data point is used to update the previously stored data, then the entire data of the competition is used to recreate the competition's Excel file along with the Excel files for the individual farm. These newly created files then replace the older versions on Sharepoint.

With this stored information, searching for the data in these competitions is possible. This can be done by selecting certain parameters that one would like to use to query the data, and once queried, a dataset is shown that matches the selected parameter requirements.

The team overcame challenges while developing this solution. For example, the team originally decided to use a NoSQL database called Firebase to store the data in these competitions. However, Firebase has data limits on the storage and upload amounts and amounts over those limits would no longer be free. With the vast amount of data needed to create the Excel files and search the data in the competitions, it became apparent while developing that a new solution was needed, which is when the team switched to a SQL database.

## Images

Here are the pictures we would like to use.




A diagram that  shows the structures of the SQL database.

A31 | 28

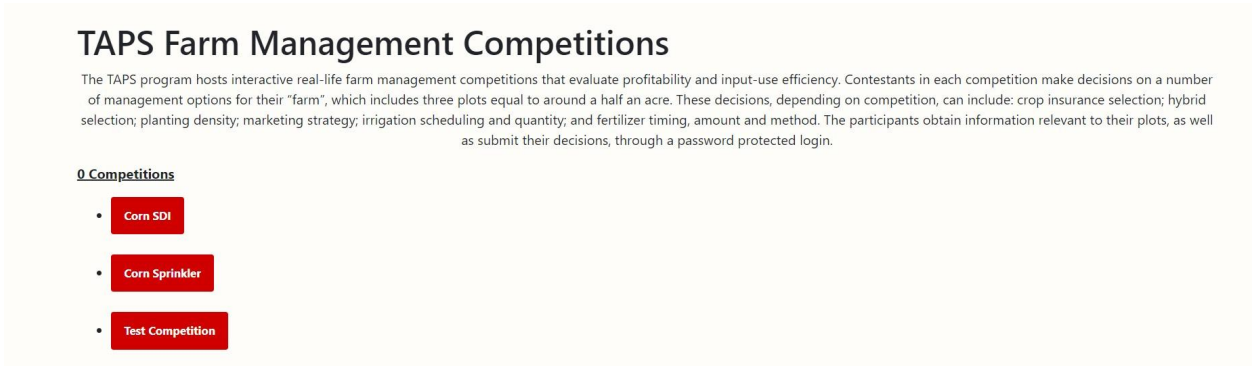
| | A | B | C | D | E | F | G | H | I | J |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | **Sprinkler Corn 2021 Planting Decisions** | | | | | | | | |
| 2 | | **Company** | **Seeding Rate** | **Cost** | **Bag** | **Cost** | **Cost** | **Survey Answer** | | |
| 3 | **Farm #** | **Hybrid** | **(seeds/ac)** | **($/bag)** | **Total** | **Total** | **($/Acre)** | **Why** | **mportance** | |
| 4 | 1 | Pioneer P1089AM | 31,000 | $228.00 | 1163 | $265,050.00 | $88.35 | Low Water Variety | 20% | |
| 5 | 2 | Pioneer P1082AM | 35000 | $244.00 | 1313 | $320,250.00 | $106.75 | Variety Test | 60% | |
| 6 | 3 | Pioneer 1366AML | 34,000 | $253.00 | 1275 | $322,575.00 | $107.53 | | | |
| 7 | 4 | Pioneer P1089AM | 24,000 | $228.00 | 900 | $205,200.00 | $68.40 | Low Water Variety | 100% | |
| 8 | 5 | Fontanelle 12DT370 | 32,000 | $243.00 | 1200 | $291,600.00 | $97.20 | Variety Test | 80% | |
| 9 | 6 | Pioneer 1197AM | 34,500 | $224.00 | 1294 | $289,800.00 | $96.60 | Variety Trust | 60% | |
| 10 | 7 | Big Cob 15-H64 | 29,000 | $244.00 | 1088 | $265,350.00 | $88.45 | Variety Trust | 60% | |
| 11 | 8 | Pioneer P1082AM | 32,000 | $244.00 | 1200 | $292,800.00 | $97.60 | Variety Test | 80% | |
| 12 | 9 | Pioneer 1366AML | 34,000 | $253.00 | 1275 | $322,575.00 | $107.53 | | | |
| 13 | 10 | Pioneer 1366AML | 34,000 | $253.00 | 1275 | $322,575.00 | $107.53 | | | |
| 14 | 11 | Channel 214-22STXRIB | 32,500 | $285.00 | 1219 | $347,343.75 | $115.78 | Something New | 40% | |
| 15 | 12 | Pioneer P1366AML | 32,000 | $253.00 | 1200 | $303,600.00 | $101.20 | High Yielding Variety | 100% | |
| 16 | 13 | Pioneer P1082AM | 31,000 | $244.00 | 1163 | $283,650.00 | $94.55 | High Yielding Variety | 60% | |
| 17 | 14 | Pioneer 1197AM | 32,000 | $224.00 | 1200 | $268,800.00 | $89.60 | High Yielding Variety | 80% | |
| 18 | 15 | Pioneer 1082 AM | 32,500 | $244.00 | 1219 | $297,375.00 | $99.13 | High Yielding Variety | 100% | |
| 19 | 16 | Pioneer 1089AM | 33,000 | $228.00 | 1238 | $282,150.00 | $94.05 | Low Water Variety | 80% | |
| 20 | 17 | Channel 207-42VT2 | 33,000 | $270.00 | 1238 | $334,125.00 | $111.38 | Variety Trust | 60% | |
| 21 | 18 | Fontanelle 11D637 | 33,500 | $243.00 | 1256 | $305,268.75 | $101.76 | TAPS Recommended | 80% | |
| 22 | 19 | Golden Harvest G10L16-3220A | 34,000 | $201.00 | 1275 | $256,275.00 | $85.43 | Company Preference | 80% | |
| 23 | 20 | Pioneer 1089AM | 33,000 | $228.00 | 1238 | $282,150.00 | $94.05 | Low Water Variety | 80% | |
| 24 | 21 | Stine 9734-G | 34,000 | $185.00 | 1275 | $235,875.00 | $78.63 | Price | 20% | |
| 25 | 22 | Pioneer 1366AML | 34,000 | $253.00 | 1275 | $322,575.00 | $107.53 | | | |
| 26 | 23 | Pioneer 1366AML | 34,000 | $253.00 | 1275 | $322,575.00 | $107.53 | Variety Trust | 60% | |
| 27 | 24 | Pioneer 1366AML | 34,000 | $253.00 | 1275 | $322,575.00 | $107.53 | | | |
| 28 | 25 | Pioneer 1366AML | 34,000 | $253.00 | 1275 | $322,575.00 | $107.53 | | | |
| 29 | 26 | Pioneer P1082 | 32,000 | $244.00 | 1200 | $292,800.00 | $97.60 | Other - Online Poll | 40% | |
| 30 | 27 | Dekalb DKC61-41-RIB | 30,000 | $255.00 | 1125 | $286,875.00 | $95.63 | TAPS Recommended | 60% | |
| 31 | 28 | Pioneer P1082AM | 30,500 | $244.00 | 1144 | $279,075.00 | $93.03 | Variety Test | 60% | |

