Fundação Mendes Gonçalves

CONCEPTUAL NOTE

Nurturing Regeneration Education

Caring, through the regeneration of soils and biodiversity, so that the planet and communities have a better future.

Fundação Mendes Gonçalves

Fundação Mendes Gonçalves (Mendes Gonçalves Foundation) was established from the commitment of **Casa Mendes Gonçalves** and its founder, **Carlos Mendes Gonçalves**, to the mission of "caring for the present and contributing to the construction of a promising future and a more sustainable world with greater opportunities for all people."

Building an equitable, healthy, sustainable future with well-being for everyone requires essential collaborative action: CARING. Caring for people and ecosystems. For what is born, grows, and regenerates. Caring means cultivating the potential of ideas, individuals, families, and the community. With **ethics, transparency, and integrity**, acknowledging that there is always more to learn, improve, and transform. With the inquisitiveness and curiosity that allow us to envision what is not yet but can become. With the **flexibility** to **adapt** and **innovate.**

Caring is a verb of the present and a verb of the future. We aim to **plant seeds of change and possibility** in our territory, Golegã, which will transform into roots of **new ways of educating, nurturing, and regenerating.** We aspire to leave a legacy, for the future of all.

Therefore, the Mendes Gonçalves Foundation proposes to develop three complementary programs:

- **EDUCATE:** Caring, through quality education, ensuring that all children have equitable opportunities to grow, learn, and flourish.
- **NURTURE:** Caring, through healthy nutrition and food security, enabling all individuals to adopt healthy lifestyles and experience well-being.
- **REGENERATE:** Caring, through the regeneration of soils and biodiversity, so that the planet and communities have a better future.

Each of these programs operates on the ground based on scientific evidence, co-creation, impact evaluation, proximity philanthropy, and ethical responsibility. **Together, their actions build an ecosystem of transformation, empowerment, and capacity-building**, rooted in community proximity and the establishment of partnerships, in science and in the possibility of knowledge transference, in the **commitment to communicate and advocate** for present and future generations. Collectively, these programs contribute to the **Sustainable Development Goals (SDGs),** with locally rooted solutions that have the potential to influence, inspire, and transform practices and public policies in Portugal and worldwide.

Caring for the future and transforming the world is a mission only possible with syntropy, inclusion, and collaboration from all—families, professionals, organizations, companies, and the community. **We count on everyone.**

PROGRAMME REGENERATE

EARTH | The Context

We are living through an unprecedented environmental crisis, with negative consequences extending across all ecosystems—both human and natural. [i] In this scenario, **agriculture—** globally, across Europe, and specifically in Portugal—faces critical challenges that impact environmental sustainability, public health, food security, and economic stability.

We now understand that dominant agricultural practices, while they increased food production throughout the 20th century, carry a high ecological and social cost. The **main problems associated with current agricultural practices and their respective impacts** include:

• **Soil degradation**. Intensive cultivation, reliance on monocultures, and lack of soil cover contribute to **soil erosion**. Globally, 24 billion tons of fertile soil are lost annually due to erosion. [ii] One-third of the world's agricultural soil is moderately or severely degraded. [iii] In Portugal, studies show that ineffective soil conservation practices have worsened erosion, leading to significant land degradation. [iv] Modern agriculture often **depletes organic matter**, reducing soil fertility and microbial diversity—which in turn lowers nutrient density in food and affects human nutrition. [v] Excessive tilling degrades soil structure, causing compaction, poor root development, and reduced water infiltration, all of which directly harm agricultural productivity.[vi]

• **Pollution and excessive water use**. Agriculture accounts for about 70% of global freshwater withdrawals and is often used **inefficiently**.[vii] In Portugal, we face water scarcity and inefficient irrigation methods that impact food production and increase costs.[viii] Simultaneously, the excessive use of synthetic fertilizers and pesticides leads to **runoff** and subsequent pollution of rivers, lakes, and coastal areas with nitrogen and phosphorus, causing **eutrophication** (the overgrowth of algae and aquatic plants, which harms water quality) and bioaccumulation of agrochemicals in humans through the food chain.[ix]

