

## **Modern Sharecropping and Regenerative Agriculture Model for Social Innovation in Rural Areas: The Pilot Case of Kemaliye Village, Giresun**

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**Abstract:** *This article presents a pilot implementation of the “Modern Sharecropping and Regenerative Agriculture Model” developed under the coordination of the Giresun Governorship in Kemaliye Village, Türkiye. The project addresses the critical decline in hazelnut productivity due to aging rural populations and labor shortages, as well as the lack of professional agricultural care and youth involvement. A comprehensive farm analysis and orchard scoring system was applied to 14 hazelnut producers' lands, totaling 300 decares. Based on over 60 indicators—ranging from topography and soil quality to pest damage and yield history—a digital scoring software generated customized agricultural calendars and harvest-sharing offers for each landowner.*

*In parallel, 240 young individuals were certified as hazelnut maintenance technicians through structured vocational training. A four-story abandoned village school was transformed into a multifunctional rural hub that now hosts a training center, women-led production areas, and guest accommodation. At the end of the project, the S.S.TEKFINDIK Women's Cooperative was established to maintain operational sustainability.*

*This model, which combines traditional sharecropping logic with digital agriculture, vocational training, and social entrepreneurship, has created an integrated framework for rural revitalization. It demonstrates that local development is achievable when digital tools, professional labor, and cooperative governance intersect with community-based action.*

**Keywords:** *modern sharecropping, regenerative agriculture, rural development, agricultural innovation, digital farming, youth employment, women's cooperatives*

### **Background**

Hazelnut agriculture, which is an important economic value in Turkey, especially in the Black Sea Region, has been facing a serious productivity problem in recent years. Structural reasons such as the aging of the rural population, the withdrawal of young people from agriculture, urbanisation trends and the weakening of family management have led to the neglect of the maintenance of hazelnut orchards. As a result, quality and quantity losses are experienced in production, agricultural incomes decrease and regional development is negatively affected (Erdoğan, 2018; An et al., 2020).

On the other hand, the need for knowledge-based, sustainable and professional maintenance services in hazelnut agriculture is increasing. However, the limited availability of qualified human resources in this field, the fact that young people do not see a future in hazelnut agriculture and the lack of adequate professionalisation models for this field create a structural gap in the production process (Kantar et al., 2017; Berk, 2018).

In this study, the "Modern Semi-Forestry and Restorative Agriculture Model" developed under the coordination of the Governorship of Giresun and piloted in Kemaliye Village is introduced; the contributions of this model in terms of social innovation, agricultural productivity increase, youth employment and women's cooperatives in rural areas are explained.

### **Introduction**

Hazelnut cultivation is one of the cornerstones of the economic and social structure of the Black Sea Region of Turkey. However, there has been a significant decline in production

capacity and productivity in recent years. The study by Erdoğan (2018) lists the most important problems facing hazelnut production in Turkey as the aging agricultural population, soil fragmentation, inadequate garden maintenance and lack of technological investments. Similarly, An et al. (2020) emphasised the importance of transition to sustainable agricultural practices by revealing the negative effects of climate change on hazelnut production. It is stated that this situation is more evident especially in the Black Sea Region and alternative care and management models are needed for the continuity of production (Islam et al., 2024).

The migration of the young population from rural to urban areas and the gradual decrease in the number of young people working in agriculture also deepen this problem. Kantar et al. (2017) listed economic uncertainty, low prestige of agriculture and lack of career opportunities as the main reasons for rural youth to move away from agriculture. In addition, Berk (2018) states that the main factors for young farmers to leave the sector are lack of economic gain, difficult working conditions and professional uncertainty. This situation shows the importance of professionalisation and professionalisation in agriculture. This situation shows the importance of professionalisation and professionalisation in agriculture.

Research on the necessity of professional maintenance services in agriculture reveals that hazelnut orchards with regular maintenance provide significantly higher yields. Yaman (2019) conducted a field study showing that yield can increase significantly with regular and professional maintenance. Öztürk and İslam (2019) stated that professional maintenance techniques are inevitable for the sustainability of hazelnut production, and the application of these techniques depends on trained and qualified labour force.

