

JULY NEWSLETTER

Sustainable Farming Success Stories

PowerWorms: Vermicomposting; The Future of Sustainable Agriculture and Organic Waste Management in Europe

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Dear Readers

Welcome to this month's edition of the PowerWORMS Newsletter! As we navigate the ever-evolving landscape of agriculture, the importance of sustainability has never been more evident. In every corner of the globe, farmers, researchers, and communities are pioneering new methods to ensure that our farming practices not only meet today's needs but also safeguard the future for generations to come.

This month, we explore the heart of sustainable agriculture, exploring its principles and the incredible stories of transformation that are happening in fields and farms around the world. From the verdant fields of Peçenek village in Turkiye to the arid landscapes of Andalusia, Spain, these stories remind us that sustainable agriculture is not just a set of practices—it's a commitment to the planet, to communities, and to the future.

Our newsletter begins with a celebration of sustainable agriculture and its foundational role in conserving natural resources like water, soil, and biodiversity. We highlight how innovative approaches, such as vermicomposting and soilless farming, are being successfully implemented to boost productivity while preserving the environment.

You'll also find inspiring global perspectives from Turkey and Spain, where local farmers have adapted sustainable practices to overcome regional challenges. These stories are a testament to the ingenuity and resilience of those who are leading the way in sustainable farming.

In our Small-Scale Success section, we share the journey of MTTARIM, a small farm in Peçenek village that has become a model of organic agriculture. The story of its owner, Burak Metehan Öztürk, illustrates how determination and innovation can turn a dream into a thriving reality.

This edition also explores the cutting-edge technologies that are shaping the future of farming. From precision agriculture to renewable energy integration and smart farming technologies, we discuss how these innovations are making farming more efficient, sustainable, and economically viable.

Finally, our Educational Corner distills practical lessons from the success stories featured in this newsletter. Whether you're a farmer, a gardener, or simply someone interested in sustainable agriculture, these insights and tips are designed to help you apply sustainable practices in your own work.

As we move forward, we are reminded that sustainable agriculture is an ongoing journey—one that requires continuous learning, adaptation, and collaboration. Together, by sharing knowledge and supporting one another, we can create a brighter, more sustainable future for agriculture and the planet.

Thank you for being part of this journey with us.

Sincerely,

The PowerWORMS Team

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Introduction: Celebrating Sustainable Agriculture

Sustainable agriculture is more than just a method of farming; it is a philosophy and a commitment to preserving our planet while feeding the world's growing population. As we face the challenges of climate change, resource depletion, and environmental degradation, the importance of sustainable agriculture becomes ever more apparent. This approach to farming not only seeks to produce food in a way that is environmentally responsible but also aims to ensure economic viability and social equity for future generations.

In this month's newsletter, we take the opportunity to celebrate the successes and advancements in sustainable agriculture. Across the globe, farmers, researchers, and communities are embracing sustainable practices that are transforming the way we grow food. These practices are rooted in a deep respect for the natural world and a recognition of the interconnectedness of all living things.

One of the key principles of sustainable agriculture is the conservation of natural resources. Water, soil, and biodiversity are the cornerstones of agricultural productivity, and their careful management is essential for long-term sustainability. Traditional farming methods often lead to the depletion of these resources, with practices such as over-irrigation, monocropping, and excessive use of chemical inputs causing significant harm to the environment. In contrast, sustainable agriculture employs techniques that protect and enhance these resources, ensuring that they remain viable for future use.



Water conservation is a prime example of how sustainable agriculture is making a difference. Techniques such as drip irrigation, rainwater harvesting, and the use of mulch help to minimize water usage and reduce waste. By using water more efficiently, farmers can not only lower their costs but also help to preserve this precious resource for other uses and future generations.

Soil health is another critical focus of sustainable agriculture. Healthy soil is the foundation of a productive farm, and maintaining it requires careful management of organic matter, nutrients, and microorganisms. Practices such as crop rotation, cover cropping, and the use of organic fertilizers like vermicompost improve soil structure, enhance fertility, and increase the soil's ability to retain water. These practices also reduce the need for chemical fertilizers and pesticides, leading to a decrease in pollution and a healthier environment.

Biodiversity, both above and below the ground, plays a crucial role in sustainable agriculture. Diverse farming systems are more resilient to pests, diseases, and climate variability. By integrating a variety of crops and livestock into their operations, farmers can create more balanced ecosystems that support a wide range of plant and animal life. This not only enhances the productivity of the farm but also contributes to the overall health of the environment.