• **Loss of biodiversity**. Monocultures on which modern agriculture depends reduce genetic diversity and resilience to pests, diseases, and climate variability.[x] Agricultural expansion is also a major driver of deforestation, habitat destruction, and consequent biodiversity loss.[xi] In Portugal, the decline in pollinators like bees is a growing concern. Our country has lost nearly 30% of its bee populations, which serve as indicators of environmental degradation and ecosystem imbalance. [xii]

• **Greenhouse gas (GHG) emissions**. Intensive livestock production and fertilizer use are major sources of powerful GHGs, namely **methane** and **nitrous oxide**.[xiii] Deforestation for agriculture also significantly contributes to **carbon dioxide** emissions.[xiv] In Portugal, agriculture…

… contributes around 12% of national GHG emissions, with the main sources being enteric fermentation, rice cultivation, agricultural soils, and the burning of agricultural residues.[xv] These emissions lead to increased extreme weather events (such as heatwaves and floods) and the spread of vector-borne diseases (such as malaria and dengue), with corresponding public health consequences.

• **Impacts of pesticide and herbicide use**. Excessive dependence on these chemicals leads to resistant pests and weeds, requiring higher or stronger applications.[xvi] Pesticides also harm pollinators, aquatic life, and human health through direct exposure and residues. For instance, they have been linked to cancer, endocrine disorders, and neurological issues.[xvii] [xviii] In 2021, Portugal ranked 48th globally in pesticide consumption.[xix]

• **Economic and social inequalities**. Dependence on external seeds, equipment, and chemical inputs places small producers in cycles of debt and vulnerability.[xx] Industrial agriculture often leads to land concentration, displacing or marginalizing small farmers.[xxi]

• **Climate vulnerability**. Conventional systems are often less adaptable and resilient to droughts, floods, and other extreme weather events, which are becoming more frequent due to climate change.[xxii] This results in livelihood losses in sectors like agriculture, forced migration, and increased conflicts over scarce resources.[xxiii]

Globally, in Portugal, and specifically in the Golegã region—a territory heavily reliant on agriculture and a secondary sector linked to the food industry—**only part of the population is aware of these problems**.[xxiv] Although Portugal's Strategic Plan for the Common Agricultural Policy highlights soil resilience as essential to its goals,[xxv] and the Innovation Agenda for Agriculture stresses the importance of knowledge and research in this effort,[xxvi] current **public policies** still seem relatively **resistant to discussing new and more effective solutions** for mitigating and resolving these problems and their impacts.

At the European level, the legislative framework already acknowledges the urgency of adopting healthy and regenerative food systems, placing soil at the heart of the political agenda. Examples include the European Green Deal[xxvii] and the Soil Biodiversity Strategy.[xxviii] However, it remains **essential to build and share scientific knowledge about the connection between the global challenges we face and their impacts on health, society, and ecosystems**.[xxix]

The responsible use of resources—central to the concept of sustainability—is no longer enough. **We must REGENERATE**. We must reimagine agriculture as an act of care and of future-building, advocating for changes in agricultural production practices, regulating and promoting regenerative agriculture as an environmental, health, social, and economic priority. **Regenerating soils is regenerating our future.**

ROOTS | The Foundations

Regenerative agriculture is a system of agricultural principles and practices that seeks to **restore and enhance the health, functioning, and resilience of ecosystems**, particularly soil, biodiversity, and climate—**while producing food**. Unlike conventional agriculture, which often depletes natural resources, regenerative agriculture aims to restore them. It **goes beyond the concept of sustainability** by actively improving the land and environment, rather than merely maintaining or minimizing damage.

