

AERIAL IMAGING VENDOR COMPARISONS - AERIAL IMAGERY WORKSHOP, LODI CA, AUGUST 2, 2018

AREAS FOR COMPARISON	VENDOR						
	TerrAvion	Simplot Grower Solutions - SmartFarm®	Ceres Imaging	HAWK AERIAL	VineView	Precision Imagery Corp	GeoG2
Attending today's workshop?	yes	yes	yes	no	yes	no	no
Platform	Fixed Wing Aerial, Subscription based	Satellite	Aerial (fixed wing aircraft)	Drone, multirotor	Airplane or drone (Hawk Aerial)	Manned Aircraft	Aerial (high altitude)
Typical uses	Scouting, irrigation planning & monitoring, directed sampling, canopy management, differential harvesting	Season long health of crop, issue monitoring	<5m analysis; Irrigation uniformity (leaks, pressure loss, soil drainage issues), early problem detection, targeted sampling + field checks metric of success for ranch managers	Block Data Maps, Vigor Uniformity. In development: Canopy Volumes, Water Status, Gopher Tracking	Scouting, sampling, amendments, irrigation, pest/disease management, harvest planning	Vigor, Photochemical, Water Absorbition, Disease	Grower/Ag Service/ Processor
Spectral bands	RGB, Infra-red, NDVI (Vigor), Thermal, Zoning feature	4-band (blue, green, red, IR)	multispectral (5-8 bands)	R, G, B, NIR, TIR, 3D model/point cloud	Multispectral and hyperspectral	Hyperspectral (360+ bands) - Color (RGB), Near Infrared (NIR), Short Wave Infrared (SWIR), Long Wave Infrared (LWIR)	Color/Green/Red/Red-Edge/NIR
Resolution	18-22 cm in reflectance bands, 2 m thermal	50 cm post sharpening	<0.5 m (20-30 cm)	5cm to under 1 cm ground sampling distance	20 cm to 50 cm	8 cm	.75 m
Timing (when, how often)	Weekly or bi-weekly	Any time; weekly, biweekly, monthly, one off	1-18x / season; weeks chosen by grower	Budbreak to first hedging for block vigor uniformity (3 to 4 imaging sessions)	1 to 10 flights per season	Monthly	28 Days through growing season
Turnaround time	11.2 hours mean delivery	24-48 hours from collection date	24-72 hours	48 hours for multispectral, 72 hours for 3D models	Varies with product (2 to 7 days)	24 hours	12-24 hours
Software required	None	Simplot Advisor or Manual Deliveries	No	Adobe Acrobat, ArcMap 10.x/ArcGIS Pro	None required, Free app and online database	None	None to GIS (that supports raster data)
Form the data is presented (PDF, JPEG, Interactive, proprietary viewer, vendor's website, computer, tablet, phone)	.pdf, geo TIFF, open API, vendor's website, computer, iOS and Android mobile	PDF, Interactive - Computer, Tablet, Phone	Georegistered images (GeoTIFFS); Printable JPEG/PD; interactive imagery on tablet/phone	PDF for multispectral, web-based gCMS for 3D model, GIS (if client has internal GIS program and expertise)	Free app, online database, Geotiff download	Web based & PDF	Any
Interpretation (easy, hard, learning curve, done by vendor)	Easy	Done by vendor	Moderate - Ceres-assisted interpretation if needed	Done by Vendor with input from Vineyard Manager or viticulturalist	Easy for Viticulturists, support for app	Collaborative data reviews	From visual to full GIS integration
Cost	18 flights - \$10/acre for the season, 28 flights \$20/acre for the season	\$1.00 per acre per image (typically)	\$2-3/ac/flight	\$6-\$15/ac, volume discounts available; block data maps are \$150/map plus an additional \$35/block for more than 3 blocks on one map	Varies with product and acreage	\$8-\$11 (property dependant)	\$1-\$2 for individual images/\$4-\$8 for series of imagery through season

** Vendors were asked to fill out these Excel sheets with their information prior to today's AERIAL IMAGERY WORKSHOP; compiled by the VINEYARD TEAM and the LODI WINEGRAPE COMMISSION