UAV's for Golf Course Management

Turf Solutions

The value of UAVs

Unmanned Aerial Vehicles (UAVs) are revolutionizing the turf industry, introducing golf course superintendents to never before seen course data and actionable analysis. Through the use of UAVs, users can identify areas of plant stress that can not be seen with the naked eye, in addition to browning or yellowing of turf. Aerial imagery also provides insight into water distribution patterns, identifying specific areas where water applications can be reduced while maintaining healthy turf, aesthetics, and improving playability.

Map key course features

Produce current maps and 3D renderings of courses, allowing golf course superintendents to see overall course health and areas of turf stress. Utilizing easy to use tools, superintendents and maintenance crews can monitor all course features, equipment and areas of interest from sprinkler heads to turf stress.

- HOLE BOUNDARIES
- HOLES
- FAIRWAYS
- GREENS
- SAND BUNKERS

Easily track problem areas and treatment progress

Detect areas of stress and seek opportunities for water reduction. These areas are presented via Drones Of Prey' software platform and are highlighted for management review. Using the Drones Of Prey tools, problem areas can be tracked, follow up tasks can be assigned to maintenance crew members, and progress is monitored over time.

- STRESSED AREAS
- HIGH FLOURISHING

Pinpoint areas of interest with unmatched precision

Track specific turf problems such as yellowing/ browning spots and potential over watered areas. Each critical area can be monitored over time to show reduction in turf browning and redistribution of water from over greened areas.

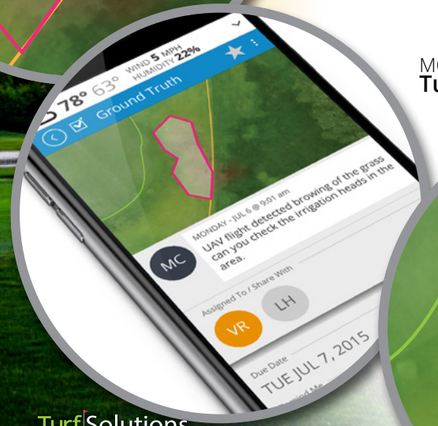
Yellowing | Light Browning | Moderate Browning | Severe Browning | High Flourishing

Transform aerial imagery into actionable data

Using Drones Of Prey, areas of stress can be tracked from flight to flight and included in reports showing progress towards turf health and aesthetic goals. Stay up-to-date on turf health and improvement progress using your desktop or mobile device.

FIRST FLIGHT
Mild Browning

MOBILE TASKS
Turf Management



SECOND FLIGHT
Light Browning

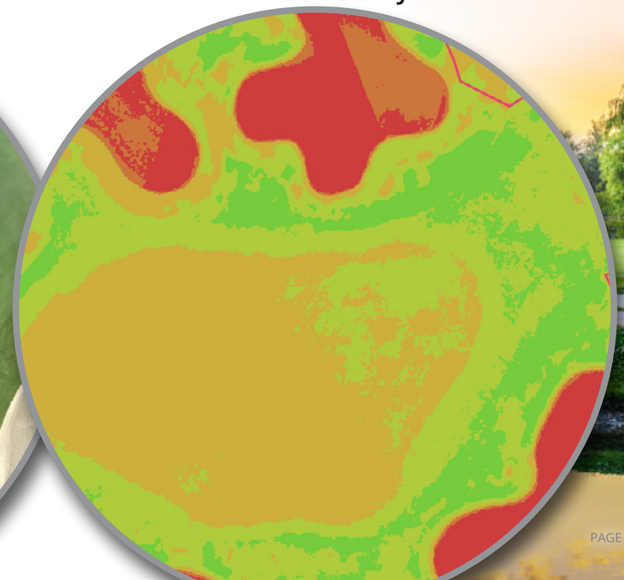
66% REDUCTION IN BROWNING

Green Comparison: High Resolution vs. Plant Stress Analysis

Detect areas of stress not yet visible to the human eye.

High Resolution

Plant Stress Analysis



Hole Turf Progress

Flight data for **July 1** and **August 3, 2015**

Grand Harbor
Country Club
4580 East Thousand Oaks Blvd.
Westlake Village, CA

34 DAYS BETWEEN FLIGHTS
84,321 Sq. ft. TOTAL HOLE AREA
5,185 Sq. ft. PUTTING GREEN AREA
43,652 Sq. ft. FAIRWAY AREA
2 BUNKERS

Hole #12 | 84,321 Sq. Ft.

