Leveraging Artificial Intelligence to Manage a Sustainable Transition In Viticulture "STIV"

Toolkit for VET

A guide developed by the STIV project consortium to promote a green and healthy approach to the working environment, recognising the critical importance of addressing environmental challenges and climate change.

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M1 — Social Transition in the Wine Sector

1.1 Social Responsibility in Viticulture

1. OIV – International Organisation of Vine & Wine

Web: *https://www.oiv.int*
Languages: EN /FR / ES
Free: ✅ Yes (public documents)

- ES: Organización internacional que publica normas, informes y guías técnicas sobre viticultura y sostenibilidad, útiles para marcos de responsabilidad social.
- EN: International body publishing standards, reports and technical guidance on viticulture and sustainability—useful for social responsibility frameworks.
- FR: Organisation internationale publiant normes, rapports et guides techniques sur viticulture et durabilité, utiles pour responsabilité sociale.
- IT: Organizzazione internazionale che pubblica norme, relazioni e guide tecniche sulla viticoltura e sostenibilità, utili per i quadri di responsabilità sociale.
- SR: Međunarodna organizacija koja objavljuje standarde, izveštaje i tehničke vodiče o vinogradarstvu i održivosti, korisne za okvire društvene odgovornosti.

2. Equalitas- Sustainable Wine Certification (Italy)

- **Web:** *https://equalitas.it*
- **Languages:** EN / IT
- **Free:** ✅ Yes (public materials)

- ES: Norma nacional de sostenibilidad para empresas vitivinícolas que integra las dimensiones ambiental, social y económica; incluye directrices y listas de verificación.
- EN: National sustainability standard for wine companies integrating environmental, social and economic dimensions; it includes guidelines and checklists.
- FR: Norme nationale de durabilité pour les entreprises vinicoles intégrant les dimensions environnementale, sociale et économique; elle comprend des lignes directrices et des listes de contrôle.
- IT: Standard nazionale di sostenibilità per le aziende vinicole che integra le dimensioni ambientale, sociale ed economica; include linee guida e liste di controllo.
- SR: Nacionalni standard održivosti za vinske kompanije koji integriše ekološke, socijalne i ekonomske dimenzije; uključuje smernice i kontrolne liste.

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3. FAO – TECA & Climate/Agro resources

Web: *https://www.fao.org*
Languages: EN + Multilingual
Free: ✅ Yes

- ES: Recursos FAO sobre buenas prácticas agrícolas, gestión del agua y adaptación climática aplicables a viñedos y condiciones laborales.
- EN: FAO resources on good agricultural practices, water management and climate adaptation applicable to vineyards and labour conditions.
- FR: Ressources FAO sur bonnes pratiques agricoles, gestion de l'eau et adaptation climatique applicables aux vignobles.
- IT: Risorse FAO sulle buone pratiche agricole, gestione delle acque e adattamento climatico applicabili ai vigneti e alle condizioni lavorative.
- SR: FAO resursi o dobrim poljoprivrednim praksama, upravljanju vodom i klimatskoj adaptaciji primenljivi na vinograde i radne uslove.

4. amfori / BSCI (supply chain & wine sector guidance)

Web: *https://www.amfori.org*
Languages: EN
Free: ✅ Partial (free introductory material)

- ES: Guías sobre derechos laborales y cumplimiento en cadenas de suministro que pueden adaptarse a la viticultura.
- EN: Guidance on labour rights and supply-chain compliance adaptable for the wine sector.
- FR: Guides sur les droits du travail et conformité des chaînes d'approvisionnement applicables au secteur vitivinicole.
- IT: Guide sui diritti del lavoro e conformità nelle filiere che possono essere adattate alla viticoltura.
- SR: Vodiči o radnim pravima i usklađenosti u lancima snabdevanja koji se mogu prilagoditi vinogradarstvu.

5. Sustainable Winegrowing Australia (SWA)

Web: *https://www.sustainablewinegrowing.com.au*
Languages: EN
Free: ✅ Partial (public guides)

- ES: Plataforma australiana con guías y casos sobre prácticas sostenibles que incluyen dimensiones sociales.
- EN: Australian platform providing guides and case studies on sustainable practices including social aspects.
- FR: Plateforme australienne proposant guides et études de cas sur pratiques durables incluant aspects sociaux.
- IT: Piattaforma australiana con guide e casi su pratiche sostenibili che includono dimensioni sociali.
- SR: Australijska platforma sa vodičima i studijama o održivim praksama koje uključuju društvene dimenzije.

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6. Sustainable Winegrowing BC (Canada)

Web: *https://sustainablewinegrowingbc.ca/*
Languages: EN
Free: ✅ Yes

- ES: Recursos, plantillas y guías sobre sostenibilidad y responsabilidad social para viticultores en Columbia Británica.
- EN: Resources, templates and guides on sustainability and social responsibility for BC winegrowers.
- FR: Ressources, modèles et guides sur durabilité et responsabilité sociale pour vignerons en Colombie-Britannique.
- IT: Risorse, modelli e guide sulla sostenibilità e responsabilità sociale per viticoltori in Columbia Britannica.
- SR: Resursi, šabloni i vodiči za održivost i društvenu odgovornost za vinogradare u Britanskoj Kolumbiji.

7. Sustainable Winegrowing New Zealand (NZ Wine / SWNZ)

Web: *https://www.nzwine.com/en/sustainability/*
Languages: EN
Free: ✅ Yes

- ES: Material público sobre sostenibilidad (ambiental y social), buenas prácticas y casos en Nueva Zelanda.
- EN: Public materials on sustainability (environmental and social), best practice and case studies from New Zealand.
- FR: Documents publics sur durabilité environnementale et sociale, bonnes pratiques en Nouvelle-Zélande.
- IT: Materiale pubblico sulla sostenibilità (ambientale e sociale), buone pratiche e casi in Nuova Zelanda.
- SR: Javni materijal o održivosti (ekološkoj i društvenoj), dobrim praksama i primerima na Novom Zelandu.

8. Fair'n Green (Germany)

Web: *https://www.fairandgreen.de/en/*
Languages: EN / DE
Free: ✅ Partial (information material)

- ES: Marco de sostenibilidad que incluye criterios sociales; fichas y guías públicas de referencia.
- EN: Sustainability framework including social criteria; public fact sheets and guidance.
- FR: Cadre de durabilité incluant critères sociaux; fiches et guides publics.
- IT: Quadro di sostenibilità che include criteri sociali; schede e guide pubbliche di riferimento.
- SR: Okvir održivosti koji uključuje socijalne kriterijume; javno dostupni vodiči i listovi za referencu.

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9. ADVID – Cluster dos Vinhos (Portugal)

Web: *https://www.advid.pt*
Languages: EN / PT
Free: ✅ Yes (articles and news)

- ES: Clúster con proyectos de innovación y sostenibilidad que incluyen aspectos sociales de la viticultura.
- EN: Cluster with innovation and sustainability projects including social aspects for wine regions.
- FR: Cluster travaillant sur innovation et durabilité, incluant la dimension sociale.
- IT: Cluster con progetti di innovazione e sostenibilità che includono aspetti sociali della viticoltura.
- SR: Klaster sa inovacionim i održivim projektima koji obuhvataju društvene aspekte vinogradarstva.

10. Ethical Trading Initiative

Web: *https://www.ethicaltrade.org/*
Languages: EN
Free: ✅ Yes (materials)

- ES: Guías y recursos sobre comercio ético y derechos laborales aplicables a la cadena de suministro vitivinícola.
- EN: Guides and resources on ethical trade and labour rights applicable to wine supply chains.
- FR: Guides et ressources sur commerce éthique et droits du travail applicables aux filières vinicoles.
- IT: Guide e risorse sul commercio etico e sui diritti dei lavoratori applicabili alla filiera vitivinicola.
- SR: Vodiči i resursi o etičkoj trgovini i radnim pravima primenljivi na lanac nabavke vina.

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1.2 Gender Equality in Viticulture

11. Donne del Vino – Women of Wine (Italy)

Web: *https://www.ledonnedelvino.com*
Languages: EN / IT
Free: ✅ Yes

- ES: Asociación nacional que promueve la igualdad de género, la educación y el liderazgo de las mujeres en la industria vitivinícola italiana.
- EN: Community and mentoring to boost female participation and leadership in the wine sector.
- FR : Association nationale qui promeut l'égalité des genres, l'éducation et le leadership des femmes dans l'industrie viticole italienne.
- IT: Associazione nazionale che promuove la parità di genere, l'educazione e la leadership delle donne nell'industria vinicola italiana.
- SR: Nacionalno udruženje koje promoviše rodnu ravnopravnost, obrazovanje i liderstvo žena u italijanskoj vinskoj industriji.