As a result of these developments, cooperative models have emerged as an important solution for professionalisation in agriculture and rural development. Lan et al. (2014) and Figueiredo and Franco (2018) show the positive effects of social entrepreneurship-oriented co-operatives on economic growth, social solidarity and environmental sustainability in rural areas. In the case of Turkey, Kılıç and Aydoğan (2022) elaborate on the role of cooperatives in social and economic development and emphasise the necessity of cooperatives in rural development. In particular, women's co-operatives are critical for gender equality, economic empowerment and social innovation in rural development. Boz and İrmış (2023) examine the active role of women's co-operatives in rural development through social entrepreneurship activities, while Kazar (2019) and Akkaya Aldırmaz (2018) highlight the impact of women's co-operatives on poverty alleviation and their importance in creating sustainable economic activities in rural areas.

Finally, Deichmann et al. (2016) and Gumbi et al. (2023), who examined the impact of digital agriculture practices on smallholder farmers, stated that digital technologies have great potential for efficiency, transparency and economic gain in agricultural production. It is stated that these digital tools facilitate farmers and increase the capacity for sustainable agricultural management (Boz Yılmaz and Tunalıoğlu, 2024). For this reason, the aim of this study is to address the effectiveness and sustainability of the Modern Semi-Farming and Restorative Agriculture Model applied in Giresun Kemaliye Village.

## **Method**

This study is a qualitative research. Data were obtained from project reports, local stakeholder interviews, digital agricultural software records and implementation outputs.

Kemaliye Village, where the study was conducted, was selected as the pilot implementation area as it is a rural settlement where structural problems such as aging agricultural population and loss of young labour force are intensely observed. The project process carried out in the village consists of three main components: field analysis and garden scoring, vocational training programme and social cooperative infrastructure.

### **Field Analysis and Garden Scoring**

Within the scope of the project, a detailed field analysis and scoring study was carried out on a total of 300 decares of hazelnut land belonging to 14 garden owners in Kemaliye Village who could not maintain their own gardens for various reasons. In these analyses, approximately 60 different indicators including physical characteristics of the gardens, soil structure, disease and pest status, yield history and ownership information were evaluated. The scoring system is

categorised under six main headings:

**Location and Slope:** The direction, altitude, wind exposure and slope of the gardens were evaluated. Especially areas with a slope of 5-25%, south orientation and easy accessibility received high scores.

**Soil Quality:** Physical and chemical properties such as organic matter content, soil type, drainage and pH level were scored.

**Garden Structure:** Number of hearths, branch height, density of bottom shoots, suitability for machine harvesting and general maintenance status were evaluated.

**Diseases and Pests:** Biotic threats such as shatterwort, powdery mildew, brown skunk, mossaing were scored according to a 4-grade observation system.

**Property Status:** Administrative variables such as whether the title deed is shared or not, ÇKS registration, zoning pressure and infrastructure access were included in the evaluation.

**Yield and Yield:** The average yield and yield quality of the last three years were analysed by examining producer declarations and delivery receipts.

With the help of the garden scoring software, the current conditions of the gardens were comprehensively analysed and the agricultural calendar for the following years was determined. As a result of this evaluation, each garden owner was offered a harvest sharing model at different rates according to physical conditions, maintenance requirements and production potential. This approach ensured both efficient use of resources and the establishment of a fair and sustainable partnership model.

### **Training, Infrastructure and Cooperatives**

In parallel with the scoring process, a hazelnut maintenance technician training programme was carried out in order to encourage professionalisation in hazelnut agriculture. A total of 240 young people successfully completed 80 hours of training and were awarded certificates. Training contents consist of pruning techniques, soil nutrition, pest control, machine harvesting and occupational safety modules.

In addition, the 4-storey old village school building in Kemaliye Village was restored and turned into a multifunctional rural centre within the scope of the project. The building includes a technical training workshop, women's production and sales areas, a local breakfast hall and a guest house.

At the end of this whole process, “Tekfindık” Women's Initiative Production and Business Cooperative with Limited Responsibility was officially established and started its activities in order to ensure sustainability. The cooperative undertakes maintenance by making harvest sharing agreements with garden owners and continues the production process with professional staff.

### **Findings**

Multifaceted and measurable outputs were obtained as a result of the pilot implementation of the ‘Modern Semi-Farm and Restorative Agriculture Model’ in Kemaliye Village. These findings were evaluated on the axis of agricultural production, human resource development, social structure and institutionalisation.

### **Productivity Potential in Agricultural Production**

The maintenance practices carried out according to the priorities determined as a result of field analysis and garden scoring system have provided a visible improvement in hazelnut gardens from the first year. In most of the gardens, bottom shoot cleaning, fertilisation and pruning operations were carried out, and suitable branch height and garden layout were targeted for machine harvesting. According to the observation reports, the average yield increase expectation for the next production season is estimated to be 20-30 per cent.