Condition	Goal	Progress	Impact of efforts
Severe Browning	15% Reduction		18% Reduction Achieved
Moderate Browning	15% Reduction		15% Reduction Achieved
Mild Browning	10% Reduction		6% Reduction Achieved
Yellowing	10% Reduction		3% Growth
High Flourishing	15% Increase		11% Increase Achieved

Hole #12 - Fairway | 43,652 Sq. Ft.

Condition	Goal	Progress	Impact of efforts
Severe Browning	50% Reduction		58% Reduction Achieved
Moderate Browning	50% Reduction		45% Reduction Achieved
Mild Browning	20% Reduction		22% Reduction Achieved
Yellowing	50% Reduction		16% Reduction Achieved
High Flourishing	15% Increase		5% Decline

TurfSolutions

Progress by location

Track specific turf problems such as yellowing/browning spots and potential over watered areas. Each critical area can be monitored over time to show reduction in turf browning and redistribution of water from overly green areas.

Hole Turf Conditions

Flight data for **August 3, 2015**

Grand Harbor
Country Club
4580 East Thousand Oaks Blvd.
Westlake Village, CA

84,321 Sq. ft. TOTAL HOLE AREA
5,185 Sq. ft. PUTTING GREEN AREA
43,652 Sq. ft. FAIRWAY AREA
2 BUNKERS

Hole #12 | 84,321 Sq. Ft.

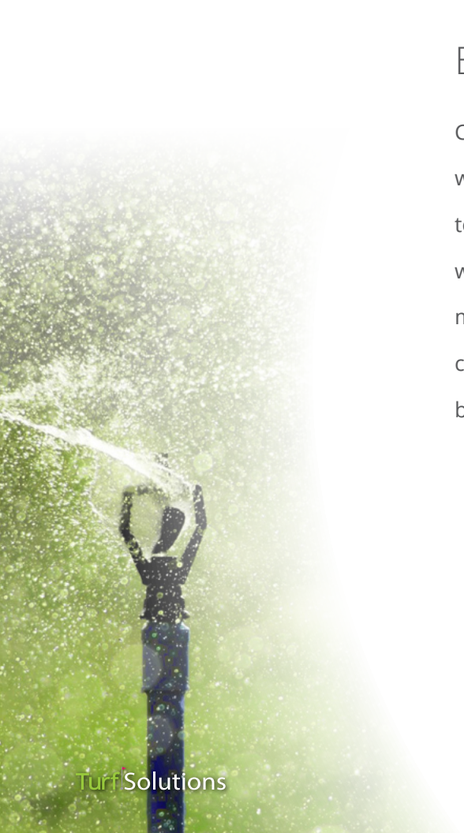
Condition	8/3/2015	Target	± Sq. ft. to Target
Severe Browning	997 Sq. Ft.	15% Reduction	-149 Sq. Ft.
Moderate Browning	1,190 Sq. Ft.	15% Reduction	-178 Sq. Ft.
Mild Browning	827 Sq. Ft.	10% Reduction	-82 Sq. Ft.
Yellowing	124 Sq. Ft.	10% Reduction	-12 Sq. Ft.
High Flourishing	762 Sq. Ft.	15% Increase	+114 Sq. Ft.

Hole #12 - Fairway | 43,652 Sq. Ft.

Condition	8/3/2015	Target	± Sq. ft. to Target
Severe Browning	227 Sq. Ft.	50% Reduction	-113 Sq. Ft.
Moderate Browning	350 Sq. Ft.	50% Reduction	-175 Sq. Ft.
Mild Browning	421 Sq. Ft.	20% Reduction	-84 Sq. Ft.
Yellowing	96 Sq. Ft.	50% Reduction	-48 Sq. Ft.
High Flourishing	396 Sq. Ft.	15% Increase	+55 Sq. Ft.

Get detailed reports analyzing turf health

Monitor areas by specific location in detail, and track progress towards reduction goals. Analyze turf conditions to determine how best to improve course athletics and optimize water use.



Become a water conservation champion

Create a water conservation strategy that identifies specific areas where water applications can be reduced or reallocated. Measure progress towards your water plan and make improvements to continue optimizing water applications. The Turf Stewardship Program promotes healthy turf management while maximizing water use efficiency. Proudly share your club's commitment to water stewardship planning and reduction efforts by sharing a detailed course management report with:

- Membership
- Green Committees
- Board of Directors
- Water Districts
- Local Media
- Adjoining home owners & HOAs
- Club Marketing Efforts

Why Drones Of Prey?

We partnered with Turf.Solutions a leading-edge technology company providing a comprehensive solution for UAV flight services, aerial image analysis, and task management. Enabling you to maximize turf health, aesthetics and playability, while reducing water usage and costs.

- High performance UAV craft platforms
- Actionable data and intuitive software tools
- Trained pilots
- FAA commercially approved

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