12. Women in Wine (New Zealand)

Web: *https://www.nzwine.com/en/initiativesevents/women-in-wine/*
Languages: EN
Free: ✅ Yes

- ES: Comunidad y mentoring para impulsar la participación y liderazgo femenino en el sector vitivinícola.
- EN: Community and mentoring to boost female participation and leadership in the wine sector.
- FR: Communauté et mentorat pour renforcer la participation et le leadership des femmes dans le vin.
- IT: Comunità e mentoring per promuovere la partecipazione e la leadership femminile nel settore vitivinicolo.
- SR: Zajednica i mentorstvo za podsticanje učešća i ženskog liderstva u sektoru vina.

13. Mujeres del Vino (España)

Web: *https://www.mujeresdelvino.es/*
Languages: ES
Free: ✅ Partial (interviews and resources)

- ES: Asociación que visibiliza a las profesionales del vino en España.
- EN: Association promoting visibility of women in Spanish wine.
- FR: Association valorisant les professionnelles du vin en Espagne.
- IT: Associazione che valorizza le professioniste del vino in Spagna.
- SR: Udruženje koje promoviše žene profesionalce vina u Španiji.

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14. Women of the Vine & Spirits (International)

Web: *https://www.womenofthevine.com/*
Languages: EN
Free: ✅ Partial

- ES: Red global con artículos, conferencias y materiales sobre liderazgo femenino en bebidas.
- EN: Global network with articles, events and materials on female leadership in beverage industries.
- FR: Réseau mondial proposant articles et événements sur leadership féminin.
- IT: Rete globale con articoli, conferenze e materiali sulla leadership femminile nelle bevande.
- SR: Globalna mreža sa člancima, konferencijama i materijalima o ženskom liderstvu u industriji pića.

15. Asociación Mujeres del Vino de Argentina

Web: *https://www.amuvaargentina.ar/*
Languages: ES
Free: ✅ Yes

- ES: Asociación que visibiliza a las profesionales del vino en Argentina.
- EN: Association promoting visibility of women in Argentinian wine.
- FR: Association valorisant les professionnelles du vin en Argentine.
- IT: Associazione che valorizza le professioniste del vino in Argentina.
- SR: Udruženje koje promoviše žene profesionalce vina u Argentina.

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1.3 Change Management and Communication

16. Wine Australia – Change Management Toolkit

Web: *https://www.wineaustralia.com/*
Languages: EN
Free: ✅ Yes

- ES: Kit práctico para gestionar cambios organizativos y comunicación en bodegas y viñedos.
- EN: Practical toolkit to manage organisational change and communications in wineries.
- FR: Boîte à outils pratique pour gérer changement organisationnel et communication.
- IT: Kit pratico per gestire i cambiamenti organizzativi e la comunicazione in cantine e vigneti.
- SR: Praktični kit za upravljanje organizacionim promenama i komunikacijom u vinarijama i vinogradima.

17. ICV Webinars (France) – Change & Innovation

Web: *https://www.icv.fr*
Languages: FR
Free: ✅ Partial (webinars)

- ES: Seminarios sobre innovación, gestión del cambio y transformación digital en cooperativas y bodegas.
- EN: Webinars on innovation, change management and digital transformation for cooperatives and wineries.
- FR: Webinaires sur innovation, gestion du changement et transformation digitale.
- IT: Seminari su innovazione, gestione del cambiamento e trasformazione digitale in cooperative e cantine.
- SR: Seminari o inovacijama, upravljanju promenama i digitalnoj transformaciji u zadrugama i vinarijama.

18. Kotter's 8 Steps (framework)

Web: *https://www.kotterinc.com/8-steps-process-for-leading-change/*
Languages: EN
Free: ✅ Yes (public explanations)

- ES: Marco teórico clásico para gestionar procesos de cambio, aplicable a empresas vitivinícolas.
- EN: Classic organisational change framework applicable to winery transformations.
- FR: Cadre classique de gestion du changement applicable aux caves.
- IT: Quadro teorico classico per gestire processi di cambiamento, applicabile alle aziende vitivinicole.
- SR: Klasičan teorijski okvir za upravljanje promenama, primenjiv na vinske kompanije.

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19. Wine Communications Group (blog/resources)

Web: *https://winecom.co.uk/*
Languages: EN
Free: ✅ Partial

- ES: Recursos prácticos sobre comunicación institucional y campañas para bodegas.
- EN: Practical resources on institutional communication and campaigns for wineries.
- FR: Ressources pratiques sur communication institutionnelle et campagnes.
- IT: Risorse pratiche su comunicazione istituzionale e campagne per cantine.
- SR: Praktični resursi o institucionalnoj komunikaciji i kampanjama za vinarije.

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M2 — Digital Transition in Viticulture

2.1 Understanding Precision Viticulture

20. Vine.net (Horta s.r.l. -Università Cattolica Piacenza)

Web: *https://www.horta-srl.it/vite-net/*
Languages: EN / IT
Free: ✅ Partial (demo)

- ES: Sistema italiano de apoyo a la decisión (DSS) para viñedos, que integra datos climáticos, de plagas y de enfermedades.
- EN: Italian Decision Support System (DSS) for vineyards, integrating climate, pest and disease data.
- FR: Système italien d'aide à la décision (DSS) pour les vignobles, intégrant des données climatiques, de ravageurs et de maladies.
- IT: Sistema italiano di supporto alle decisioni (DSS) per i vigneti, che integra dati climatici, fitosanitari e sulle malattie.
- SR: Italijanski sistem podrške odlučivanju (DSS) za vinograde, koji integriše podatke o klimi, štetočinama i bolestima.

21. Precision Viticulture 101 – UC Davis Extension

Web: *https://extension.ucdavis.edu/precision-viticulture*
Languages: EN
Free: ✅ Yes

- ES: Materiales de extensión sobre fundamentos de viticultura de precisión: sensores, zonificación y análisis.
- EN: Extension materials on fundamentals of precision viticulture: sensors, zoning and analysis.
- FR: Documents d'extension sur bases de viticulture de précision : capteurs et zonage.
- IT: Materiali di estensione sui fondamenti della viticoltura di precisione: sensori, zonizzazione e analisi.
- SR: Materijali o osnovama preciznog vinogradarstva: senzori, zoniranje i analize.

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22. CREA Viticoltora ed Enologia (Public Research Center; Italy)

Web: *https://www.crea.gov.it/*
Languages: IT
Free: ✅ Yes

- ES: Centro de investigación del gobierno italiano que publica estudios de viticultura de acceso abierto, datos SIG y proyectos de innovación digital.
- EN: Italian government research hub publishing open-access viticulture studies, GIS data, and digital innovation projects.
- FR: Pôle de recherche du gouvernement italien publiant des études de viticulture en libre accès, des données SIG et des projets d'innovation numérique.
- IT: Polo di ricerca del governo italiano che pubblica studi di viticoltura ad accesso aperto, dati GIS e progetti di innovazione digitale.
- SR: Istraživački centar italijanske vlade koji objavljuje otvorene studije o vinogradarstvu, GIS podatke i projekte digitalnih inovacija.

23. Agroop – Smart Viticulture platform (basic/free tier)

Web: *https://www.agroop.net/*
Languages: PT / EN / ES
Free: ✅ Free basic version

- ES: Plataforma de sensores y dashboards con plan básico gratuito adecuado para pequeñas explotaciones.
- EN: Sensor & dashboard platform offering a basic free tier suitable for small vineyards.
- FR: Plateforme capteurs et tableaux de bord avec version de base gratuite.
- IT: Piattaforma di sensori e dashboard con piano base gratuito adatto a piccole aziende.
- SR: Platforma senzora i kontrolnih tabli sa besplatnim osnovnim planom pogodnim za manje posede.