Regenerative agriculture has ancestral roots and embodies the idea of "doing as nature does." It involves a **plurality of practices**—relevant today and in the future, with social and economic feasibility—but above all, it is guided by **six core principles**:

1. **Minimizing soil disturbance**, meaning avoiding excessive tillage and the use of herbicides, pesticides, and synthetic fertilizers that disrupt soil structure and microbial networks. This is key to preventing soil erosion and compaction, protecting soil aggregates and organic matter, and supporting soil microbial communities and mycorrhizal fungi (which form a symbiotic relationship with plant roots, enhancing water and mineral uptake). This strategy increases carbon sequestration, removing CO_2 from the atmosphere and storing it in the soil;[xxx] improves water infiltration and retention; and reduces the need for synthetic fertilizers by enhancing nutrient cycling.[xxxi]

2. **Maintaining soil cover,** i.e., keeping the soil continuously covered with living plants or crop residues. This helps protect soil from wind and water erosion, regulate temperature and moisture, and provide habitat for beneficial organisms. This strategy significantly reduces topsoil loss—cover crops can reduce erosion by up to 90%.[xxxii] It also boosts soil organic matter, naturally suppresses weeds,[xxxiii] and improves biodiversity. [xxxiv]

3. **Maximizing biodiversity**, meaning cultivating a wide range of species above and below ground, including crops (through crop rotation and intercropping), trees (agroforestry), and livestock. This enhances resilience to pests, diseases, and climate shocks; reduces reliance on external inputs (like pesticides); and promotes ecological interactions that improve nutrient cycling. Scientific evidence shows that, compared to monocultures, polycultures yield more per unit of land over time.[xxxv] They also increase the abundance and diversity of pollinators and support long-term soil health by reducing pathogen buildup.[xxxvi]

4. **Maintaining living roots in the soil,** which means having living plants in the soil year-round, not just during the growing season, using perennials or overlapping crop rotations. This increases photosynthesis, consistently feeds soil organisms, boosts soil carbon sequestration, and reduces nutrient leaching (the loss of nutrients from the soil). This strategy increases microbial biomass and root-associated carbon.[xxxvii]

5. **Integrating animals**, i.e., incorporating animals into cropping systems through planned or rotational grazing, or mixed farming systems (crops and livestock). This mimics natural grazing patterns, stimulating plant growth and improving nutrient cycling through manure, reducing the need for external fertilizers. Managed grazing improves pasture health and soil carbon sequestration,[xxxviii] increases profitability, and reduces GHG emissions per unit of production.[xxxix]

6. **Understanding the context (social, economic, and environmental),** meaning recognizing that each territory is different (in soil type, climate, biodiversity, and water availability); that each community is different (in traditions and socioeconomic conditions); and that each action and plot of land is different (in history, size, goals, and available resources). Therefore, successful regenerative agriculture must adapt to its specific context—there are no one-size-fits-all practices. When context is understood and respected, we can expect higher success rates (because practices are relevant and viable); better soil health and biodiversity restoration (because strategies are ecologically adapted); greater community engagement (because local knowledge is valued); more resilient agricultural systems and increased social equity (due to community involvement and recognition of diverse needs, especially for vulnerable populations).[xl] [xli]

Thus, **regenerative agriculture** does not only focus on protection—it focuses on the **regeneration** of ecosystems, both **above and below the soil,** driven by **local contexts** and communities, with a **long-term value-creation vision**. With the right incentives, training, market access, and transition support, regenerative agriculture can be **cost-effective** and deliver **high returns on investment for farmers, communities, and the planet**.[xlii]

Regenerative agriculture is not just a set of practices or techniques—it is a **paradigm shift**. It redefines the way we think about agriculture: not as extraction, but as cooperation with nature. In this sense, it **offers an ecosystemic contribution to the major health, social, and environmental challenges we currently face.**

FRUITS AND SEEDS | The Proposal for the Future

In response to the challenges and impacts of current agricultural practices, Casa Mendes Gonçalves has, in recent years, sought to experiment with and implement agricultural methods that reinforce the regenerative management of natural resources and soil.

The Mendes Gonçalves Foundation builds on this legacy by investing in the promotion of regenerative agriculture through a multi-level approach and systemic strategies that involve the creation, sharing, and transference of knowledge and community engagement (farmers, consumers, policymakers, educators, and researchers).

The *Program Regenerate* aims to function both as an anchor and as a **local and global community lever**—acting locally and inspiring globally, based on a logic of proximity **philanthropy, syntropy**, and a **network of strategic connections, partnerships, and alliances**.