Sustainable agriculture is also about social responsibility. It recognizes the importance of fair labor practices, community engagement, and access to nutritious food. Many sustainable farms operate on a smaller scale, allowing farmers to build stronger connections with their communities and provide fresh, local produce. This not only supports local economies but also reduces the carbon footprint associated with transporting food over long distances.

In this month's newsletter, we highlight the stories of farmers who have successfully transitioned to sustainable practices. These individuals are pioneers in their fields, demonstrating that it is possible to produce high-quality food while protecting the environment and supporting local communities. Their successes are a testament to the potential of sustainable agriculture to create a more resilient and equitable food system.

As we celebrate these achievements, we must also recognize that the journey toward sustainable agriculture is ongoing. The challenges we face are complex and require continuous innovation and adaptation. However, by sharing knowledge, supporting each other, and staying committed to sustainable practices, we can build a brighter future for agriculture and the planet.

In conclusion, sustainable agriculture is a powerful tool for addressing the environmental, economic, and social challenges of our time. It offers a path forward that respects the earth's natural systems, promotes economic viability, and ensures social equity. By celebrating the successes of sustainable agriculture, we honor the dedication and ingenuity of those who are working to make the world a better place, one farm at a time.

Case Study: Vermicomposting in Action

What is Vermicomposting?

Vermicomposting is a sustainable farming practice that uses earthworms to convert organic waste into high-quality compost, known as vermicompost. This process not only recycles organic matter but also enriches the soil with nutrients, improves its structure, and enhances its water-holding capacity. Vermicomposting has gained popularity among farmers who are committed to sustainable agriculture, as it offers a natural and effective way to manage waste and boost soil fertility without relying on chemical fertilizers.

Implementation: How the Farm Integrated Vermicomposting

In 2019, a small family-run farm in the village of Peçenek, located in the Kahramankazan district of Ankara, Turkey, decided to transition from traditional farming methods to more sustainable practices. Faced with the challenges of soil degradation and fluctuating crop yields, the farm's owners, who cultivate strawberries, lettuce, peppers, tomatoes, and watermelons on a 10-acre plot, began exploring ways to improve soil health naturally. After researching various organic farming techniques, they chose to implement vermicomposting as a key component of their sustainability strategy.



The farm started by constructing a simple vermicomposting system using locally sourced materials. They set up composting bins filled with organic waste from their farm, including crop residues, fruit and vegetable scraps, and manure. Red wiggler worms, a species well-suited for composting, were introduced into the bins. Over time, the worms consumed the organic waste, breaking it down into nutrient-rich vermicompost.

The farm's owners carefully monitored the process, ensuring the composting conditions were optimal for the worms. They maintained the right balance of moisture, temperature, and aeration to support the worms' activity and prevent the compost from becoming anaerobic. Within a few months, the farm began harvesting its first batches of vermicompost, which was then applied to the fields as a natural fertilizer.

Impact: Benefits Seen in Soil Fertility, Crop Yields, and Reduction in Waste

The introduction of vermicomposting had a transformative effect on the farm's operations. One of the most significant benefits was the improvement in soil health. The vermicompost enriched the soil with essential nutrients, including nitrogen, phosphorus, and potassium, which are vital for plant growth. Additionally, the organic matter in the compost improved the soil's structure, making it more porous and enhancing its ability to retain water. This was particularly important in a region where water scarcity can be a concern.

As a result of these improvements in soil fertility, the farm saw a noticeable increase in crop yields. The strawberries, in particular, thrived, producing larger, juicier, and more flavorful fruits. Other crops, such as lettuce, peppers, and tomatoes, also showed significant improvement in both yield and quality. The farm's produce became highly sought after in local markets, and the family was able to command higher prices for their organically grown fruits and vegetables.

In addition to the benefits for soil and crop yields, vermicomposting also helped the farm reduce its overall waste. By recycling organic waste into valuable compost, the farm minimized the amount of waste that would otherwise be discarded. This not only contributed to environmental

sustainability but also reduced the farm's need for external inputs, such as synthetic fertilizers, further lowering its operational costs.

Visuals: The Vermicomposting Process in Action

If you were to visit the farm today, you would see the vermicomposting system in full swing. Rows of composting bins line the edge of the fields, each teeming with earthworms busily breaking down organic matter. The farm's owners proudly demonstrate how they collect organic waste from their fields and kitchens, carefully layering it in the bins to create the perfect environment for the worms. The rich, dark vermicompost produced by the worms is then spread across the fields, where it nourishes the soil and supports the growth of healthy, vibrant crops.