24. VITISENSE – Sensors & information

Web: *https://www.vitisense.com/*
Languages: EN / ES
Free: ✅ Partial (demos/material)

- ES: Soluciones de sensores para monitorizar parámetros del viñedo en tiempo real y apoyar decisiones agronómicas.
- EN: Sensor solutions to monitor vineyard variables in real-time to support agronomic decisions.
- FR: Solutions de capteurs pour surveillance en temps réel des vignes.
- IT: Soluzioni di sensori per monitorare parametri del vigneto in tempo reale e supportare decisioni agronomiche.
- SR: Rešenja sa senzorima za praćenje parametara vinograda u realnom vremenu i podršku agronomskim odlukama.

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25. Earth Daily – Satellite analytics for agriculture

Web: *https://earthdaily.com/*
Languages: EN
Free: ✅ Partial (free files)

- ES: Productos satelitales que permiten interpretar vigor, estrés hídrico y zonificación de fincas.
- EN: Satellite-derived products for vigor assessment, water stress and field zoning.
- FR: Produits satellitaires pour mesure de vigueur, stress hydrique et zonage.
- IT: Prodotti satellitari per interpretare vigore, stress idrico e zonizzazione dei terreni.
- SR: Satelitski proizvodi koji omogućavaju interpretaciju bujnosti, vodnog stresa i zoniranja parcela.

26. Viticultura de Precisión – INIA publications

Web: *https://www.inia.es/*
Languages: ES
Free: ✅ Yes (publications)

- ES: Publicaciones técnicas en español sobre aplicaciones de precisión en viñedo.
- EN: Spanish technical publications on precision viticulture applications.
- FR: Publications techniques en espagnol sur viticulture de précision.
- IT: Pubblicazioni tecniche in spagnolo sulle applicazioni di precisione nei vigneti.
- SR: Tehničke publikacije na španskom o preciznim aplikacijama u vinogradima.

2.2 Intelligent Monitoring Technologies

27. Propelleaero (3D drone mapping software)

Web: *https://www.propelleraero.com/*
Languages: EN
Free: ✅ Free basic version

- ES: Plataforma de planificación y análisis con drones con opción gratuita/básica para agricultura.
- EN: Drone mapping & analysis platform with a basic free tier for ag users.
- FR: Plateforme de cartographie par drone avec version gratuite de base.
- IT: Piattaforma di pianificazione e analisi con droni con opzione gratuita/base per l'agricoltura.
- SR: Platforma za planiranje i analize sa dronovima sa besplatnim/osnovnim opcijama za poljoprivredu.

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28. Parrot Bluegrass Fields (agriculture drone)

Web: *https://www.parrot.com/en*
Languages: EN / FR
Free: ✅ Partial (info/demos)

- ES: Dron diseñado para agricultura con sensores para mapeo de vigor en cultivos.
- EN: Agriculture-focused drone with multispectral options for vigor mapping.
- FR: Drone agricole avec capteurs multispectraux.
- IT: Drone progettato per l'agricoltura con sensori per la mappatura del vigore nelle colture.
- SR: Dron dizajniran za poljoprivredu sa senzorima za mapiranje bujnosti useva.

29. Sentera (sensors & analytics)

Web: *https://senterasensors.com/*
Languages: EN
Free: ✅ Partial (webinars/demos)

- ES: Proveedor de sensores y servicios analíticos que publica webinars y material formativo.
- EN: Sensor and analytics provider publishing webinars and demo content.
- FR: Fournisseur de capteurs et analyses fournissant webinaires et démonstrations.
- IT: Fornitore di sensori e servizi analitici che pubblica webinar e materiale formativo.
- SR: Dobavljač senzora i analitičkih usluga koji objavljuje vebinare i edukativni materijal.

30. Vineyard Cloud / vineyard management platforms (examples)

Web: *https://my.vineyard-cloud.com/*
Languages: EN
Free: ✅ Partial (demo)

- ES: Plataformas cloud para centralizar datos de sensores, suelo, riego y visualizarlos en paneles.
- EN: Cloud platforms to centralize sensor, soil and irrigation data and visualize on dashboards.
- FR: Plateformes cloud pour centraliser données de vignoble et visualiser.
- IT: Piattaforme cloud per centralizzare i dati di sensori, suolo, irrigazione e visualizzarli su pannelli.
- SR: Cloud platforme za centralizaciju podataka sa senzora, zemljišta, navodnjavanja i njihovo prikazivanje na tablama.

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31. Copernicus / Sentinel (satellite data)

Web: *https://www.copernicus.eu/en*
Languages: EN + Multilingual
Free: ✅ Yes (open data)

- ES: Imágenes Sentinel gratuitas para generar índices (NDVI), mapas de vigor y detección de estrés.
- EN: Free Sentinel imagery to produce NDVI, vigor maps and stress detection.
- FR: Images Sentinelle libres pour NDVI et cartographie du stress.
- IT: Immagini Sentinel gratuite per generare indici (NDVI), mappe di vigore e rilevamento dello stress.
- SR: Besplatne Sentinel slike za generisanje indeksa (NDVI), mapa bujnosti i detekcije stresa.

32. AWRI Sensor Web / AWRI monitoring tools

Web: *https://www.awri.com.au/industry_support/viticulture/precision-viticulture/*
Languages: EN
Free: ✅ Yes (tools and technical notes)

- ES: Herramientas y guías AWRI para monitorización del dosel, humedad y clima vitícola.
- EN: AWRI tools and guidance for canopy, moisture and vineyard climate monitoring.
- FR: Outils AWRI pour surveillance de couvert végétal et climat du vignoble.
- IT: Strumenti e guide AWRI per monitoraggio della chioma, umidità e clima viticolo.
- SR: Alati i vodiči AWRI za praćenje krošnje, vlažnosti i vinogradarske klime.

2.3 Data Visualisation & Predictive Modelling

33. Tableau (demos) / alternatives

Web: *https://www.tableau.com/solutions/agriculture*
Languages: EN
Free: ✅ Partial (educational / public versions)

- ES: Software de visualización potente usado para dashboards agronómicos; opciones gratuitas para estudiantes o público.
- EN: Powerful visualization software used for ag dashboards with some free public/educational options.
- FR: Outil de visualisation puissant utilisé pour tableaux de bord agricoles (options gratuites pour étudiants).
- IT: Software di visualizzazione potente usato per dashboard agronomici; opzioni gratuite per studenti o pubblico.
- SR: Snažan softver za vizualizaciju korišćen za agronomske kontrolne table; besplatne opcije za studente ili javnost.

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34. R Project / RStudio (data & modelling)

Web: *https://www.r-project.org/*
Languages: EN
Free: ✅ Yes (open-source)

- ES: Entorno y librerías para análisis estadístico, modelización y visualización de datos vitícolas.
- EN: Environment and libraries for statistical analysis, predictive modelling and data visualization.
- FR: Environnement et bibliothèques pour analyse statistique et modélisation.
- IT: Ambiente e librerie per analisi statistica, modellizzazione e visualizzazione di dati viticoli.
- SR: Okruženje i biblioteke za statističku analizu, modeliranje i vizualizaciju vinogradarskih podataka.

35. Agremo (image analytics)

Web: *https://www.agremo.com/*
Languages: EN
Free: ✅ Partial (demos/webinars)

- ES: Plataforma que aplica IA a imágenes para detectar plagas, vigor y estimar rendimiento.
- EN: Platform applying AI to imagery to detect pests, vigour and estimate yields.
- FR: Plateforme d'IA appliquée à l'imagerie pour détection ravageurs et estimation rendement.
- IT: Piattaforma che applica IA alle immagini per rilevare parassiti, vigore e stimare la resa.
- SR: Platforma koja primenjuje veštačku inteligenciju na slike radi otkrivanja štetočina, bujnosti i procene prinosa.

36. VineView (imagery & modelling)

Web: *https://vineview.com/*
Languages: EN
Free: ✅ Partial (demo material)

- ES: Servicios de análisis de imágenes para zonificación de rendimiento y salud del viñedo.
- EN: Imagery analysis services for yield & health zoning in vineyards.
- FR: Services d'analyse d'images pour zonage rendement et santé.
- IT: Servizi di analisi d'immagine per zonizzazione della resa e salute del vigneto.
- SR: Usluge analize slika za zoniranje prinosa i zdravlje vinograda.