The *Program Regenerate* seeks to foster spaces for **co-creation, teaching and learning, research and action, literacy promotion, and knowledge transference** for **long-lasting social transformation.**

It adopts a **regenerative vision of soil, ecosystems, and resilience**, in which **knowledge creation and sharing** is crucial. It advocates for the development of a **culture of regeneravitity**, in which everyone (not just farmers)—schools, workplaces, and communities—plays a role. **It is about caring for the soil, for people, and for the future.**

The REGENERATE Program aims to "plant" an ecosystem:

… that positively impacts health, by improving the **nutritional quality of food** (through the production of crops with higher levels of vitamins and polyphenols);[xliii] reducing **exposure to chemicals and disease risk** (by reducing or eliminating the use of pesticides, herbicides, and synthetic fertilizers); **enhancing the physical and mental health of farmers** (through better working conditions and greater autonomy, reducing stress); and, overall, contributing to **public health.**

… that positively impacts society and the economy, by **strengthening farmers' livelihoods** (reducing production costs and increasing income stability); **revitalizing rural areas** (boosting local economies and empowering small producers through community-based solutions); promoting **food sovereignty** (building local control over food systems through the preservation of seeds, traditional knowledge, and reduced dependence on external inputs); and promoting **social justice and equity** (by bringing together production, consumption, policymaking, and research).[xliv]

… that positively impacts the environment, by enhancing **soil health** (increasing organic matter, microbial activity, structure, and nutrient cycling); improving **water quality and efficiency** (better infiltration and retention, and reduced runoff and contamination); boosting **biodiversity** (above and below ground, including pollinators, birds, and soil organisms); mitigating **climate change** (through carbon sequestration and reduced GHG emissions); and strengthening **ecosystem services** (such as pollination, pest control, and flood regulation).

… that empowers farmers and communities to manage soil responsibly, by investing in the construction and coordinated dissemination of agricultural knowledge—both community-based and scientific—in academic and vocational training contexts, and among producers; …

… investing in ecological literacy for all (farmers, communities, policymakers, researchers) starting from early childhood; and investing in research through robust experimental protocols and procedures, as well as tools to monitor and evaluate the socio-ecological impacts of regenerative agriculture.

… that reinforces a culture of regenerativity, recognizing the deep interdependence of natural and human ecosystems, promoting the responsibility of all (individuals, organizations, and communities) in the renewal and enhancement of soil, water, biodiversity, health, collective well-being, social relations, intergenerational bonds, and cultural diversity. It should stimulate our creative capacity to (re)imagine the future—reflected in an annual and global event on regeneration across different fields, held every two years.

The *Program Regenerate* aims to sow hope and resilience, functioning as a "living laboratory" where regenerative agriculture, care, and community come together to build a more just, sustainable, and well world—both locally and globally—for everyone.

From Golegã to the World | Change Model

Program Regenerate

Change Model for the Promotion of Regenerative Agriculture, Centered on Knowledge Creation and Sharing, and Driven by the Community.

Program Mission

CARING for Soils, Biodiversity, and Communities through Regenerative Agriculture enables us to REGENERATE Sustainable, Resilient, and Equitable Futures.

Context

We are facing an environmental crisis that threatens ecosystem health, food security, and economic stability. Agriculture, in Portugal and around the world, faces serious challenges: soil degradation, biodiversity loss, pollution, greenhouse gas emissions, climate vulnerability, and economic and social inequalities. In light of the inadequacies of conventional models, there is an urgent need to shift to regenerative practices that restore soil, enhance natural resources, and revitalize communities.

Foundations

Regenerative agriculture proposes a paradigm shift: not merely protecting, but regenerating soil, biodiversity, and living systems. It is based on principles such as minimizing soil disturbance, maintaining vegetative cover, promoting biodiversity, integrating animals, and understanding local contexts. More than a set of techniques, it is a vision of cooperation with nature, collective care, and building resilience for future generations.

Investments

- Financial resources and infrastructure.
- Specialized human resources.
- Local, national, and international partnerships.
- Research and technical support for knowledge production and transference.
- Impact evaluation strategies focused on continuous improvement.

