

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.

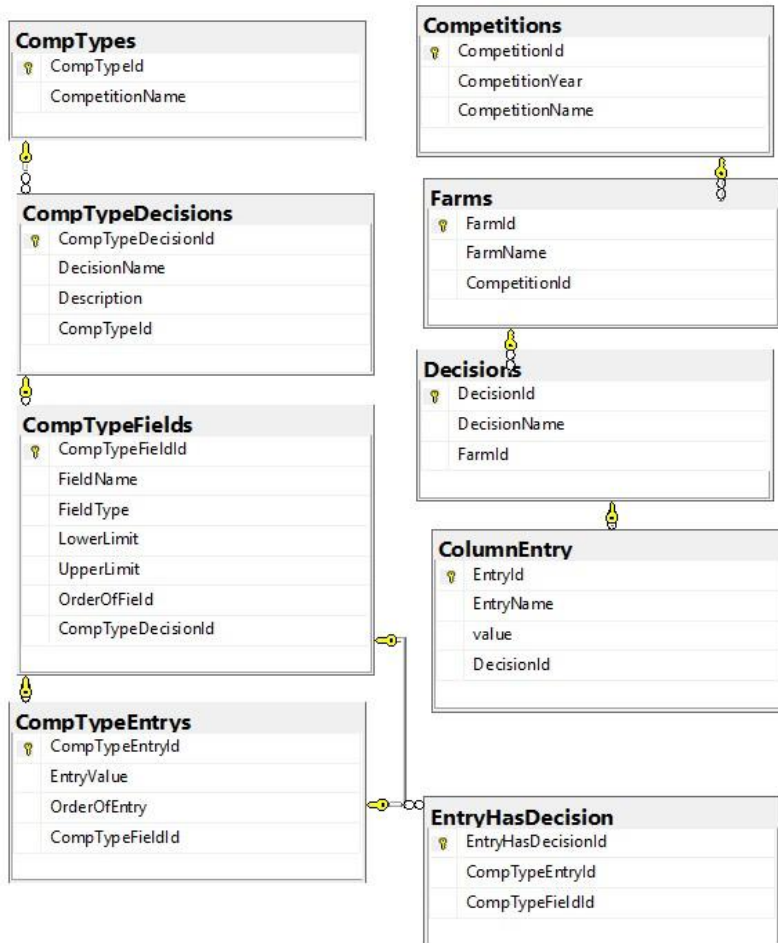
The team was tasked with creating a streamlined process for the recording of submitted decision data into the Excel files for the competitions. This was done by redesigning the way competitions are created in order to acquire all the necessary information about the competition. Then when a participant 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.

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A31										
	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	Importance	
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

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	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

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TAPS Farm Management Competitions

The TAPS program hosts interactive real-life farm management competitions that evaluate profitability and input-use efficiency. Contestants in each competition make decisions on a number of management options for their "farm", which includes three plots equal to around a half an acre. These decisions, depending on competition, can include: crop insurance selection; hybrid selection; planting density; marketing strategy; irrigation scheduling and quantity; and fertilizer timing, amount and method. The participants obtain information relevant to their plots, as well as submit their decisions, through a password protected login.

0 Competitions

- [Corn SDI](#)
- [Corn Sprinkler](#)
- [Test Competition](#)

Show the homepage

Planting - 0 Corn Sprinkler: Farm 1

Participants are responsible for selecting their hybrid & population density by April 11th. District sales managers (DSMs) of several seed companies have provided a recommended list of hybrids (Click here for hybrid recommendations) and seeding rates for the competition field. Participants have the option of selecting a DSM recommended hybrid or they can supply their own seed. If participants select a recommended hybrid, the respective DSM will provide the seed; otherwise enough seed to plant approximately 2 acres is required and must be delivered to the WCREEC office by April 11th. Population density is based on a 30-inch row spacing. Harvest will occur when the majority of hybrids are near 18% moisture content. A drying cost of \$0.04 per point per bushel will be charged for moisture content above 15.5%. Participants will decide on the planting population density (seeds per acre based on a 30 in row spacing).

Hybrid:

Population Density:

Email:

[Submit](#)

Example of submitting a decision

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Search Database

Year:

Competition:

Select parameters:

☐ Irrigation Scheduling Tool

☒ Planting

☐ Insurance

☐ Nitrogen

☐ Irrigation

☐ Marketing

Marketing

Hybrid:

Population Density:

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