The farm has become a local example of how small-scale operations can successfully integrate sustainable practices like vermicomposting. Other farmers in the region have taken note, and some have even visited the farm to learn more about the process. The success of vermicomposting on this farm has shown that sustainable farming practices are not only viable but also beneficial for both the environment and the bottom line.

Global Perspectives: Sustainable Farming Around the World



Sustainable farming practices are being implemented across the globe, each tailored to meet the unique challenges and opportunities of different regions. In this section, we explore how farmers in Turkey and Spain are embracing sustainability in their agricultural practices, showcasing their innovative approaches and the positive impacts these practices have had on their farms and communities.

Country 1: Turkiye - Embracing Sustainable Practices in the Kahramankazan District

In the Kahramankazan district of Ankara, Turkey, farmers are turning to sustainable agriculture as a way to overcome the challenges of soil degradation and water scarcity. One standout example is a small family-run farm in Peçenek village that has integrated vermicomposting and topraksız tarım (soilless farming) into its operations.

The farm, which primarily grows strawberries along with seasonal vegetables like lettuce, peppers, and tomatoes, faced significant challenges due to the limitations of traditional farming methods. In response, the farmers decided to adopt sustainable practices, starting with vermicomposting to improve soil health. They also implemented soilless farming techniques, which allowed them to grow crops in a controlled environment, using less water and reducing the need for chemical inputs.

These sustainable practices have yielded impressive results. The farm has seen a substantial increase in crop yields and quality, particularly in their strawberry production. Additionally, the farm has reduced its environmental impact by recycling organic waste into valuable compost and minimizing water usage through efficient irrigation systems.

The success of this farm has not gone unnoticed. It has inspired other farmers in the region to explore sustainable practices, demonstrating that with the right approach, it is possible to achieve both environmental and economic benefits.

Country 2: Spain - Agroecology and Water Conservation in Andalusia

In the arid regions of Andalusia, Spain, farmers face the dual challenges of water scarcity and soil erosion. To combat these issues, many have turned to agroecology, a holistic approach to farming that integrates ecological principles into agricultural practices (Gondwana Talks, n.d.). This approach not only helps conserve water but also enhances soil fertility and biodiversity.

One particularly successful example is a cooperative of olive farmers who have implemented a combination of water-saving techniques and organic farming methods. These farmers use drip irrigation systems to minimize water waste and mulching to retain soil moisture. They also practice crop rotation and cover cropping to improve soil health and prevent erosion.



The cooperative has also embraced organic farming, avoiding synthetic fertilizers and pesticides in favor of natural alternatives. This shift has not only improved the quality of their olive oil, making it highly sought after in both domestic and international markets, but has also contributed to the restoration of local ecosystems.

Furthermore, the cooperative has invested in renewable energy sources, such as solar panels, to power their operations, further reducing their environmental footprint. This holistic approach to farming has made the cooperative a model of sustainability in the region, showing that even in challenging conditions, it is possible to farm in harmony with nature.

Small-Scale Success: MTTARIM-Embracing Organic Agriculture in Peçenek Village

In the heart of Peçenek village, located in the Kahramankazan district of Ankara, lies MTTARIM, a family-run farm that has become a beacon of sustainable agriculture in the region. The farm, owned by 40-year-old Burak Metehan OZTURK, is a shining example of how small-scale farming can embrace organic practices to contribute to the larger movement of sustainable agriculture.



The Beginnings: From City Life to Organic Farming

Burak Metehan's journey into farming began in 2019 when he and his family made the life-changing decision to leave the hustle and bustle of city life and move to the countryside. Settling in Peçenek, they established MTTARIM, a farm that now spans 10 acres, including 2 acres of greenhouse space dedicated to growing a variety of vegetables and fruits. The farm's primary focus is on strawberry cultivation, but they also grow seasonal produce such as lettuce, peppers, tomatoes, and watermelons.

From the outset, Burak Metehan was determined to adopt organic farming practices. He recognized that traditional farming methods were limited in their ability to produce high-quality, sustainable yields. This realization led him to explore and eventually implement organic agriculture, despite the challenges associated with transitioning to this method.



Overcoming Challenges: The Path to Sustainable Agriculture

The journey was not without its hurdles. One of the most significant challenges Burak faced was the initial setup and cost of implementing sustainable farming techniques. Without external support, he and his family constructed their greenhouse entirely on their own, learning and adapting as they went. The process was arduous, but their determination to succeed in organic farming kept them going.