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37. Python ML stacks (scikit-learn, xgboost, prophet)

Web: *https://www.python.org/*
Languages: EN
Free: ✅ Yes (open-source)

- ES: Librerías para crear modelos predictivos de producción, fenología y riesgos fitosanitarios.
- EN: Libraries to build predictive models for yields, phenology and pest/disease risk.
- FR: Bibliothèques pour créer modèles prédictifs en viticulture.
- IT: Librerie per creare modelli predittivi di produzione, fenologia e rischi fitosanitari.
- SR: Biblioteke za kreiranje prediktivnih modela proizvodnje, fenologije i fitosanitarnih rizika.

38. Streamlit (dashboards)

Web: *https://streamlit.io*
Languages: EN
Free: ✅ Yes (open-source)

- ES: Herramienta para crear aplicaciones web ligeras que muestren datos y modelos de viñedo.
- EN: Tool to build light web apps to present vineyard data and models.
- FR: Outil pour créer applications web légères affichant données et modèles.
- IT: Strumento per creare applicazioni web leggere che mostrino dati e modelli del vigneto.
- SR: Alat za kreiranje laganih web aplikacija za prikaz podataka i modela vinograda.

2.4 Decision Support Systems (DSS)

39. CropManage (UC ANR) – irrigation & fertility

Web: *https://cropmanage.ucanr.edu/*
Languages: EN
Free: ✅ Yes

- ES: Programa para programar riegos y fertilizaciones en función de necesidades reales del cultivo.
- EN: Tool for scheduling irrigation and fertilizer applications based on crop needs and local data.
- FR: Outil pour planification d'irrigation et fertilisation selon besoins réels.
- IT: Programma per programmare irrigazioni e fertilizzazioni in base alle reali esigenze della coltura.
- SR: Program za planiranje navodnjavanja i đubrenja prema realnim potrebama useva.

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40. VineSens (monitoring / alerts)

Web: *https://www.netsens.it/en/products/sustainable-viticulture/*
Languages: EN / ES
Free: ✅ Partial (demo)

- ES: Plataforma de monitorización con alertas y paneles para decisiones agronómicas en parcelas.
- EN: Monitoring platform with alerts and dashboards to support plot-level decisions.
- FR: Plateforme de surveillance avec alertes et tableaux de bord.
- IT: Piattaforma di monitoraggio con allarmi e pannelli per decisioni agronomiche nei lotti.
- SR: Platforma za praćenje sa alarmima i tablama za agronomske odluke na parcelama.

41. MeteoVitis (agroclimate DSS)

Web: *http://agroclimate.org/projects/usda-nass-decision-support-system-dss/*
Languages: ES
Free: ✅ Yes

- ES: Integración de datos climáticos para planificar tratamientos fitosanitarios y vendimia.
- EN: Integration of climate data to plan sprays and harvest timing.
- FR: Intégration des données climatiques pour planifier traitements et vendanges.
- IT: Integrazione dei dati climatici per pianificare trattamenti fitosanitari e vendemmia.
- SR: Integracija klimatskih podataka radi planiranja fitosanitarnih tretmana i berbe.

42. Extension resources on DSS (universities)

Web: *https://extension.psu.edu/*
Languages: EN
Free: ✅ Yes

- ES: Guías y casos de extensión sobre implementación de DSS en agricultura y viñedo.
- EN: Extension guides and case studies on implementing DSS in agriculture and vineyards.
- FR: Guides d'extension sur mise en place de DSS en agriculture.
- IT: Guide e casi di estensione sull'implementazione dei DSS in agricoltura e nei vigneti.
- SR: Vodiči i primeri o implementaciji DSS-a u poljoprivredi i vinogradima.

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43. Atfield

Web: *https://atfield.tech/*
Languages: EN / SR / ES
Free: ✅ Yes

- ES: Plataforma DSS que combina datos climáticos, de suelo y de viñedo para apoyar decisiones agronómicas.
- EN: DSS platform integrating climate, soil, and vineyard data to support agronomic decision-making.
- FR: Plateforme DSS intégrant les données climatiques, pédologiques et viticoles pour soutenir la prise de décision agronomique.
- IT: Piattaforma DSS che integra dati climatici, del suolo e del vigneto per supportare il processo decisionale agronomico.
- SR: DSS platforma koja integriše podatke o klimi, zemljištu i vinogradu radi podrške agronomskom odlučivanju.

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M3 — Green & Energy Transition in Viticulture

3.1 Green Practices in Viticulture

44. Organic Winegrowing – Soil Association (guides)

Web: *https://www.soilassociation.org/for-business/farmers-growers/agroecological-farming-advice/how-to-guides/*
Languages: EN
Free: ✅ Yes

- ES: Guías para gestión orgánica del viñedo, manejo de suelos y biodiversidad.
- EN: Guides for organic vineyard management, soil care and biodiversity.
- FR: Guides pour viticulture biologique, gestion des sols et biodiversité.
- IT: Guide per la gestione organica del vigneto, gestione del suolo e biodiversità.
- SR: Vodiči za organsko upravljanje vinogradima, negu zemljišta i očuvanje biodiverziteta.

45. VIVA – Sustainable Wine Italy (Ministry of Environment)

Web: *https://viticolturasostenibile.org*
Languages: EN / IT
Free: ✅ Yes

- ES: Programa oficial italiano para medir y mejorar la sostenibilidad en viñedos y bodegas, con herramientas e indicadores abiertos (Aire, Agua, Territorio, Viñedo).
- EN: Official Italian program for measuring and improving sustainability in vineyards and wineries, with open tools and indicators (Air, Water, Territory, Vineyard).
- FR: Programme officiel italien pour mesurer et améliorer la durabilité dans les vignobles et les caves, avec des outils et des indicateurs ouverts (Air, Eau, Territoire, Vignoble).
- IT: Programma ufficiale italiano per misurare e migliorare la sostenibilità nei vigneti e nelle cantine, con strumenti e indicatori aperti (Aria, Acqua, Territorio, Vigneto).
- SR: Službeni italijanski program za merenje i unapređenje održivosti u vinogradima i vinarijama, sa otvorenim alatima i pokazateljima (Vazduh, Voda, Teritorija, Vinograd).

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46. Unione Italiana Vini (UIV) – Sustainability Portal

Web: *https://unioneitalianavini.it/*
Languages: EN / IT
Free: ✅ Partial (public docs)

- ES: Portal del sector que ofrece directrices, formación y estudios de caso sobre descarbonización y energías renovables para bodegas.
- EN: Industry portal offering guidelines, training and case studies on decarbonisation and renewable energy for wineries.
- FR: Portail de l'industrie offrant des lignes directrices, des formations et des études de cas sur la décarbonation et les énergies renouvelables pour les caves.
- IT: Portale del settore che offre linee guida, formazione e casi studio sulla decarbonizzazione e le energie rinnovabili per le cantine.
- SR: Industrijski portal koji nudi smernice, obuke i studije slučaja o dekarbonizaciji i obnovljivim izvorima energije za vinarije.

47. WaterWise Viticulture – UC Davis

Web: *https://sustainability.ucdavis.edu/water-wise*
Languages: EN
Free: ✅ Yes

- ES: Técnicas y herramientas prácticas para manejo eficiente del agua en viñedos.
- EN: Techniques and practical tools for efficient vineyard water management.
- FR: Techniques et outils pratiques pour gestion de l'eau en vignoble.
- IT: Tecniche e strumenti pratici per la gestione efficiente dell'acqua nei vigneti.
- SR: Tehnike i praktični alati za efikasno upravljanje vodom u vinogradima.

48. WWF – Biodiversity in Vineyards materials

Web: *https://www.wwf.org.uk/where-we-work/places/vineyards*
Languages: EN
Free: ✅ Yes

- ES: Iniciativas y orientación para integrar biodiversidad y servicios ecosistémicos en viñedos.
- EN: Initiatives and guidance to integrate biodiversity and ecosystem services in vineyards.
- FR: Initiatives et orientations pour intégrer biodiversité dans les vignobles.
- IT: Iniziative e orientamenti per integrare biodiversità e servizi ecosistemici nei vigneti.
- SR: Inicijative i smernice za integraciju biodiverziteta i ekosistemskih usluga u vinogradima.

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49. ENEA – energy efficiency & guides (Italy)

Web: *https://www.enea.it/en*
Languages: EN / IT
Free: ✅ Yes (information)

- ES: Estudios y guías aplicables a bodegas sobre eficiencia energética y renovables.
- EN: Studies and guides on energy efficiency and renewables for wineries.
- FR: Études et guides sur efficacité énergétique et renouvelables.
- IT: Studi e guide applicabili alle cantine su efficienza energetica e rinnovabili.
- SR: Studije i vodiči o energetskoj efikasnosti i obnovljivim izvorima energije za vinarije.

