VEGETATION INDEX

Quick Reference Guide - SYLPHAGRO S.A.S - July 18th 2024

Short name	Name	RGB/MS	Formula	Applications	Strenghts	Points of Attention
CI Red-edge	Chlorophyll Index Red-edge	MS	$(Rn / Rre) -1$	Measurement of the total chlorophyll content of the leaves Photosynthetic potential Crop productivity	Sensitive to small variations in chlorophyll content	---
EVI	Enhanced Vegetation Index	MS	$2,5 (Rn - Rr) / (Rn + 6 \times Rr - 7,5 \times Rb + 1)$	Modified version of NDVI, for areas with dense vegetation Crop health and Hydric stress evaluation	More sensitive than NDVI in areas of dense canopy cover, when leaf area index (LAI) is high Low sensitivity to soil background and to atmospheric influences	---
GLI	Green Leaf Index	RGB	$(2 \times Rg - Rr - Rb) / (2 \times Rg + Rr + Rb)$	Differentiates between soil and vegetation Chlorophyll content indicator	Visible spectrum	---
GNDVI	Green Normalized Difference Vegetation Index	MS	$(Rn - Rg) / (Rn + Rg)$	Compared to NDVI, this index is replacing red band by green Photosynthesis measurement Plant stress evaluation To monitor vegetation with dense canopies or at advanced stages of maturity.	More sensitive to variation in chlorophyll content than is NDVI	---
LCI	Leaf Chlorophyll index	MS	$(Rn - Rre) / (Rn + Rr)$	Index to assess chlorophyll content in areas with complete leaf cover	---	---
MCARI	Modified Chlorophyll Absorption in Reflectance Index	RGB	$((R700 − R670) - 0.2 \times (R700 − R550)) (R700 / R670)$	Measurement of chlorophyll absorption and variations in Leaf Area Index (LAI)	Visible spectrum Not affected by variations in illumination and by soil reflectance	---
NDRE	Normalized Difference Red Edge	MS	$(Rn - Rre) / (Rn + Rre)$	By the use of the red-edge band, this index is very susceptible to chlorophyll content at medium to high concentration Good indicator of plant health from mid to late development Measurement of nitrogen stress, to create variable-rate nitrogen application maps.	More accurate than NDVI at mid to late stage crops	---
NDVI	Normalized Difference Vegetation Index	MS	$(Rn - Rr) / (Rn + Rr)$	The most common vegetation index Good measure of plant health, biomass and yield potential during early and mid development of the canopy	Not very sensitive to variations in light conditions.	Saturates with well developed plants May be affected by soil reflectance and atmospheric conditions
OSAVI	Optimized Soil Adjusted Vegetation Index	MS	$(1 + 0,16) (Rn - Rr) / (Rn + Rr + 0,16)$	Derived from NDVI, this index has been developed to reduce the impact of soil reflectance For OSAVI, the soil brightness correction factor = 0,16 (NDVI = 0) Useful at an early stage of development, to assess emergence quality for example	Adapted in situations where there is a high proportion of bare soil, sparse vegetation or a low concentration of chlorophyll in plants	---
SAVI	Soil Adjusted Vegetation Index	MS	$(1 + 0,5) (Rn - Rr) / (Rn + Rr + 0,5)$	Derived from NDVI, this index has been developed to reduce the impact of soil reflectance For SAVI, the soil brightness correction factor = 0,5 (NDVI = 0) Useful at an early stage of development, to assess emergence quality for example	Adapted in situations where there is a high proportion of bare soil, sparse vegetation or a low concentration of chlorophyll in plants	---
SIPI	Structure Insensitive Pigment Index	MS	$(Rn - Rb) / (Rn - Rr)$	Maximizes sensitivity to the bulk carotenoids to chlorophyll ratio An increase of the value indicates a stress	Minimize the impact of the variable canopy structure or leaf area index	---
SR	Simple Ratio	MS	Rn / Rr	The simpliest vegetation index Useful to highlight green leaves, and estimate biomass	---	---
TGI	Triangular Greenness Index	RGB	$-0.5 \times (190 \times (Rr - Rg) - 120 \times (Rr - Rb))$	One of the best vegetation index for chlorophyl measurement Usefull for nitrogen content measurement when a multispectral sensor isn't available	Visible spectrum Low sensitivity to leaf size	---
VARI	Visible Atmospherically Resistant Index	RGB	$(Rg - Rr) / (Rg + Rr - Rb)$	To highlight vegetation area in RGB images	Visible spectrum Low sensitivity to lighting differences and atmospheric conditions	---

Formula code	Name	Wawelenghts range (nm)	Mavic 3M sensors (nm)
Rn	NIR	760 - 900	860 (+- 26)
Rre	Red edge	700 - 730	730 (+- 16)
Rr	Red (R)	630 - 690	650 (+- 16)
Rg	Green (G)	520 - 600	560 (+- 16)
Rb	Blue	450 - 520	-
Rnnn	-	nnn	-