Example from Main Decision file

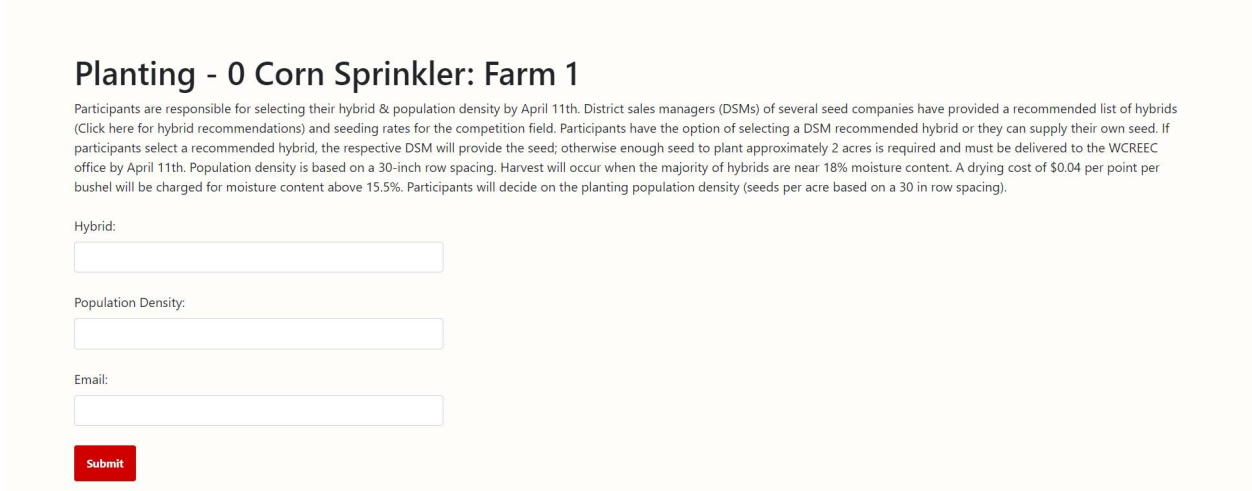
| | A | B | C | D | E |
|---|---|---|---|---|---|
| 1 | | | | | |
| 2 | Farm ID# | Farm 1 | | | |
| 3 | | | | | |
| 4 | Scheduling Tool Decision | | | | |
| 5 | Installed Tool | Sentek/GroGuru | | | |
| 6 | | | | | |
| 7 | Planting Decisions | | | | |
| 8 | Planting | 12-May-21 | | | |
| 9 | Hybrid: | Pioneer P1089AM | | | |
| 10 | Population Density: | 31,000 | | | |
| 11 | | | | | |
| 12 | Insurance Selection | | | | |
| 13 | Coverage | RPHPE Alt 2 65% | | | |
| 14 | Level | 65% | | | |
| 15 | | | | | |
| 16 | Nitrogen Decisions | | | | |
| 17 | Pre-Plant | 100 | 3-May-21 | | |
| 18 | Sidedress | 0 | 18-Jun-21 | | |
| 19 | Fertigation at V9 | 30 | 1-Jul-21 | | |
| 20 | Fertigation at V12 | 30 | 22-Jul-21 | | |
| 21 | Fertigation at VT/R1 | 30 | 2-Aug-21 | | |
| 22 | Fertigation at R2 | 0 | | | |
| 23 | | | | | |
| 24 | Irrigation Decisions | | | | |
| 25 | Date | Amount (inches) | Type | | |
| 26 | 17-Jun-21 | 0.5 | Irrigation | | |
| 27 | 24-Jun-21 | 0.5 | Irrigation | | |
| 28 | 1-Jul-21 | 0.316 | Fertigation | | |
| 29 | 1-Jul-21 | 0.4 | Irrigation | | |
| 30 | 5-Jul-21 | 0.5 | Irrigation | | |
| 31 | 8-Jul-21 | 0.65 | Irrigation | | |
| 32 | 22-Jul-21 | 0.316 | Fertigation | | |
| 33 | 22-Jul-21 | 0.75 | Irrigation | | |
| 34 | 26-Jul-21 | 0.6 | Irrigation | | |
| 35 | 29-Jul-21 | 0.6 | Irrigation | | |
| 36 | 2-Aug-21 | 0.316 | Fertigation | | |
| 37 | 2-Aug-21 | 0.65 | Irrigation | | |
| 38 | 5-Aug-21 | 0.85 | Irrigation | | |
| 39 | 9-Aug-21 | 0.55 | Irrigation | | |
| 40 | 12-Aug-21 | 0.8 | Irrigation | | |
| 41 | 16-Aug-21 | 0.55 | Irrigation | | |
| 42 | 23-Aug-21 | 0.4 | Irrigation | | |
| 43 | 26-Aug-21 | 0.55 | Irrigation | | |
| 44 | 30-Aug-21 | 0.4 | Irrigation | | |