50. FAO Agroforestry / agroecology resources

Web: *http://www.fao.org/agroforestry/*
Languages: EN / ES
Free: ✅ Yes

- ES: Material sobre integrar árboles y prácticas agroecológicas para mejorar suelo y clima micro.
- EN: Materials on integrating trees and agroecological practices to improve soil and microclimate.
- FR: Ressources sur agroforesterie pour améliorer sols et microclimat.
- IT: Materiale sull'integrazione di alberi e pratiche agroecologiche per migliorare il suolo e il microclima.
- SR: Materijali o integraciji drveća i agroekoloških praksi radi poboljšanja zemljišta i mikroklime.

51. EU biodiversity & agriculture guidance (DG ENV / EEA)

Web: *https://ec.europa.eu/environment/index_en.htm*
Languages: EN / ES / FR
Free: ✅ Yes

- ES: Documentos de política y buenas prácticas para integrar biodiversidad en agricultura y viñedos.
- EN: Policy papers and good-practice guidance for integrating biodiversity in agriculture.
- FR: Documents politiques et bonnes pratiques pour intégrer biodiversité.
- IT: Documenti di politica e buone pratiche per integrare la biodiversità in agricoltura e vigneti.
- SR: Dokumenti o politikama i smernice o najboljim praksama za integraciju biodiverziteta u poljoprivredu.

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52. Biochar International (soil carbon & health)

Web: *https://www.biochar-international.org/*
Languages: EN
Free: ✅ Yes (resources)

- ES: Información sobre biochar para mejorar retención de agua y salud del suelo en viñedos.
- EN: Info on biochar use to improve water retention and soil health in vineyards.
- FR: Informations sur usage du biochar pour améliorer sols et rétention d'eau.
- IT: Informazioni sul biochar per migliorare ritenzione idrica e salute del suolo nei vigneti.
- SR: Informacije o upotrebi bio-uglja za poboljšanje zadržavanja vode i zdravlja zemljišta u vinogradima.

53. Agroecology videos / YouTube playlists (prácticas)

Web:
https://www.youtube.com/playlist?list=PLFWmf6fZP1qy5qd5jrv346EsN0V0HQYWy
Languages: EN / ES / FR
Free: ✅ Yes

- ES: Videos prácticos sobre cubiertas vegetales, setos y agroecología en viñedos.
- EN: Practical videos on cover crops, hedgerows and agroecology in vineyards.
- FR: Vidéos pratiques sur cultures de couverture et agroécologie.
- Video pratici su coperture vegetali, siepi e agroecologia nei vigneti.
- IT: Video pratici su coperture vegetali, siepi e agroecologia nei vigneti.
- SR: Praktični video materijali o pokrovnim usevima, živim ogradama i agroekologiji u vinogradima.

3.2 Energy Transition in the Wine Industry

54. US DOE – Renewable energy guides for farmers / solar

Web: *https://www.energy.gov/cmei/systems/farmers-guide-going-solar*
Languages: EN
Free: ✅ Yes

- ES: Guías técnicas y casos para instalación solar en bodegas y ahorro energético.
- EN: Technical guides and case studies on solar installations and energy saving for wineries.
- FR: Guides techniques et études de cas sur solaire en caves.
- IT: Guide tecniche e casi per l'installazione di sistemi solari in cantine e risparmio energetico.
- SR: Tehnički vodiči i studije slučaja o solarnim instalacijama i uštedi energije za vinarije.

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55. Enel Green Power – energy audits & cases

Web: *https://www.enelgreenpower.com/*
Languages: EN / IT
Free: ✅ Partial (information)

- ES: Informes y casos sobre auditorías energéticas y transición a renovables.
- EN: Reports and case studies on energy audits and renewables switch.
- FR: Rapports et cas sur audits énergétiques et renouvelables.
- IT: Relazioni e casi su audit energetici e transizione alle rinnovabili.
- SR: Izveštaji i studije slučaja o energetskim revizijama i prelasku na obnovljive izvore energije.

56. Biomass Magazine (applications)

Web: *https://biomassmagazine.com/*
Languages: EN
Free: ✅ Yes (publications)

- ES: Artículos sobre uso de biomass para calor y valorización de subproductos vitícolas.
- EN: Articles on biomass use for heat generation and pomace valorisation in wineries.
- FR: Articles sur utilisation de biomasse pour chaleur et valorisation des sous-produits.
- IT: Articoli sull'uso della biomassa per il calore e la valorizzazione dei sottoprodotti viticoli.
- SR: Članci o upotrebi biomase za proizvodnju toplote i valorizaciju ostataka grožđa u vinarijama.

57. IRENA – Clean energy resources

Web: *https://www.irena.org/*
Languages: EN
Free: ✅ Yes

- ES: Recursos globales sobre tecnologías limpias y estrategias energéticas aplicables al sector.
- EN: Global resources on clean tech and energy transition strategies for agri-food sectors.
- FR: Ressources globales sur technologies propres et transition énergétique.
- IT: Risorse globali su tecnologie pulite e strategie energetiche applicabili al settore.
- SR: Globalni resursi o čistim tehnologijama i strategijama energetske tranzicije za agro-prehrambene sektore.

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58. Ecovinegoals

Web: *https://giam.zrc-sazu.si/en/programi-in-projekti/ecovinegoals-ekolosko-upravljanje-z-vinogradi-in-aktivnosti-za-pokrajinske*
Languages: EN / ES / FR / SR
Free: ✅ Yes

- ES: Proyecto europeo que promueve la gestión ecológica de viñedos y la sostenibilidad del paisaje.
- EN: European project promoting ecological vineyard management and landscape sustainability.
- FR: Projet européen promouvant la gestion écologique des vignobles et la durabilité des paysages.
- IT: Risorse globali su tecnologie pulite e strategie energetiche applicabili al settore.
- SR: Progetto europeo che promuove la gestione ecologica dei vigneti e la sostenibilità del paesaggio.

3.3 Case Studies on Sustainable Viticulture

59. Castel Winery – sustainability cases (France)

Web: *https://www.castel-freres.com/*
Languages: EN / FR
Free: ✅ Yes (information)

- ES: Casos de implementación de prácticas sostenibles a gran escala en grupos vitivinícolas.
- EN: Cases of scaled sustainability implementation in commercial wine groups.
- FR: Exemples d'implantation de pratiques durables à grande échelle.
- IT: Casi di implementazione di pratiche sostenibili su ampia scala in gruppi vitivinicoli.
- SR: Primeri primene održivosti u većem obimu u komercijalnim vinskim grupama.

60. Bodegas Torres – sustainability reports (Spain)

Web: *https://www.torres.es/*
Languages: EN / ES
Free: ✅ Yes (reviews)

- ES: Informes públicos sobre energía, agua, reducción de emisiones y certificaciones sostenibles.
- EN: Public sustainability reports on energy, water and emissions reduction.
- FR: Rapports publics sur durabilité, énergie et eau.
- IT: Relazioni pubbliche su energia, acqua, riduzione delle emissioni e certificazioni sostenibili.
- SR: Javni izveštaji o održivosti koji pokrivaju energiju, vodu i smanjenje emisija.

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61. Cloudy Bay – environmental projects (NZ)

Web: *https://www.cloudybay.co.nz/*
Languages: EN
Free: ✅ Yes (examples)

- ES: Proyectos ambientales y de reducción de huella en viñedos costeros de Nueva Zelanda.
- EN: Environmental management and footprint reduction projects in coastal NZ vineyards.
- FR: Projets environnementaux dans vignobles côtiers de NZ.
- IT: Progetti ambientali e di riduzione dell'impronta nei vigneti costieri della Nuova Zelanda.
- SR: Projekti upravljanja životnom sredinom i smanjenja ekološkog otiska u vinogradima na obali Novog Zelanda.

62. Concha y Toro – sustainability (Chile)

Web: *https://www.conchaytoro.com/*
Languages: EN / ES
Free: ✅ Yes (reports)

- ES: Documentación pública sobre adaptación climática, recursos hídricos y certificaciones.
- EN: Public documentation about climate adaptation, water management and certifications.
- FR: Documentation publique sur adaptation climatique et gestion de ressources.
- IT: Documentazione pubblica su adattamento climatico, risorse idriche e certificazioni.
- SR: Javno dostupna dokumentacija o prilagođavanju klimatskim promenama, upravljanju vodom i sertifikacijama.