Proposal

To create an ecosystem that regenerates soil, natural ecosystems, and communities, promoting resilience and well-being through knowledge creation and sharing. To foster innovative, inclusive, and evidence-based practices in a territory that cares, learns, and grows together.

Outcomes

- Organization of a global event, every two years, on regeneration, hosted in Golegã. This event will bring together projects from around the world where regeneration is practiced across various areas, exploring the concept and its application to different socio-economic challenges.
- Development and funding of projects that promote a culture of regenerativity, in partnership with other foundations and organizations.
- Production and dissemination of high-quality and innovative practical resources for training and promoting regenerative agriculture, adapted to local contexts.
- Development of Best Practices in Regenerative Agriculture – scientifically based and science-informing, both locally and globally.
- Creation of a Farmer Field School, enabling experiential learning and integrating scientific evidence into local knowledge systems.
- Establishment of a peer learning community where farmers create a network to share regenerative knowledge.
- Delivery of training and mentoring activities for consultants and agricultural technicians on regenerative agriculture.
- Strengthening of Casa Mendes Gonçalves' agroforests as "beacon spaces" for participatory demonstration and research, helping to reduce uncertainty and perceived risk through "seeing is believing" experiences.
- Creation of a Regenerative Garden at the Educational Center, to promote learning about ecology, health, citizenship, and responsibility.
- Integration of regenerative agriculture into the curriculum of the Educational Center, linking its principles to science, geography, and citizenship subjects.
- Provision of food grown through regenerative agriculture systems at the Educational Center, schools, and workplaces in Golegã, via partnerships with local farmers and implementation of a regenerative food basket delivery system.

- Delivery of ecological literacy and regenerative agriculture promotion actions in schools, workplaces, producers, and communities (e.g., talks, workshops, creation of regenerative gardens).
- Development of tools to monitor indicators of regenerative agriculture outcomes (e.g., organic soil, carbon, water infiltration, biodiversity).
- Implementation of "citizen science" initiatives, e.g., soil health tests or pollinator counts.
- Support for longitudinal and multidisciplinary research, encompassing not only agronomic dimensions (e.g., soil organic carbon, water retention, biodiversity indicators) but also social and economic aspects (e.g., labor intensity, economic resilience, gender equality).
- Support for direct-to-consumer markets and food brands produced via regenerative agriculture systems.
- Creation of advocacy actions and resources for regenerative agriculture, grounded in scientific evidence, including outreach to training schools for professionals in this field.
- Influence on public policy and local strategies promoting regenerative agriculture.
- Support for projects and initiatives from other organizations aligned with the principles of regenerative agriculture.

Impacts

On Health

- Improved nutritional quality of food (number of regenerative foods available at the Educational Center, in schools, workplaces, and communities; micronutrient levels in produced foods).
- Reduced chemical exposure (% of producers reducing or eliminating the use of pesticides, herbicides, and synthetic fertilizers).
- Improved physical and mental health of farmers and communities (survey results on health and well-being before and after adoption of regenerative agriculture; consumer satisfaction with regenerative foods).

On Society and Economy

- Strengthened agricultural livelihoods (reduction in production costs; monitoring of income stability; number of farmers reporting increased profitability after transitioning to regenerative agriculture).
- Revitalized rural areas (number of local partnerships created; number of new jobs/activities linked to regenerative agriculture).
- Promotion of food sovereignty (number of supported direct sales markets; volume of locally sold regenerative food).
- Influence on public policy (number of advocacy documents produced; number of public policies or local strategies influenced).

On the Environment

- Regenerated soil health (increase in soil organic carbon; improved water infiltration rates; monitored reduction in soil erosion).
- Increased biodiversity (number of pollinator and soil organism species recorded in regenerated areas; number of citizen science initiatives carried out).
- Climate change mitigation (estimated carbon sequestered in regenerated areas; monitored reduction in agricultural emissions).