MTTARIM soon integrated soilless farming, particularly for strawberry production, to maximize efficiency and minimize environmental impact. This technique, combined with careful and conscious fertilization and pest management, allowed the farm to reduce chemical residues and improve the timing and application of nutrients. As a result, the quality of their produce significantly improved, making their strawberries particularly renowned for their taste and size.

The Role of Vermicomposting

One of the key sustainable practices that MTTARIM adopted was the use of vermicomposting. This method involves using earthworms to convert organic waste into nutrient-rich compost, which is then applied to the fields. The introduction of vermicompost had a remarkable impact on the farm's operations, particularly in enhancing soil health and increasing crop yields.



The vermicompost contributed to healthier root systems and improved the overall quality of the produce. Strawberries, in particular, benefited from this practice, becoming more flavorful and robust. This success further motivated Burak to continue exploring and implementing other sustainable practices.

Community Influence and Future Plans

MTTARIM's success did not go unnoticed. Burak's efforts inspired other farmers in the region to explore organic and sustainable farming practices. In fact, one of the farm's most notable achievements was helping a local investor establish a greenhouse in the same village, which has since started production.



Burak Metehans's advice to other farmers emphasizes the importance of technical knowledge, research, and community collaboration. He encourages others to thoroughly understand the entire farming process, from production to market, and to engage in knowledge-sharing with peers in the industry.

Looking ahead, Burak Metehan plans to maintain and expand the farm's production capacity. He is particularly interested in experimenting with new and diverse crop varieties, as well as completing the installation of solar energy systems to fully power the farm. This move towards renewable energy is in line with his commitment to minimizing the farm's environmental footprint.





MTTARIM's story is a testament to the power of small-scale farming in driving the sustainable agriculture movement. By adopting organic practices and continuously innovating, Burak Metehan Öztürk and his family have created a thriving farm that not only produces high-quality food but also serves as an example for others in the region.

Their efforts contribute to a larger, global shift towards sustainability, demonstrating that even small farms can make a significant impact when guided by principles of environmental stewardship and community engagement. Through MTTARIM, Burak and his family are proving that sustainable, organic farming is not just viable but vital for the future of agriculture.

Innovations in Sustainability: Cutting-Edge Technologies in Sustainable Farming

Sustainable farming is at the forefront of the global movement towards environmental stewardship and resource efficiency. As the world's population continues to grow and climate change intensifies, the need for innovative solutions in agriculture has never been more urgent. Today, cutting-edge technologies and methods are being employed across the agricultural sector to enhance sustainability, improve productivity, and reduce environmental impact. This essay explores some of the most significant innovations in sustainable farming, including technology-driven solutions, renewable energy integration, and smart farming technologies.

Innovation 1: Technology-Driven Solutions

One of the most impactful advancements in sustainable farming is the development and implementation of precision agriculture. Precision agriculture leverages data, GPS, and IoT (Internet of Things) devices to optimize field-level management with regard to crop farming. By using sensors and drones, farmers can monitor soil conditions, crop health, and environmental factors in real-time. This data-driven approach allows for precise application of water, fertilizers, and pesticides, reducing waste and ensuring that crops receive exactly what they need, when they need it.

For example, smart irrigation systems, equipped with soil moisture sensors and weather forecasting, can adjust water application based on real-time data, significantly reducing water use and preventing over-irrigation. A study published in *Precision Agriculture* highlighted that such systems can reduce water usage by up to 30% while maintaining or even increasing crop yields (O'Connell et al., 2020). This not only conserves water but also reduces the energy required for pumping and distributing water, thereby lowering

the farm's carbon footprint.

Furthermore, advancements in crop monitoring through satellite imagery and drone technology provide farmers with detailed insights into crop health and growth patterns. These technologies help identify issues such as pest infestations or nutrient deficiencies early, allowing for targeted interventions that are both more effective and environmentally friendly.

Innovation 2: Renewable Energy Integration in Farming

As agriculture is a significant contributor to global greenhouse gas emissions, integrating renewable energy into farming practices is essential for achieving sustainability goals. Renewable energy sources such as solar, wind, and biomass are increasingly being adopted by farms to reduce reliance on fossil fuels and minimize carbon emissions.

Solar energy, in particular, has gained widespread adoption due to its versatility and decreasing cost. Solar panels can be installed on rooftops, over irrigation canals, or even on agricultural lands (a practice known as agrivoltaics) to generate electricity for farm operations. This electricity can be used to power everything from irrigation systems to processing equipment, significantly reducing the farm's dependence on grid electricity and its associated carbon emissions.