63. Domaine de la Romanée-Conti – biodynamic examples (France)

Web: *https://www.romanee-conti.fr/*
Languages: FR
Free: ✅ Yes (informative material)

- ES: Ejemplo de viticultura biodinámica centrada en salud del suelo y calidad de producto.
- EN: Example of biodynamic viticulture focused on soil health and wine quality.
- FR: Exemple de viticulture biodynamique axée sur santé du sol.
- IT: Esempio di viticoltura biodinamica incentrata sulla salute del suolo e sulla qualità del prodotto.
- SR: Primer biodinamičkog vinogradarstva fokusiranog na zdravlje zemljišta i kvalitet vina.

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64. Agro-Environmental Practices and Business Performance in the Wine Sector

Web: *https://www.mdpi.com/2077-0472/12/2/239*
Languages: EN, FR, ES, SR
Free: ✅ Yes

- ES: Estudio que analiza cómo las prácticas agroambientales afectan el desempeño empresarial en el sector del vino.
- EN: Study analyzing how agro-environmental practices impact business performance in the wine sector.
- FR: Étude analysant comment les pratiques agroenvironnementales influencent la performance économique dans le secteur viticole.
- IT: Esempio di viticoltura biodinamica incentrata sulla salute del suolo e sulla qualità del prodotto.
- SR: Studija koja analizira kako agroekološke prakse utiču na poslovne performanse preduzeća u vinskom sektoru.

65. Cell wall compounds of red grapes skins and their grape marcs from three different winemaking techniques

Web: *https://www.sciencedirect.com/science/article/abs/pii/S0308814615005889*
Languages: EN
Free: ✅ Partial

- ES: Estudio que proporciona información útil para la revalorización del orujo de uva.
- EN: Study providing useful information for the revalorisation of grape marc.
- FR: Étude fournissant des informations utiles pour la valorisation du marc de raisin.
- IT: Studio che fornisce informazioni utili per la valorizzazione delle vinacce.
- SR: Studija koja pruža korisne informacije za valorizaciju komine grožđa.

66. The composition of cell walls from grape skin in *Vitis vinifera* intraspecific hybrids

Web: *https://scijournals.onlinelibrary.wiley.com/doi/full/10.1002/jsfa.8270*
Languages: EN
Free: ✅ Free

- ES: Estudio que proporciona información útil para apoyar el desarrollo de nuevos cultivares adaptados a condiciones de sequía.
- EN: Study providing useful information to support the development of new cultivars adapted to dry conditions.
- FR: Étude fournissant des informations utiles pour soutenir le développement de nouveaux cultivars adaptés aux conditions de sécheresse.
- IT: Studio che fornisce informazioni utili per sostenere lo sviluppo di nuove cultivar adattate alle condizioni di siccità.SR: Studija koja pruža korisne informacije za podršku razvoju novih sorti prilagođenih sušnim uslovima.

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M4 — New Products & Business Models in Viticulture

4.1 New Innovative Products

67. Grapeskin Extracts – University of Murcia (research)

Webs:
https://www.um.es/
https://scispace.com/authors/encarna-gomez-plaza-rbx3oi57fp
https://pubmed.ncbi.nlm.nih.gov/25977002/
Languages: EN / ES
Free: ✅ Yes (publications)

- ES: Investigación sobre valorización de hollejos y subproductos para usos en alimentos y cosmética.
- EN: Research on valorising grape skins and pomace for antioxidants and cosmetic uses.
- FR: Recherche sur valorisation des peaux et marcs pour antioxydants.
- IT: Ricerca sulla valorizzazione delle vinacce e sottoprodotti per usi in alimenti e cosmetica.
- SR: Istraživanja o valorizaciji kožica grožđa i ostataka grožđa za dobijanje antioksidanata i upotrebu u kozmetici.

68. Non-alcoholic wine trends – industry guides

Web:
https://www.vinetur.com/documentos/article/88052/Report_%20Rise%20of%20Non-Alcoholic%20Wines.pdf
Languages: EN
Free: ✅ Yes (information)

- ES: Información sobre desarrollo de productos alternativos y tendencias de consumo.
- EN: Insights on the development and market of non-alcoholic wine alternatives.
- FR: Informations sur tendances du marché des vins sans alcool.
- IT: Informazioni sullo sviluppo di prodotti alternativi e tendenze di consumo.
- SR: Uvidi u razvoj i tržište bezalkoholnih vinskih alternativa.

69. Wine Meridian (Italy) – Innovation & Market Insights

Web: https://www.winemeridian.com/
Languages: EN / IT
Free: ✅ Yes (educational information)

- ES: Revista italiana en línea sobre marketing del vino, innovación y exportación.
- EN: Italian online magazine on wine marketing, innovation and export.
- FR: Magazine italien en ligne sur le marketing du vin, l'innovation et l'exportation.
- IT: Rivista italiana online sul marketing del vino, l'innovazione e l'exportazione.

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SR: Mogućnosti za kreiranje novih proizvoda za poboljšanje zemljišta i Italijanski onlajn časopis o marketingu vina, inovacijama i izvozu.

70. Associazione Nazionale Città del Vino

Web: *https://www.cittadelvino.it/*
Languages: IT
Free: ✅ Yes

- ES: Red nacional de ciudades del vino que promueve el enoturismo, la sostenibilidad y el patrimonio cultural.
- EN: National network of wine towns promoting wine tourism, sustainability, and cultural heritage.
- FR: Réseau national de villes du vin promouvant l'œnotourisme, la durabilité et le patrimoine culturel.
- IT: Rete nazionale delle città del vino che promuove l'enoturismo, la sostenibilità e il patrimonio culturale.
- SR: Nacionalna mreža vinskih gradova koja promoviše vinski turizam, održivost i kulturno nasleđe.

71. Biochar applications for vineyards (info)

Web: *https://www.biochar-international.org/*
Languages: EN
Free: ✅ Yes

- ES: Posibilidades de crear nuevos productos de enmienda de suelo y secuestro de carbono.
- EN: Opportunities to develop soil amendment products and carbon sequestration solutions.
- FR: Opportunités de créer produits amendement et séquestration carbone.
- IT: Possibilità di creare nuovi prodotti per il miglioramento del suolo e il sequestro del carbonio.
- SR: Mogućnosti za razvoj proizvoda za poboljšanje zemljišta i rešenja za sekvestraciju ugljenika.

72. Urban vineyards association

Web: *https://urbanvineyards.org/fr/fr-home/*
Languages: EN /FR /IT
Free: ✅ Yes

- ES: Modelos de producto y experiencias locales derivados de proyectos de viticultura urbana.
- EN: Models for small-scale wine products & local experiences from urban viticulture projects.
- FR: Modèles pour petits produits locaux issus viticulture urbaine.
- IT: Modelli di prodotto ed esperienze locali derivanti da progetti di viticoltura urbana.
- SR: Modeli za lokalne vinske proizvode i lokalna iskustva iz urbanih vinogradarskih projekata.

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73. Wine tourism digital tools & conference materials

Web: *https://winetourism.co.za/programme-2026/*
Languages: EN
Free: ✅ Partial (webinars/information)

- ES: Recursos y ponencias para diseñar experiencias turísticas digitales y sostenibles.
- EN: Resources & talks for designing digital & sustainable wine tourism experiences.
- FR: Ressources pour concevoir expériences oenotourisme numériques et durables.
- IT: Risorse e conferenze per progettare esperienze turistiche digitali e sostenibili.
- SR: Resursi i predavanja za dizajniranje digitalnih i održivih iskustava u vinskom turizmu.

74. Circular economy briefs (EU)

Web: *https://circulareconomy.europa.eu/*
Languages: EN / ES / FR
Free: ✅ Yes

- ES: Orientación para incorporar economía circular en bodega: envases, subproductos y logística.
- EN: Guidance for circular economy implementation in wineries: packaging, by-products, logistics.
- FR: Orientation pour économie circulaire en caves.
- IT: Orientamenti per integrare l'economia circolare in cantina: packaging, sottoprodotti e logistica.
- SR: Smernice za integraciju cirkularne ekonomije u vinarijama: pakovanja, nusproizvodi i logistika.