Example from Individual Farm File

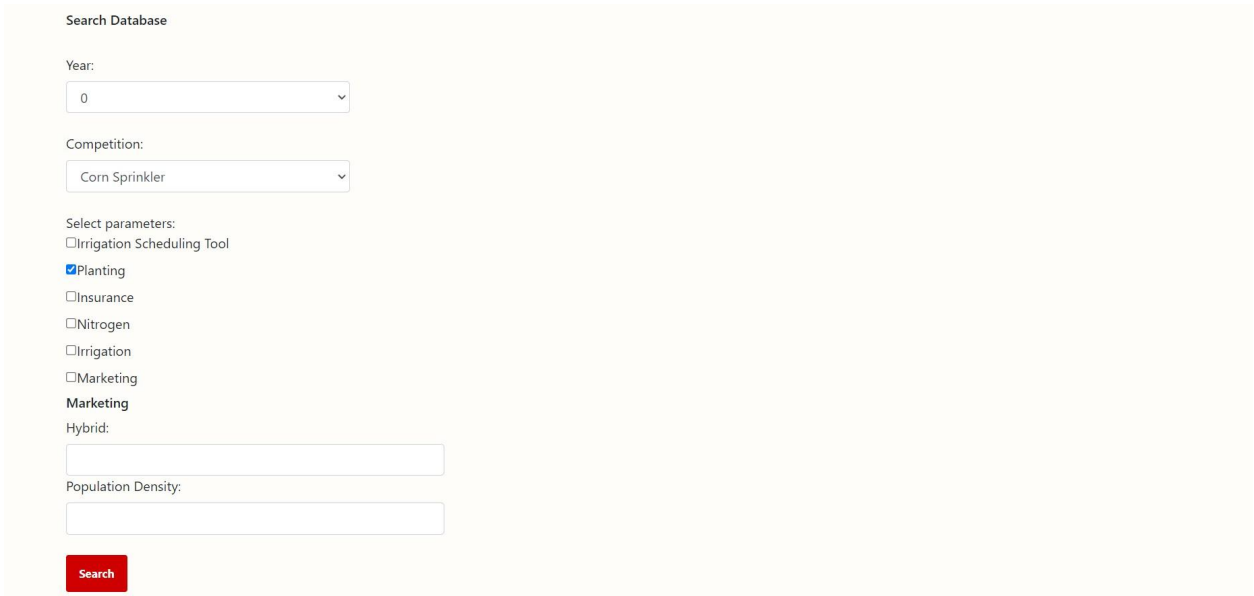
Senior Design Poster and Year in Review Report Materials




Show the homepage




Example of submitting a decision




An example of searching

## Team Members Names

| First Name | Last Name | Role |
|---|---|---|
| Ryan | Lindsay | Squad Lead, Development Manager |
| Uyen | Tran | Project Manager |
| Yicong | Mo | Developer |
| Kai | Guo | Developer |
| William | Prewitt | Developer |