

The benefits of this remote sensing insight were three-fold: by avoiding another herbicide application, the grower saved on the cost of herbicide, optimized labor costs during the busy harvest season, and helped reduce the risk of further herbicide resistance development in the orchard. Utilization of advanced vegetation indices and the red edge band made it possible for Felipe and the grower to quickly see the effects of the herbicide application, before the weeds began to yellow and wither, and without having to send anyone out to the field to scout.

CHERRY ORCHARD - CHILE

CIR
Composite

Using the MicaSense CIR and NDRE indices to manage weeds.

CASE STUDY

Managing weeds in a cherry orchard.

Efficient control of weeds in a farming operation is critical. Weeds can harbor pests and serve as hosts for diseases that all too easily spread to the crop. Knowing where and when to apply herbicide can provide significant savings, not only in preventing damage to the crop but in minimizing the amount of product that is purchased and applied.

SENSOR	RedEdge
ANALYTICS	MicaSense Atlas
LOCATION	Chile
CROP	Cherry Orchard
INDEX	CIR Composite, NDRE
AREA	Weed Management

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Dynamic Wings, an agronomic service company located in Chile, uses professional multispectral imaging to help their clients maximize these applications. “[Cherry] growers generally apply herbicide 4 to 6 times in the spring,” says Felipe Santibáñez of Dynamic Wings. “Remote sensing technology can help these growers assess the effectiveness of the treatments, identify problem areas, and implement corrective actions as needed.”

In the Maipo Valley outside of Santiago, Felipe put this remote sensing technology to work, helping a client in their continuous battle against weeds that spring up in between tree rows. Over the course of three weeks, Dynamic Wings captured imagery of the client’s cherry orchard using a RedEdge multispectral camera and then analyzed the results using MicaSense Atlas.

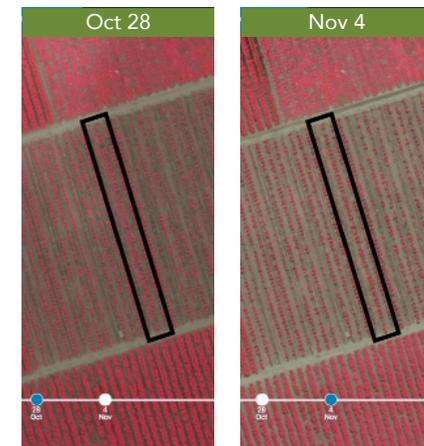
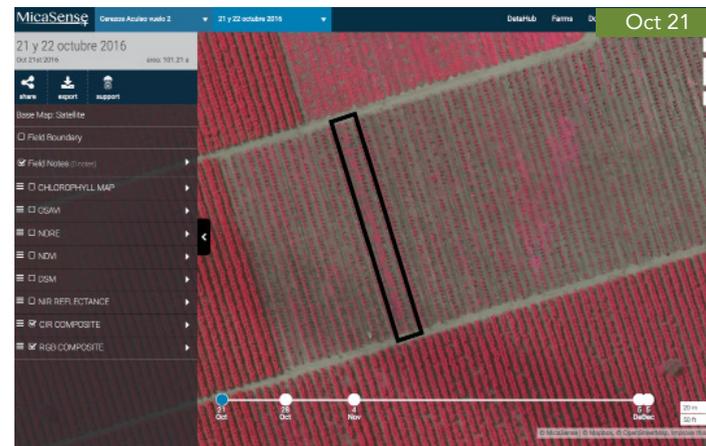
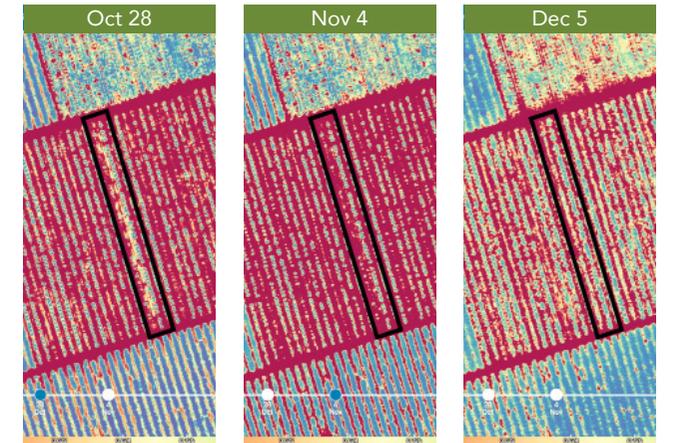
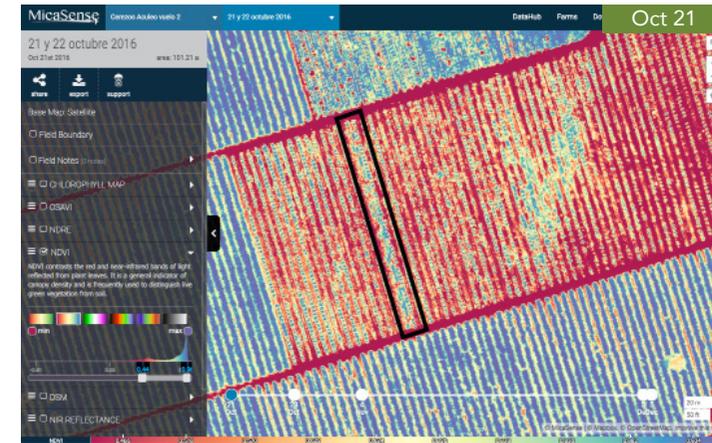
After analyzing the data captured during the first flight, Felipe found that the CIR (Color Infrared) composite and NDVI layers identified weeds in a couple rows of the orchard. The grower decided to apply glyphosate to control the identified weeds.

A week later, Dynamic Wings flew another mission and analyzed the outputs in Atlas to assess the results of the glyphosate application. According to Felipe, “CIR and NDVI layers showed that weeds were still present. This could indicate that the weeds were not controlled by glyphosate, pointing to a possible tolerance or resistance to the herbicide. This could also indicate that the chemical application was not done properly.”

Glyphosate resistance is an issue for many growers battling weeds. It would not be uncommon to see a glyphosate application fail in controlling all the targeted weeds. Based on the information provided thus far, the grower would have likely decided to apply more herbicide, with a different mode of action than glyphosate.

However, Dynamic Wings decided to investigate further before making a recommendation. Felipe looked to the other advanced vegetation indices available in Atlas to gain additional insight. He found that the NDRE index (which utilizes the red edge band) showed that in the weed-infested row, there was a significant reduction in chlorophyll content. “This is an indication that the herbicide is successfully controlling the weeds at that point in time.” Felipe demonstrated to the grower that the first herbicide application was effective and an additional application would not be needed.

NDVI map of the cherry orchard shows a healthy strip of weeds outlined in black. The weeds have a broad leaf canopy so they have high NDVI values, shown in blue. A week after herbicide treatment (October 28), the weeds still show up but this time with lower NDVI values, shown in yellow.



The CIR color composite layer shows a similar story, weeds are still visible in between the rows of cherry trees a week after herbicide treatment (October 28).

The NDRE map shows that the herbicide application was effective, even just a week after glyphosate application. The weeds appear as yellow (having moderate NDRE values) on October 21 but a week later that area appears as red (having very low NDRE values, indicative of soil).