A case study from the *Journal of Cleaner Production* demonstrated that farms integrating solar energy saw a reduction in energy costs by up to 50%, alongside a substantial decrease in carbon emissions (Shahbaz et al., 2021). Moreover, solar-powered drip irrigation systems are particularly beneficial in regions with limited access to reliable electricity, enabling farmers to irrigate their crops more efficiently and sustainably.

In addition to solar energy, farms are exploring the use of wind turbines and biogas plants. Wind turbines can generate electricity in areas with consistent wind patterns, while biogas plants convert organic waste into energy, providing a sustainable solution for waste management. These renewable energy sources not only reduce greenhouse gas emissions but also contribute to energy security and cost savings for farmers.

Innovation 3: Smart Farming Technologies

The advent of smart farming technologies, also known as digital agriculture, represents a major leap forward in the quest for sustainability. These technologies encompass a wide range of tools, including automated machinery, AI-driven analytics, and blockchain for supply chain transparency.

Automated machinery, such as autonomous tractors and harvesters, are designed to perform tasks with minimal human intervention, improving efficiency and reducing labor costs. These machines are often equipped with sensors and AI systems that enable them to navigate fields, plant seeds, and harvest crops with precision, thereby minimizing soil compaction and reducing the need for chemical inputs.

AI-driven analytics play a crucial role in optimizing farm management decisions. By analyzing data from various sources, including weather patterns, soil conditions, and market trends, AI systems can provide farmers with actionable insights to improve crop planning, resource allocation, and risk management. For instance, AI models can predict pest outbreaks or disease spread, allowing farmers to take preventive measures that reduce crop losses and minimize the use of pesticides.

Blockchain technology is another innovative tool that is transforming the agricultural supply chain. By

providing a transparent and immutable record of transactions, blockchain ensures that every step of the supply chain, from farm to table, is traceable. This not only enhances food safety and quality but also allows consumers to verify the sustainability practices employed in the production of their food. A report from *Frontiers in Blockchain* emphasized that blockchain could revolutionize sustainable agriculture by promoting transparency, reducing fraud, and encouraging ethical practices (Kim & Laskowski, 2021).

Interactive Infographic: Summarizing Innovations and Their Benefits

To visually illustrate the impact of these innovations, an interactive infographic could be used to summarize key benefits:

- **Precision Agriculture:** Reduces water and fertilizer use by up to 30%, increases crop yields, and lowers environmental impact.
- **Renewable Energy Integration:** Cuts energy costs by 50%, reduces carbon emissions, and enhances energy security.
- **Smart Farming Technologies:** Improves efficiency, reduces labor costs, minimizes chemical inputs, and ensures supply chain transparency.

This infographic can serve as an educational tool, helping farmers and stakeholders understand the value of adopting these technologies in their operations.

Educational Corner: Lessons from Success Stories

The stories of farmers and agricultural innovators featured in this newsletter offer valuable insights that can guide others in adopting sustainable practices. Here are some key lessons that can be applied by farmers and gardeners alike to improve their operations and contribute to a more sustainable future.



Lesson 1: The Importance of Soil Health

One of the most consistent themes in sustainable farming is the critical importance of maintaining and enhancing soil health. Healthy soil is the foundation of any successful farming operation, as it directly impacts crop yields, water retention, and resistance to pests and diseases. The use of organic matter, such as vermicompost, has been shown to significantly improve soil structure and fertility (Edwards, Arancon, & Sherman, 2011). By incorporating organic compost into the soil, farmers can reduce their reliance on chemical fertilizers and pesticides, leading to healthier crops and a more sustainable farming ecosystem.

Practical Tip: Regularly test your soil to monitor its health and make informed decisions about what nutrients or organic amendments may be needed to optimize its condition.

Lesson 2: Adapting Practices to Local Conditions

Success in sustainable farming often depends on the ability to tailor practices to the specific conditions of the local environment. For example, the adoption of agroecology and water conservation techniques by farmers in Andalusia, Spain, demonstrates how practices like drip irrigation and mulching can be adapted to arid regions to conserve water and prevent soil erosion (Gliessman, 2014). By understanding the unique challenges and opportunities of their local area, farmers can implement strategies that maximize the efficiency and sustainability of their operations.

Practical Tip: Conduct a thorough assessment of your local climate, soil type, and water availability to determine which sustainable practices will be most effective in your region.