4.2 Wine Tourism as a Business Model

75. Great wine capitals: wine tourism

Web: *https://www.greatwinecapitals.com/*
Languages: EN
Free: ✅ Partial

- ES: Comunidad con artículos y herramientas para profesionalizar el enoturismo.
- EN: Community with articles & tools to professionalize wine tourism.
- FR: Communauté avec ressources pour professionnalisation oenotourisme.
- IT: Comunità con articoli e strumenti per professionalizzare l'enoturismo.
- SR: Zajednica sa člancima i alatima za profesionalizaciju vinskog turizma.

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76. EU / OECD wine tourism playbooks

Web: *https://ec.europa.eu/*
https://www.oecd.org/
Languages: EN / ES / FR
Free: ✅ Yes

- ES: Guías para integrar enoturismo en estrategias regionales y de diversificación económica.
- EN: Guides to integrate wine tourism into regional development and diversification strategies.
- FR: Guides pour intégrer oenotourisme aux politiques régionales.
- IT: Guide per integrare l'enoturismo in strategie regionali e di diversificazione economica.
- SR: Vodiči za integraciju vinskog turizma u strategije regionalnog razvoja i diverzifikacije.

4.3 Sales Strategies for New Products

77. Wine marketing toolkits / green marketing guides

Web: *https://www.greenmarketingitalia.com/en/sustainable-wine-growing/*
Languages: EN / IT
Free: ✅ Partial

- ES: Guías para comunicar atributos sostenibles y trazabilidad del producto.
- EN: Toolkits to communicate sustainable attributes and product traceability.
- FR: Outils pour communiquer durabilité et traçabilité.
- IT: Guide per comunicare attributi sostenibili e tracciabilità del prodotto.
- SR: Alati za komunikaciju održivih karakteristika i praćenja proizvoda.

78. Wine Business materials

Web: *https://www.winebusiness.com/*
Languages: EN
Free: ✅ Partial (articles / presentations)

- ES: Noticias y ponencias sobre comercialización y modelos de negocio en el sector.
- EN: Industry news and conference talks on marketing and business models.
- FR: Actualités et conférences sur marketing vin.
- IT: Notizie e conferenze su commercializzazione e modelli di business nel settore.
- SR: Industrijske vesti i konferencijski govori o marketingu i poslovnim modelima.

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Cross-cutting resources, data, communities and various tools (up to 115)

79. AWRI – Australian Wine Research Institute (resources & webinars)

Web: *https://www.awri.com.au/*
Languages: EN
Free: ✅ Yes (resources)

- ES: Investigación aplicada, notas técnicas, podcasts y webinars sobre viticultura y enología.
- EN: Applied research, technical notes, podcasts and webinars on viticulture and enology.
- FR: Recherche appliquée, notes techniques et webinaires.
- IT: Ricerca applicata, note tecniche, podcast e webinar su viticoltura ed enologia.
- SR: Primenjeno istraživanje, tehničke beleške, podkasti i vebinari o vinogradarstvu i enologiji.

80. Wine Australia – Knowledge Hub

Web: *https://www.wineaustralia.com/*
Languages: EN
Free: ✅ Yes

- ES: Recursos sectoriales, datos de mercado y herramientas prácticas para viticultores y bodegas.
- EN: Sector resources, market data and practical tools for growers and wineries.
- FR: Ressources sectorielles et données marché.
- IT: Risorse settoriali, dati di mercato e strumenti pratici per viticoltori e cantine.
- SR: Sektorski resursi, tržišni podaci i praktični alati za vinogradare i vinarije.

81. Vinehealth Australia

Web: *https://www.vinehealth.com.au/*
Languages: EN
Free: ✅ Yes

- ES: Alertas de bioseguridad, plagas y medidas preventivas para viñedos australianos.
- EN: Biosecurity, pest alerts and prevention measures for Australian vineyards.
- FR: Informations biosécurité et alertes parasites.
- IT: Allarmi di biosicurezza, parassiti e misure preventive per i vigneti australiani.
- SR: Bionadzor, upozorenja na štetočine i mere prevencije za australijske vinograde.

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82. CSIRO Agriculture and Food (Australia)

Web: *https://www.csiro.au/*
Languages: EN
Free: ✅ Yes (publications)

- ES: Investigación sobre resiliencia de cultivos, efectos climáticos y producción.
- EN: Research on crop resilience, climate impacts and agricultural production.
- FR: Recherche sur résilience des cultures et impacts climatiques.
- IT: Ricerche sulla resilienza delle colture, effetti climatici e produzione.
- SR: Istraživanje o otpornosti useva, klimatskim uticajima i poljoprivrednoj proizvodnji.

83. BRI – Bragato Research Institute (NZ)

Web: *https://bri.co.nz/*
Languages: EN
Free: ✅ Yes

- ES: Informes y consejos técnicos sobre viticultura sostenible y adaptación.
- EN: Reports and technical advice on sustainable viticulture and adaptation.
- FR: Rapports et conseils techniques sur viticulture durable.
- IT: Relazioni e consigli tecnici sulla viticoltura sostenibile e adattamento.
- SR: Izveštaji i tehnički saveti o održivom vinogradarstvu i prilagođavanju.

84. Plant & Food Research (New Zealand)

Web: *https://www.plantandfood.co.nz/*
Languages: EN
Free: ✅ Yes (publications)

- ES: Estudios sobre fisiología de la vid, climas y variedades resistentes.
- EN: Studies on vine physiology, cultivars and climate resilience.
- FR: Études sur physiologie de la vigne et résilience climatique.
- IT: Studi sulla fisiologia della vite, climi e varietà resistenti.
- SR: Studije o fiziologiji vinove loze, sortama i otpornosti na klimatske promene.

85. European Climate Foundation – wine sector materials

Web: *https://europeanclimate.org/*
Languages: EN
Free: ✅ Yes

- ES: Análisis y recomendaciones de políticas sobre transición climática en sectores como el vino.
- EN: Analyses and policy recommendations on climate transition for sectors including wine.
- FR: Analyses et recommandations politiques sur transition climatique.
- IT: Analisi e raccomandazioni politiche sulla transizione climatica nel settore del vino.
- SR: Analize i preporuke politika o klimatskoj tranziciji za sektore, uključujući vino.

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86. GBIF – Global Biodiversity Information Facility

Web: *https://www.gbif.org/*
Languages: EN
Free: ✅ Yes

- ES: Datos de ocurrencia de especies para planificar plantaciones de biodiversidad y fomentar enemigos naturales.
- EN: Species occurrence data for planning biodiversity plantings and natural enemies.
- FR: Données d'occurrence d'espèces pour planifier corridors de biodiversité.
- IT: Dati sulla presenza di specie per pianificare piantagioni di biodiversità e favorire nemici naturali.
- SR: Podaci o pojavi vrsta za planiranje sadnje biodiverziteta i prirodnih neprijatelja (štetočina).

87. Cool Farm Tool (methodology & reading)

Web: *https://coolfarmtool.org/*
Languages: EN
Free: ✅ Partial

- ES: Metodologías para estimar huella de carbono y rendir cuentas en cadena agrícola.
- EN: Methodology to estimate GHG footprints and account for ag supply chains.
- FR: Méthodologie pour estimer empreinte GES des chaînes agricoles.
- IT: Metodologie per stimare l'impronta di carbonio e rendicontare nelle filiere agricole.
- SR: Metodologija za procenu otisaka gasova sa efektom staklene bašte (GHG) i obračun za lance snabdevanja u poljoprivredi.

88. FAO WaPOR (water productivity via RS)

Web: *https://wapor.apps.fao.org/*
Languages: EN / ES
Free: ✅ Yes

- ES: Mapas de ET y productividad hídrica vía satélite para calibrar riego y eficiencia.
- EN: Satellite ET & water productivity maps for irrigation calibration.
- FR: Cartes ET satellitaires pour productivité en eau.
- IT: Mappe di ET e produttività idrica via satellite per calibrare l'irrigazione e l'efficienza.
- SR: Satelitske mape evapotranspiracije (ET) i produktivnosti vode za kalibraciju navodnjavanja.