Empowerment of Farmers and Communities

- Number of farmers and technicians trained.
- Number of training and mentoring activities conducted.
- % of farmers reporting practical changes in their production methods.
- Number of hectares transitioned to regenerative agriculture systems.
- Establishment of the Farmers Field School.
- Creation of a knowledge-sharing network among agricultural producers (and participant satisfaction).
- Number of longitudinal studies conducted, and publications/results disseminated.
- Number of monitoring tools developed and used.
- Number of educational resources produced.

Culture of Regeneration

- Promotion of ecological literacy and regenerative education (integration of regeneration content into curricula; number of students/schools involved in regenerative projects; assessment of ecological literacy gains pre- and post-program implementation).
- Creation of demonstration and inspiration spaces (development of the "Vila Feliz Cidade" project as a beacon site; creation of school and community regenerative gardens; number of visitors and participants in activities and projects).
- Global dissemination of the regeneration concept (delivery of the global event; media and social reach of the program's events and communication actions).

By 2035, we will have **contributed directly to achieving Sustainable Development Goals 2** (Zero Hunger), **12** (Responsible Consumption and Production), and 15 (Life on Land), and **indirectly to Goals 6** (Clean Water and Sanitation), **8** (Decent Work and Economic Growth), and **13** (Climate Action).

[i] Agência Portuguesa do Ambiente (2024). *Relatório do estado do ambiente 2024*. Agência Portuguesa do Ambiente. https://rea.apambiente.pt/sites/default/files/rea/REA_2024_Final_22_out_2024.pdf

[ii] UN Food and Agriculture Organization (FAO). (2015). *Status of the World's Soil Resources*. https://openknowledge.fao.org/server/api/core/bitstreams/6ec24d75-19bd-4f1f-b1c5-5becf50d0871/content

[iii] FAO (2022). *The state of the world's land and water resources for food and agriculture: Systems at breaking point*. FAO. https://doi.org/10.4060/cb9910en

[iv] Gonçalves, J., Valente, S., & Ramos, T. B. (2023). *Soil erosion in extensive versus intensive land uses in areas sensitive to desertification: A case study in Beira Baixa, Portugal*. ResearchGate. https://www.researchgate.net/publication/373114498_Soil_Erosion_in_Extensive_versus_Intensive_Land_Uses_in_Areas_Sensitive_to_Desertification_A_Case_Study_in_Beira_Baixa_Portugal

[v] Lal, R. (2020). *Regenerative agriculture for food and climate*. Journal of Soil and Water Conservation, 75(5), 123A–124A. https://doi.org/10.2489/jswc.2020.0620A

[vi] Hamza, M. A., & Anderson, W. K. (2005). *Soil compaction in cropping systems: A review of the nature, causes and possible solutions*. Soil and Tillage Research, 82(2), 121–145. https://doi.org/10.1016/j.still.2004.08.009

[vii] World Water Assessment Programme (WWAP). (2021). *The United Nations World Water Development Report 2021: Valuing Water*. UNESCO. https://unesdoc.unesco.org/ark:/48223/pf0000375724

[viii] UNFCCC. (2021). *COP26: Outcomes and highlights relating to agriculture and food security*. United Nations Framework Convention on Climate Change. https://unfccc.int/

[ix] Glibert, P. M., Maranger, R., Sobota, D. J., & Bouwman, L. (2014). *The Haber Bosch–harmful algal bloom (HB–HAB) link*. Environmental Research Letters, 9(10), 105001. https://doi.org/10.1088/1748-9326/9/10/105001

[x] Tilman, D., Cassman, K. G., Matson, P. A., Naylor, R., & Polasky, S. (2002). *Agricultural sustainability and intensive production practices*. Nature, 418(6898), 671–677. https://doi.org/10.1038/nature01014

[xi] IPBES (Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services). (2019). *Global Assessment Report on Biodiversity and Ecosystem Services*. https://ipbes.net/global-assessment

[xii] Portuguese Catholic University (UCP). (2024). *Biodiversity challenges in an imbalanced world*. Católica Lisbon School of Business and Economics. https://clsbe.lisboa.ucp.pt/news/biodiversity-challenges-imbalanced-world

