

2017 NEWA User experience/User interface research summary

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The NEWA website will undergo a major rebuild in 2018-2019. Fruit and vegetable grower surveys completed by the New York State IPM Program (NYSIPM) found that users want NEWA to be accessible from any computer, laptop, tablet or smart device. The layouts currently in use contain a wealth of information but are not device responsive. The website upgrade will involve conversion of the current NEWA website to a responsive design. Input on the website redesign will be drawn from multiple sources including an online survey completed 31 January 2018, a series of strategic planning workshops and research conducted by Master of Professional Studies (MPS) graduate students that is reported here.

A User Experience/User Interface (UX/UI) strategy is needed before a responsive website is designed for NEWA. The current website is very good at delivering critical crop management information and data, as demonstrated by the growth from 95 to 605 weather station locations since the current web launch in November 2009. The value and fabric of NEWA tools currently available must not be lost in translation. A responsive NEWA website must deliver the same critical information while retaining or gaining value.

John Kim, a Cornell undergraduate student in Information Science, worked with Olmstead, Leshed, and Harms to 1) develop protocols for person-to-person and remote interviews, 2) conduct user experience interviews with a cross-section of NYSIPM and Cornell researchers and 3) summarize UI/UX results gathered. Features of greatest importance among all participants were the degree day calculator and weather summaries. Other suggestions and needs for the NEWA website are summarized in table 1.

Olmstead and Carroll also submitted a successful project proposal to work with Information Science MPS graduate students during the fall 2017 semester. Project objectives included

- 1) Completion of primary user experience interviews
- 2) Application of UX/UI research protocols to gather website usage data from primary users
- 3) Preparation of recommendations for the NEWA web redesign process.

Challenges identified by primary users:

- Mobile access is frustrating
- Confusing resources and external links
- Information heavy by necessity
- Each user interviewed only needs to access a subset of resources.
- Scope of website tends to discourage users who get lost or discouraged.

These issues were categorized into three key areas of inefficiency:

- 1) Navigation
- 2) Customization
- 3) Centralization

Table 1. NEWA website suggestions and needs identified by NYSIPM staff and Cornell researchers during preliminary UX/UI research.

User profile <i>This feature was suggested by nearly all those interviewed.</i>	<ul style="list-style-type: none"> • User login • Saved locations • Saved model settings • Fahrenheit or Celsius selection • Select models of importance. All others hidden • Select users can beta models in development that aren't available to the general public
New users	<ul style="list-style-type: none"> • Self-start orientation is needed for new users. Site is not intuitive without extended training.
Website functionality	<ul style="list-style-type: none"> • Improve navigation so it is intuitive • Menu items, dropdown, list of stations are redundant
Model functionality	<ul style="list-style-type: none"> • UX/UI needs to be intuitive • Faster, more intuitive access to important indices or values • Condense detailed management recs to a simple summary page with links out to detailed information • Multiple station output comparisons • Add field crops models, more vegetable models
Weather data	<ul style="list-style-type: none"> • Provide short term context for data points. Example current temperature compared to past 24 hours.
Data visualization	<ul style="list-style-type: none"> • Spatial visualization of degree days, temperature, etc.
Data tables	<ul style="list-style-type: none"> • Include soil moisture, which is important for germination. • Formatting needs to be corrected. Columns don't align with field names. When copy and paste occurs additional formatting is required. • Provide a CSV file download • Enable custom field selection, date ranges, etc.
Degree day tools	<ul style="list-style-type: none"> • Improve UX/UI • Define each available base model
Automated alerts	<ul style="list-style-type: none"> • SMS alerts when pre-determined model parameters set by the user are exceeded.

The following design solutions were proposed to remedy the each of these key inefficiencies:

- Static navigation sidebar customized for account and non-account holders.
- Login/Sign up workflow.
- Add station(s). Multiple station selection.
- Station page customization and features.
- Customizable weather data output and features such as graphs or tables.
- NEWA multiple model selection within a station page.
- Customizable NEWA model feature preferences such as graphs and tables.
- Explore NEWA section for first time visitors.
- FAQ page.
- Account settings.
- Contact Us workflow.

The graduate student group created a concept design to illustrate some of the above recommended features. This can be viewed at <https://invis.io/GJEWDM632>. A sampling of some of the features are shown in Figures 1-3.