Lesson 3: Embracing Innovation and Technology

Innovative technologies, such as precision agriculture and renewable energy systems, have become indispensable tools in modern sustainable farming. Precision agriculture, which involves the use of data-driven technologies like GPS and IoT devices, allows farmers to optimize resource use, reduce waste, and improve crop yields (O'Connell, Houghton, & Barrie, 2020). Similarly, the integration of renewable energy sources like solar panels can significantly reduce a farm's carbon footprint while lowering energy costs (Shahbaz, Loganathan, & Sbia, 2021).



Practical Tip: Explore how you can incorporate technology into your farming practices, whether through automated machinery, smart irrigation systems, or renewable energy solutions.

Lesson 4: The Power of Community and Collaboration

The success stories of small-scale farmers, like those of MTTARIM in Turkiye, highlight the importance of community engagement and collaboration. By sharing knowledge, resources, and experiences with other farmers and local stakeholders, individuals can amplify the impact of their sustainable practices and contribute to a broader movement towards sustainability (Pretty, 2003).

Practical Tip: Join or form a local farming cooperative or network to exchange ideas, share resources, and collaborate on sustainability initiatives with other farmers in your area.

Lesson 5: Continuous Learning and Adaptation

Sustainable farming is not a one-size-fits-all solution; it requires continuous learning, adaptation, and experimentation. As new challenges arise and technologies evolve, successful farmers are those who

remain open to learning and willing to adapt their practices to stay sustainable (Altieri, 2002). This mindset of continuous improvement is key to long-term success in sustainable agriculture.

Practical Tip: Stay informed about the latest developments in sustainable farming by attending workshops, reading relevant literature, and experimenting with new techniques on your farm.

These resources provide additional information and practical advice for those looking to deepen their understanding of sustainable farming practices.

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Inviting Contributions and Feedback

Join the PowerWORMS Community!

As we journey through the fascinating world of sustainable agriculture and vermicomposting, your voice, experiences, and insights are invaluable to us. We're not just a newsletter; we're a community of enthusiasts, learners, and eco-conscious individuals. And we'd love for you to be an active part of this vibrant community.

Share Your Experiences

Have you started your own vermicomposting project?

What challenges and successes have you encountered?

Do you have unique tips or stories about your vermicomposting journey?

We're eager to hear about your experiences! Your stories can inspire and educate others, creating a ripple effect of sustainable practices.

Ask Questions

Are there aspects of vermicomposting or sustainable agriculture you're curious about?

Do you have specific challenges you need help with?

Don't hesitate to ask. Our community is here to share knowledge and provide support.

info@powerworms.org

Interactive Community Section

Visit the PowerWORMS website https://powerworms.org and explore our new interactive community section. Post your stories, questions, and suggestions.

Stay Connected

Follow us on social media for updates, tips, and community highlights.

Share your vermicomposting photos and stories with the hashtag #PowerWORMSCommunity.

Your participation enriches our project and brings us closer to our goal of promoting sustainable practices worldwide. Together, we can make a significant impact on the health of our planet.

https://powerworms.org

https://www.instagram.com/power.worms/

https://twitter.com/power_worms

Looking forward to your valuable contributions!

Warm regards,

The PowerWORMS Team.

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Contact Information

Name: Dr. Ekrem AKBULUT, Dr. Gulcin BEKER AKBULUT
Partner: Malatya Turgut Ozal University
Email: ekrem.akbulut@ozal.edu.tr

Name: Fatih DEMIRCI, E. Ozkan DEMIRCI
Partner: Naturainnova
Email: fatih.demirci@naturainnova.com, enezdemirci@gmail.com

Name: Abdullah ERDOGAN, Dr. Duygu OZELCI
Partner: Malatya Apricot Research Institute
Email: abdullah.erdogan@tarimorman.gov.tr

Name: Chemi JOSE
Partner: WWOOF ESPANA
Email: info@wwoof.es

Name: Aikaterini SOTIROPOULOU
Partner: INNOPOLIS
Email: projects@innopolis.org

Name: Ljupcho TOSHEV, Aleksandra NİKOLOVA
Partner: FACE (Foundation Agro-Centre for Education)
Email: Lj.tosev@ace.org.mk, a.nikolova@ace.org.mk

Name: Athanasios KRİKİS
Partner: INNOTOMIA
Email: athkrikis@innotomia.com

Name: Sefer DEMİRCİ, Mehmet ALTUNBAS
Partner: ILA
Email: sefer@ilabour.eu, mehmet@ilabour.eu

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