[xiii] Intergovernmental Panel on Climate Change (IPCC). (2022). *Climate Change 2022: Mitigation of Climate Change*. https://www.ipcc.ch/report/ar6/wg3/

[xiv] Tubiello, F. N., Salvatore, M., Cóndor Golec, R. D., Ferrara, A., Rossi, S., Biancalani, R., ... & Flammini, A. (2021). *Greenhouse gas emissions from agriculture, forestry and other land use*. FAO Statistics Division. http://www.fao.org/faostat/en/#data/GT

[xv] Agência Portuguesa do Ambiente. (2023). *Emissões de gases com efeito de estufa (GEE)*. https://apambiente.pt/clima/emissoes-gee

[xvi] Gould, F., Brown, Z. S., & Kuzma, J. (2018). *Wicked evolution: Can we address the sociobiological dilemma of pesticide resistance?* Science, 360(6390), 728–732. https://doi.org/10.1126/science.aar3780

[xvii] Pimentel, D. (2005). *Environmental and economic costs of the application of pesticides primarily in the United States*. Environment, Development and Sustainability, 7(2), 229–252. https://doi.org/10.1007/s10668-005-7314-2

[xviii] European Food Safety Authority (EFSA). (2021). *Annual Report on Pesticide Residues*. EFSA Journal, 19(4), e06542. https://doi.org/10.2903/j.efsa.2024.8753

[xix] ReportLinker. (2024). *Portugal Pesticide Industry Outlook 2022-2026*. https://www.reportlinker.com/clp/country/13/726376

[xx] Altieri, M. A., & Nicholls, C. I. (2017). *Agroecology: A brief account of its origins and currents of thought in Latin America*. Agroecology and Sustainable Food Systems, 41(3–4), 231–237. https://doi.org/10.1080/21683565.2017.1287147

[xxi] De Schutter, O. (2011). *The right of everyone to enjoy the benefits of scientific progress and the right to food: From conflict to complementarity*. Human Rights Quarterly, 33(2), 304–350. doi:10.1353/hrq.2011.0020

[xxii] Vermeulen, S. J., Campbell, B. M., & Ingram, J. S. I. (2012). *Climate change and food systems*. Annual Review of Environment and Resources, 37, 195–222. https://doi.org/10.1146/annurev-environ-020411-130608

[xxiii] Intergovernmental Panel on Climate Change (IPCC). (2022). *Climate Change 2022: Mitigation of Climate Change*. https://www.ipcc.ch/report/ar6/wg3/

[xxiv] Conselho Local de Ação Social da Golegã (2024*). Diagnóstico social 24. Golegã um município mais social*. https://redesocial.cm-golega.pt/diagnostico-social/

[xxv] Gabinete de Planeamento, Políticas e Administração Geral (2024). *Plano estratégico da Política Agrícola Comum.* https://www.gpp.pt/images/PEPAC/PEPAC_Submetido/Exportacao_SFC_versaoAprovao_29072022.pdf

[xxvi] Presidência do Conselho de Ministros. (2020). *Resolução do Conselho de Ministros n.º 86/2020*. Diário da República 1ª série, 199 (outubro): 38-59. https://files.diariodarepublica.pt/1s/2020/10/19900/0003800059.pdf

[xxvii] Comissão Europeia (2021*). Pacto Ecológico Europeu*. https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/european-green-deal_pt

[xxviii] Comissão Europeia (2021). *Estratégia de Proteção do Solo da União Europeia para 2030*. https://environment.ec.europa.eu/publications/eu-soil-strategy-2030_en?prefLang=pt

[xxix] FAO, ITPS, GSBI, CBD & EC (2020). *State of knowledge of soil biodiversity: Status, challenges and potentialities, Report 2020*. FAO. https://doi.org/10.4060/cb1928en

[xxx] Lal, R. (2020). *Regenerative agriculture for food and climate*. Journal of Soil and Water Conservation, 75(5), 123A–124A. https://doi.org/10.2489/jswc.2020.0620A

[xxxi] Giller, K. E., Hijbeek, R., Andersson, J. A., & Sumberg, J. (2021). Regenerative agriculture: An agronomic perspective. *Outlook on Agriculture*, 50(1), 13–25. https://doi.org/10.1177/0030727021998063