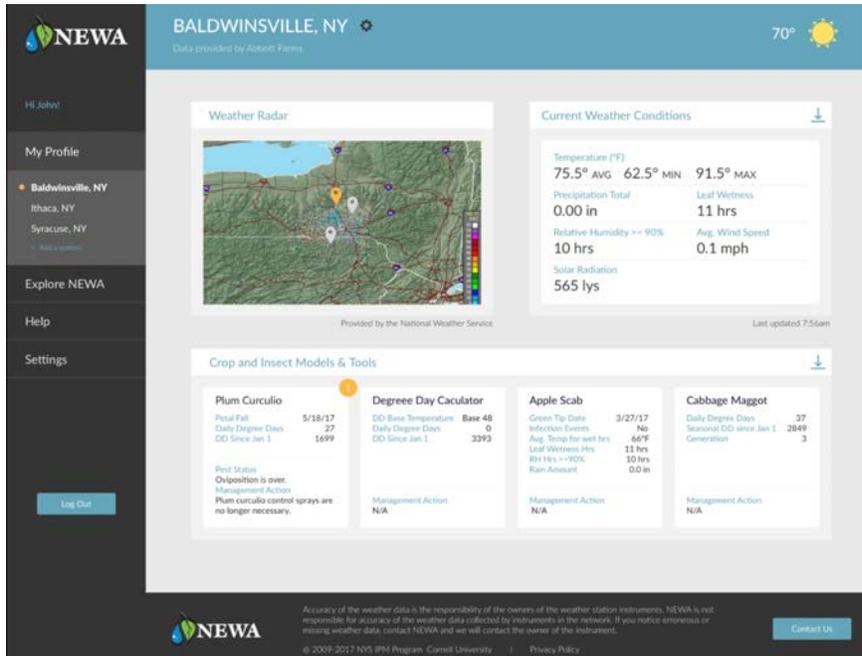


Figure 1. Customizable weather station profile with preferred model 'snapshot' output summaries that expand upon selection.

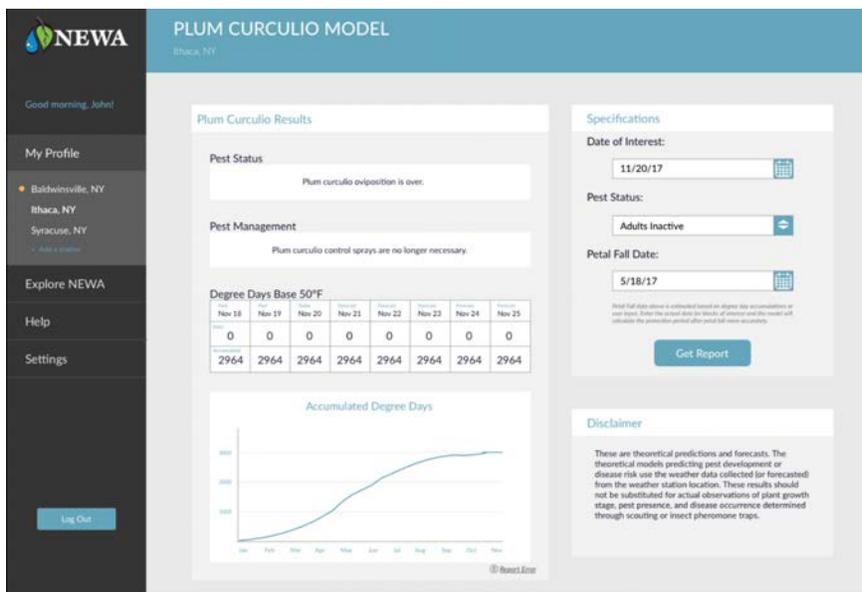


Figure 2. Customizable model summary results where output elements are customizable based on user preference.

