

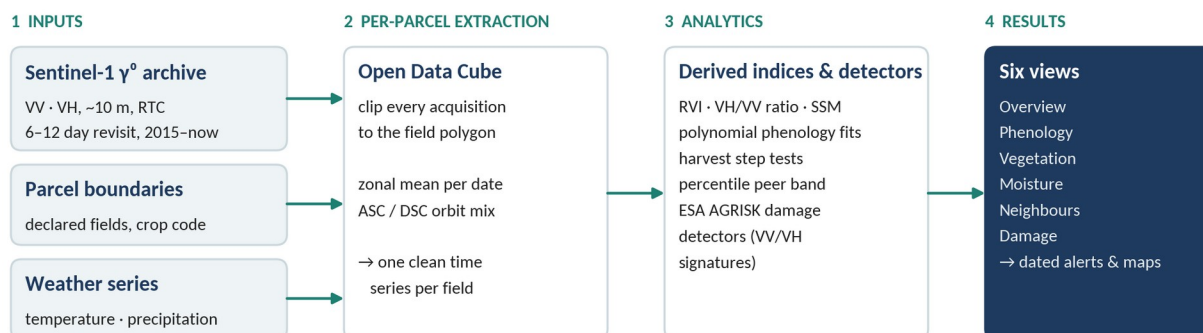
SAGRIS ODC • Farmer Application

Parcel-level crop monitoring from Sentinel-1 radar — how it works

Every declared field, every radar pass, analysed automatically through the season — for agricultural advisors, paying agencies and crop insurers. The six views are shown on a real field overleaf.

Farmer is the field-level application of the SAGRIS ODC platform. It overlays declared agricultural parcels on a satellite basemap, filters them by crop group, and for any selected field extracts the complete Sentinel-1 radar time series from the data cube. That series is turned into agronomic answers: **when** the crop emerged, closed canopy and was harvested; **how well** it is growing; **whether** the soil is too dry or waterlogged; **how it compares** with neighbouring fields of the same crop; and **whether it was damaged** by flooding or storm lodging. Radar sees through cloud, day and night, so the record has no weather gaps and every field is measured the same way on every pass.

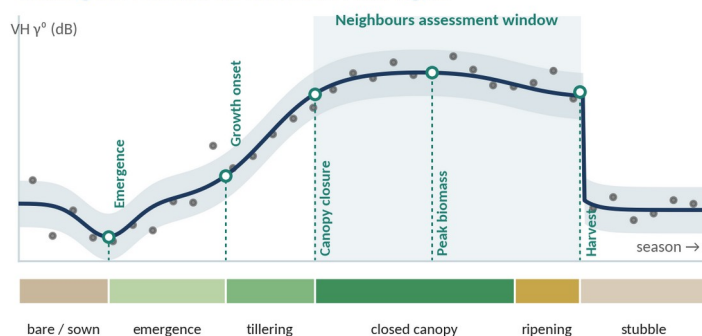
How it works



Six analytical views

View	How it works	What the user gets
Overview	Smoothed VV and VH backscatter (γ^0) for every acquisition, filterable by orbit direction, on one time axis with air and soil temperature and precipitation.	The raw signal behind every index, with weather context for every change.
Phenology	Sliding-window polynomial fits over VH and the VH/VV ratio. Harvest is an abrupt, persistent VH step, tested against rain, senescence and soil-moisture look-alikes.	Dated emergence, growth onset, canopy closure, peak biomass and harvest, plus a season stage bar.
Vegetation	Radar Vegetation Index, $RVI = 4 \cdot VH / (VV + VH)$, tracked against accumulated growing degree days.	Canopy vigour and biomass trend; frost, disease-risk and lodging windows flagged.
Moisture	Relative surface soil moisture from where VV sits between its seasonal extremes (Wagner method), a vegetation-corrected variant, and a running water balance.	Drought and waterlogging risk against thresholds; dry spells and saturation events.
Neighbours	The field against up to 100 same-crop parcels within 5 km: a per-date 10–90 % percentile band and a 1–99 rank, assessed from canopy closure to harvest. Shared weather and orbit effects cancel out.	Percentile rank, peer median and a scored verdict, with a plain-language note for each spell outside the peer band.
Damage	ESA AGRISK detectors on a rolling 10-day window: waterlogging from VV/VH and open-water thresholds; lodging from a VV drop with a VH rise, confirmed on both orbits and irreversible.	Dated events, affected-area curve and a 10 m map of the worst window; wild-animal damage reported as a candidate.

Reading the season from one field's radar signal



Damage signatures (ESA AGRISK)

Change between consecutive rolling medians

Event	VV	VH
Storm lodging	↓	↑
Flooding	↓	↓
Harvest / mowing	↓	↓↓
Wild-animal damage	↓ slow	↑

Waterlogging: VV/VH ratio + open-water VH thresholds, graded transient → persistent.