### **Professionalisation and Youth Participation**

As a result of the training programmes carried out within the scope of the project, 240

young individuals were certified as hazelnut maintenance technicians. After the training, a significant number of the participants were either directly employed within the co-operative or started to take part in seasonal maintenance works on a contractual basis. This situation shows that hazelnut agriculture has gone beyond being a means of livelihood and gained the status of ‘profession’.

### **Cooperative Based Social Entrepreneurship**

The “Limited Responsibility Tekfindık” Women's Initiative Production and Business Cooperative, established at the end of the project, ensured the active participation of rural women in the production process and started to act as an institutional framework for issues such as garden maintenance protocols, equipment sharing and local sales organisations. In its first year of operation, the co-operative provided services to 14 garden owners and received new application requests for the following period. Following the trainings, women members have become more visible in social and economic life by taking part in production areas.

### **Digitalisation and Agricultural Planning**

The developed garden scoring software enabled maintenance and production plans to be made in a data-driven manner, allowing resource utilisation to be optimised. Thanks to the digital agricultural calendar created for each garden, fertilisation, spraying and pruning procedures are synchronised, ensuring efficiency and time management in the field. The system was integrated into the co-operative's digital archive to increase traceability.

### **Infrastructure Transformation and Rural Revitalisation**

The restoration of an idle village school and its re-functioning as a training centre, production and sales area, guesthouse and local breakfast venue has increased social interaction in the village and created a new focal point for the local community. The multi-purpose use of the space ensured the continuity of education and production activities, and demonstrated that abandoned buildings in rural areas can be utilised as a development tool.

### **Discussion**

The ‘Modern Semi-Farming and Restorative Agriculture Model’ project implemented in Kemaliye Village provides a concrete example of integrating traditional agricultural practices with contemporary rural development approaches. The findings show that effective and locally context-sensitive solutions can be developed to structural problems in agriculture such as loss of labour force, youth disengagement from the sector and lack of maintenance.

Firstly, intervention planning through field analysis and garden scoring system strengthened the expectation of yield increase in hazelnut production. The fact that this system takes technical decisions out of heuristic approaches and makes them data-based supports professionalisation in agricultural production. This is in line with the ‘direct effect of quality of care on yield’ emphasised by Yaman (2019) and Öztürk & İslam (2019).

In terms of increasing the participation of young people in agricultural activities, hazelnut maintenance technician trainings seem to play an enabling role. Kantar et al. (2017) and Berk (2018) show uncertainty, precariousness and low prestige as the main reasons why young people move away from agriculture. The training and certification system developed within the scope of this project has managed to break these barriers by transforming agriculture into a profession for young people.

The inclusion of women in co-operative-based production and governance processes is noteworthy in terms of gender equality and rural women's employment. In line with studies such as Boz & İrmiş (2023) and Kazar (2019), women in this project are positioned not only as producers but also as decision-making actors. This sets a strong example in terms of establishing sustainable structures in the field of rural social entrepreneurship.

In addition, the introduction of digital agricultural practices in rural areas has been a transformative factor for small producers. The advantages of digital tools such as transparency,



time management and efficiency emphasised by Deichmann et al. (2016) and Gumbi et al.

In conclusion, the combination of the traditional sharecropping model with modern agricultural planning, digital monitoring, training and social co-operative systems shows that rural development can be realised not only in economic but also in social and institutional dimensions. In this respect, the project presents a strong model for sustainable rural development policies that prioritise local development.

### **Conclusion and Recommendations**

Within the scope of the study, unmaintained gardens were brought into production and productivity was increased. Agriculture has become a certified profession for young people beyond a source of livelihood. Women have taken an active role in local production processes and gained economic autonomy. Thanks to digital agricultural practices, production processes have become planned and traceable. An idle public building in rural areas was transformed into a multifunctional rural centre. In this context, the following suggestions can be given for sustainable development activities that can be implemented in rural areas;

The agricultural sector should be presented as a profession that requires technical knowledge and competence, not just a temporary occupation for young people. Digital applications such as garden scoring should be made widespread and producer decisions should be based on scientific data. Cooperative structures should be strengthened to enable women to take active and decision-making positions in the agricultural production chain. Unused rural buildings such as schools, lodging houses, etc. should be restored and re-functionalised as education, production and social centres. Pilot projects should be scaled up and successful practices such as the Kemaliye model should be scaled up in other rural areas and integrated into rural development programmes.

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