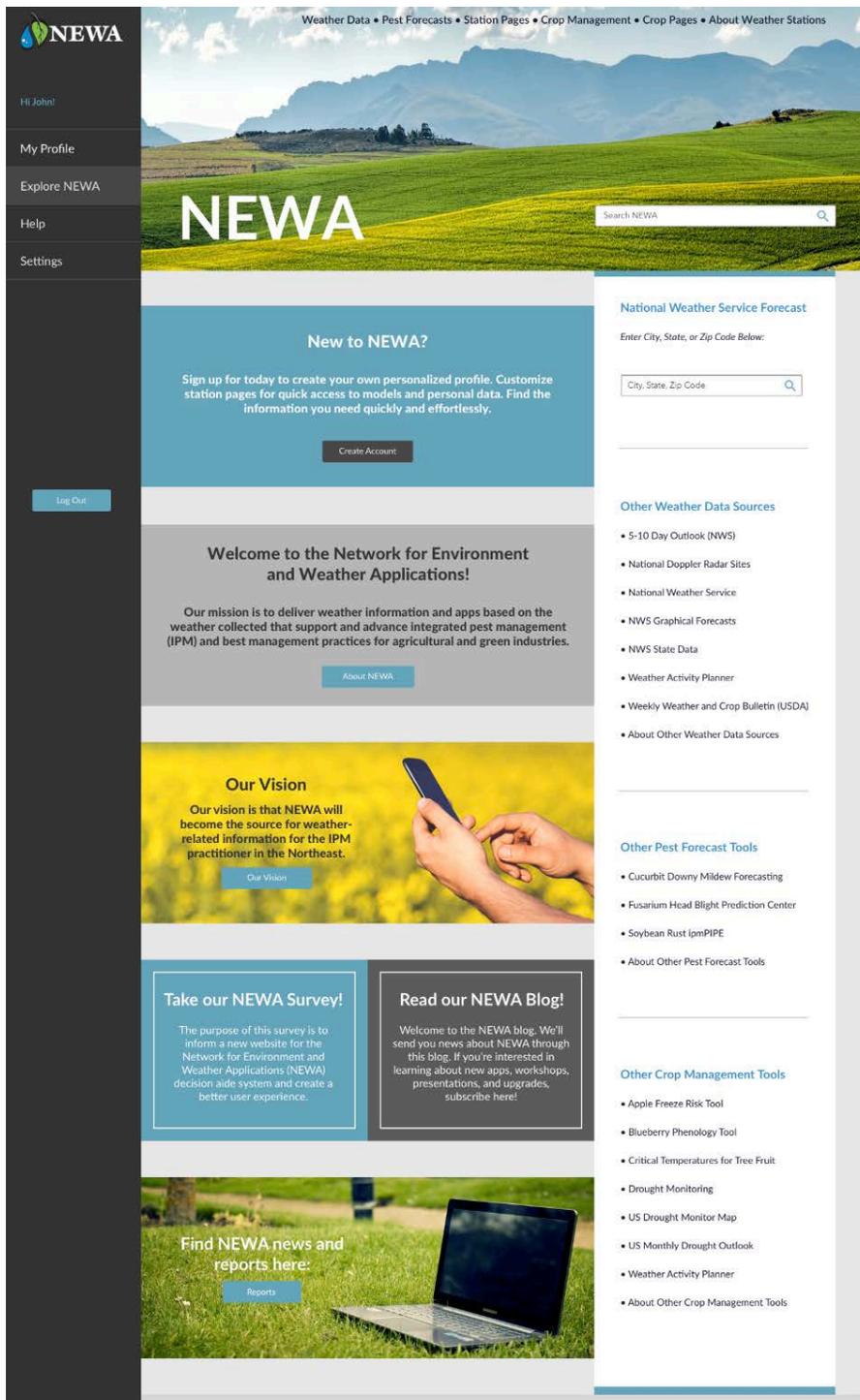


Figure 3. An 'Explore NEWA' landing page for new visitors to learn more about NEWA.

Other recommendations were made based on grower feedback but could not be researched due time constraints:

- Mobile app development, if admin and support resources are available. A mobile app draws from the same data as a full website but the user experience and interface is optimized for small screens. For example, a mobile version of NEWA model outputs

might be text-based and prioritize a few key elements of model output. A full screen version would use the same information but provide graphs, tables, detailed management recommendations and so on.

- Mobile notification alerts. Short Message Service (SMS) communications, or text messaging, could be used to send high priority notifications based on user-defined parameters. For example, a freeze alert could be sent when night time temperature drops below freezing and dew point is higher than reported temperature.
- Data visualization standards. Specifications could be developed for visual presentation standards. For example, a color scheme is developed for alert levels, graphs of a certain type always used a specified format, data tables always occupy a standard screen width and so on.
- Multiple Station and Model reporting. Growers widely cite the need to view multiple model outputs simultaneously from multiple station. Research should be done to explore data visualization methods to achieve this goal.