Why it matters. Objective, repeatable, dated evidence for advisory visits, subsidy checks and insurance claims — without a field trip. The same per-parcel logic is sensor-agnostic: for Korea it can run on national radar and optical missions, with rice-paddy flooding, transplanting and typhoon damage as natural first use cases.

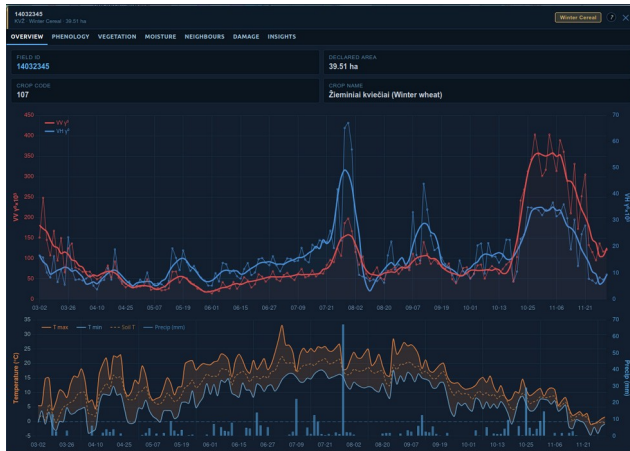
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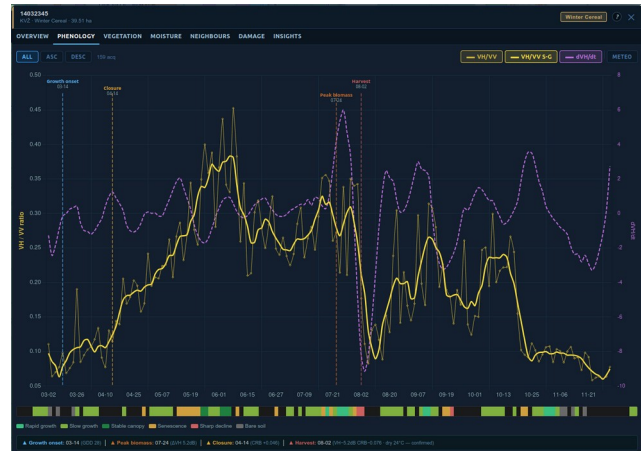
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Per-field crop intelligence from Sentinel-1 radar

Six analytical views of a single parcel across one growing season — phenology, vegetation, moisture, peer benchmarking and damage. Example shown: winter wheat, 39.5 ha, Lithuania.



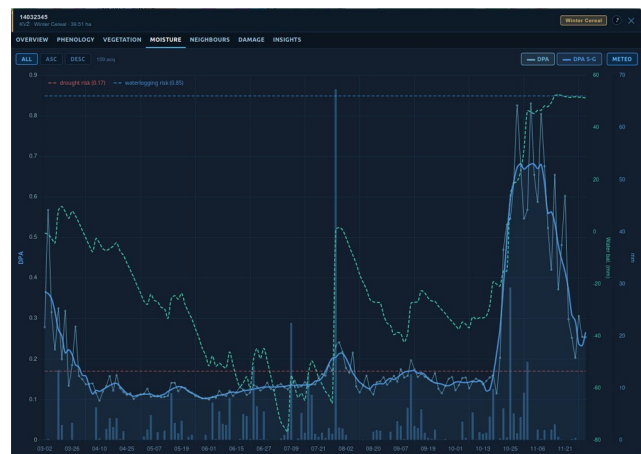
Overview — Smoothed VV and VH backscatter (γ^0) across the season with a synchronized weather panel — air and soil temperature and precipitation. The raw signal behind every derived index.



Phenology — Growth stages read automatically from the VH/VV ratio and its rate of change — growth onset, canopy closure, peak biomass and harvest, each dated and confirmed, with a season-long stage bar.



Vegetation — The Radar Vegetation Index (RVI) tracks canopy vigour and biomass against accumulated Growing Degree Days, flagging frost, disease-risk and lodging windows along the timeline.



Moisture — A soil-moisture proxy with drought and waterlogging risk thresholds and a running water balance, so dry spells and saturation events stand out against seasonal rainfall.



Neighbours — The field benchmarked against up to 100 same-crop parcels within 5 km — percentile rank, peer median and the 10-90% band show whether it leads or trails its neighbourhood.



Damage — Flooding, waterlogging and storm-lodging detection with dated events, affected-area curves and per-pixel worst-window maps, powered by ESA AGRISK algorithms on the SAR time series.