[xxxii] Blanco-Canqui, H., & Lal, R. (2007). Soil and crop response to harvesting corn residues for biofuel production. *Geoderma, 141*(3-4), 355–362. https://doi.org/10.1016/j.geoderma.2007.06.012

[xxxiii] Teasdale, J. R., Devine, T. E., Mosjidis, J. A., Bellinder, R. R., & Beste, C. E. (2007). Weed suppression in soybean (Glycine max) using a hairy vetch (Vicia villosa) cover crop. *Weed Technology, 21*(3), 476–481. https://doi.org/10.1614/WT-06-143.1

[xxxiv] LaCanne, C. E., & Lundgren, J. G. (2018). Regenerative agriculture: Merging farming and natural resource conservation profitably. *PeerJ*, 6, e4428. https://doi.org/10.7717/peerj.4428

[xxxv] Isbell, F., Craven, D., Connolly, J., Loreau, M., Schmid, B., Beierkuhnlein, C., ... & Reich, P. B. (2017). Benefits of increasing plant diversity in sustainable agroecosystems. *Journal of Ecology, 105*(4), 871–879. https://doi.org/10.1111/1365-2745.12789

[xxxvi] Kremen, C., & Miles, A. (2012). Ecosystem services in biologically diversified versus conventional farming systems: benefits, externalities, and trade-offs. *Ecology and Society*, 17(4), 40. https://doi.org/10.5751/ES-05035-170440

[xxxvii] Poeplau, C., & Don, A. (2015). Carbon sequestration in agricultural soils via cultivation of cover crops—A meta-analysis. *Agriculture, Ecosystems & Environment*, 200, 33–41. https://doi.org/10.1016/j.agee.2014.10.024

[xxxviii] Teague, W. R., Apfelbaum, S., Lal, R., Kreuter, U. P., Rowntree, J., Davies, C. A., ... & Byck, P. (2016). The role of ruminants in reducing agriculture's carbon footprint in North America. *Journal of Soil and Water Conservation*, 71(2), 156–164. https://doi.org/10.2489/jswc.71.2.156

[xxxix] Sekaran, U., Lai, L., Ussiri, D., Kumar, S., & Clay, S. (2021). Role of integrated crop-livestock systems in improving agriculture production and addressing food security – A review. *Journal of Agriculture and Food Research, 5*, 100190. https://doi.org/10.1016/j.jafr.2021.100190

[xl] Newton, P., Civita, N., Frankel-Goldwater, L., Bartel, K., & Johns, C. (2021). What is regenerative agriculture? A review of practitioner and scholarly definitions and principles. *Frontiers in Sustainable Food Systems, 5*, 590475. https://doi.org/10.3389/fsufs.2020.577723

[xli] Schreefel, L., Schulte, R. P. O., de Boer, I. J. M., Schrijver, A. P., & van Zanten, H. H. E. (2020). Regenerative agriculture: The soil is the base. *Global Food Security, 26*, 100404. https://doi.org/10.1016/j.gfs.2020.100404

[xlii] IFOAM EU. (2019). *Organic in Europe: Prospects and developments*. https://www.organicseurope.bio/content/uploads/2021/06/ifoameu_advocacy_CAP_StrategicPlansAnd25Target_202106.pdf?dd

[xliii] Manzeke-Kangara, M. G., Joy, E. J. M., Joy, Lark, M., Redfern, S., Eilander, A., & Broadley, M. R. (2023). Do agronomic approaches aligned to regenerative agriculture improve the micronutrient concentrations of edible portions of crops? A scoping review of evidence. *Frontiers in Nutrition*, 10, Article 1078667. https://doi.org/10.3389/fnut.2023.1078667

[xliv] Sher, A., Li, H., Ullah, A., Hamid, Y., Nasir, B., Zhang, J. (2024). Importance of regenerative agriculture: Climate, soil health, biodiversity and its socioecological impact. *Discover Sustainability*, 5, Article 462. https://doi.org/10.1007/s43621-024-00662-z