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89. Climate-ADAPT (EU adaptation platform)

Web: *https://climate-adapt.eea.europa.eu/*
Languages: EN + Multilingual
Free: ✅ Yes

- ES: Buenas prácticas de adaptación aplicables a regiones vitícolas europeas.
- EN: Adaptation good practices applicable to European wine regions.
- FR: Bonnes pratiques d'adaptation pour régions viticoles.
- IT: Best practice di adattamento applicabili alle regioni viticole europee.
- SR: Dobre prakse prilagođavanja primenljive na evropske vinske regione.

90. OpenAerialMap (community aerial imagery)

Web: *https://openaerialmap.org/*
Languages: EN
Free: ✅ Yes

- ES: Repositorio de imágenes aéreas comunitarias útil para mapeo local.
- EN: Community-shared aerial imagery useful for local mapping.
- FR: Imagerie aérienne communautaire utile pour cartographie.
- IT: Repository di immagini aeree comunitarie utili per la mappatura locale.
- SR: Zajednički korišćeni vazdušni snimci korisni za lokalno mapiranje.

91. USGS Earth Explorer (Landsat / SRTM)

Web: *https://earthexplorer.usgs.gov/*
Languages: EN
Free: ✅ Yes

- ES: Acceso a series satelitales históricas y DEMs para análisis de pendientes y cambios.
- EN: Access to historical satellite time-series and DEMs for slope & change analysis.
- FR: Accès à séries satellites historiques et DEM pour analyses.
- IT: Accesso a serie storiche satellitari e DEM per analisi di pendenze e cambiamenti.
- SR: Pristup istorijskim satelitskim vremenskim serijama i DEM-ovima (digitalni elevacioni modeli) za analizu nagiba i promena.

92. Google Earth Engine (research access)

Web: *https://earthengine.google.com/*
Languages: EN
Free: ✅ Yes (for research)

- ES: Plataforma cloud para análisis masivo de series satelitales y modelado.
- EN: Cloud platform for large-scale satellite time-series analysis and modelling.
- FR: Plateforme cloud pour analyse temporelle satellite.
- IT: Piattaforma cloud per analisi massiva di serie satellitari e modellizzazione.
- SR: Cloud platforma za analizu i modelovanje satelitskih vremenskih serija velikih razmera.

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93. OpenDroneMap / WebODM (UAV processing)

Web: *https://www.opendronemap.org/*
Languages: EN
Free: ✅ Yes (open-source)

- ES: Software libre para generar ortofotos y modelos 3D desde vuelos con drones.
- EN: Open-source tool to produce orthomosaics and 3D models from UAV imagery.
- FR: Outil open-source pour orthomosaïques et modèles 3D.
- IT: Piattaforma cloud per analisi massiva di serie satellitari e modellizzazione.
- SR: Alat otvorenog koda za izradu ortomozaika i 3D modela od snimaka bespilotnih letelica (UAV).

94. Leaflet (web mapping libs)

Web: *https://leafletjs.com/*
https://maplibre.org/
Languages: EN
Free: ✅ Yes (open-source)

- ES: Librerías para crear mapas interactivos y aplicaciones de geovisualización.
- EN: Libraries to build interactive web maps and geovisualisations.
- FR: Bibliothèques pour créer cartes web interactives.
- IT: Piattaforma cloud per analisi massiva di serie satellitari e modellizzazione.
- SR: Biblioteke za izradu interaktivnih veb mapa i geovizualizacija

95. Kepler.gl (no-code geovisualization)

Web: *https://kepler.gl/*
Languages: EN
Free: ✅ Yes

- ES: Herramienta sin código para visualizar rutas, datos de cosecha y KPIs espaciales.
- EN: No-code tool to visualise routes, harvest data and spatial KPIs.
- FR: Outil sans code pour visualisation géospatiale.
- IT: Strumento senza codice per visualizzare percorsi, dati di raccolta e KPIs spaziali.
- SR: : Alat bez kodiranja za vizualizaciju ruta, podataka o berbi i prostornih KPI-jeva.

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96. OpenET (evapotranspiration data, US regions)

Web: *https://openetdata.org/*
Languages: EN
Free: ✅ Yes (US regions)

- ES: Datos ET por satélite para estimar evapotranspiración real y optimizar riego.
- EN: Satellite-based ET data to estimate actual evapotranspiration for irrigation optimization.
- FR: Données ET satellitaires pour estimer évapotranspiration réelle.
- IT: Dati ET satellitari per stimare l'evapotraspirazione reale e ottimizzare l'irrigazione.
- SR: Satelitski podaci o evapotranspiraciji (ET) za procenu stvarne evapotranspiracije u svrhu optimizacije navodnjavanja.

97. GitHub – precision ag repos & notebooks

Web: *https://github.com/*
Languages: EN
Free: ✅ Yes

- ES: Repositorios con notebooks y scripts para NDVI, clustering y modelos de rendimiento.
- EN: Repos with notebooks & scripts for NDVI processing and yield models.
- FR: Repos avec notebooks et scripts pour NDVI et modèles de rendement.
- IT: Repository con notebook e script per NDVI, clustering e modelli di resa.
- SR: Repozitorijumi sa beležnicama i skriptama za NDVI obradu i modele prinosa.

98. Coursera / edX (audit mode) – data / GIS courses

Web: *https://www.coursera.org/*
https://www.edx.org/
Languages: EN + Multilingual
Free: ✅ Yes

- ES: MOOCS de ciencia de datos, SIG y modelización que se pueden auditar gratis.
- EN: MOOCs in data science and GIS that can be audited for free.
- FR: MOOCs en science des données et SIG auditable gratuitement.
- IT: MOOCS di data science, GIS e modellizzazione auditabili gratuitamente.
- SR: MOOC-ovi iz nauke o podacima i GIS-a koji se mogu besplatno pohađati.

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99. ResearchGate & ScienceDirect (open access articles)

Web: *https://www.researchgate.net/*
https://www.sciencedirect.com/
Languages: EN + Multilingual
Free: ✅ Partial (OA articles)

- ES: Plataformas para acceder a literatura científica; muchos artículos de viticultura son OA.
- EN: Platforms to access scientific literature; many viticulture articles are open access.
- FR: Plateformes pour accéder aux articles scientifiques (certains OA).
- IT: Piattaforme per accedere alla letteratura scientifica; molti articoli viticoli sono OA.
- SR: Platforme za pristup naučnoj literaturi; mnogi članci o vinogradarstvu su otvorenog pristupa.

100. QGIS (GIS open source)

Web: *https://qgis.org/*
Languages: EN + Multilingual
Free: ✅ Yes

- ES: GIS completo para zonificación, análisis topográfico e integración de datos de sensores.
- EN: Full GIS for zoning, slope analysis and sensor data integration.
- FR: Logiciel SIG complet pour zonage et intégration de données.
- IT: GIS completo per zonizzazione, analisi topografica e integrazione dati da sensori.
- SR: Potpuni GIS za zoniranje, analizu nagiba i integraciju senzorskih podataka.

101. Trello (project management)

Web: *https://trello.com/*
Languages: EN + Multilingual
Free: ✅ Yes

- ES: Organización de tareas y seguimiento de proyectos de viñedo y bodega.
- EN: Task organisation and project tracking for vineyard teams.
- FR: Organisation et suivi des tâches pour équipes.
- IT: Organizzazione di compiti e monitoraggio progetti di vigneto e cantina.
- SR: Organizacija zadataka i praćenje projekata za vinogradarske timove.

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102. Canva (design for communications)

Web: *https://www.canva.com/*
Languages: EN + Multilingual
Free: ✅ Yes

- ES: Creación de materiales de marketing, redes y comunicación para bodegas.
- EN: Create marketing and communication materials for wineries.
- FR: Création de supports marketing et communication.
- IT: Creazione di materiali di marketing, reti e comunicazione per le cantine.
- SR: Izrada marketinškog i komunikacionog materijala za vinarije.

103. GlobalG.A.P. / Organic & certification info (info pages)

Web: *https://www.globalgap.org/*
Languages: EN + Multilingual
Free: ✅ Partial (public information)

- ES: Información y requisitos para certificaciones de producción responsable; material público consultable.
- EN: Info on standards and requirements for responsible production certifications—public information available.
- FR: Informations sur normes et exigences pour certifications de production responsable.
- IT: Informazioni e requisiti per certificazioni di produzione responsabile; materiale pubblico consultabile.
- SR: Informacije o standardima i zahtevima za sertifikaciju odgovorne proizvodnje—javno dostupne informacije.

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