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BeeBridge
Strengthen of the beekeepers generation bridging
2025-1-PL01-KA220-VET-000350136



BeeBridge State-of-the-Art National Report

Türkiye



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Introduction

Beekeeping in Türkiye represents an important agricultural activity contributing to rural livelihoods, biodiversity and food production. National vocational education and training (VET) programmes provide structured instruction in colony management, disease control and honey production. Sector reports and technical publications indicate that productivity, colony health and market diversification remain central priorities. However, emerging challenges such as environmental stress, climate variability, digital transformation and evolving market demands require additional competences beyond traditional training content.

The thematic areas analysed in this report — including efficient beekeeping techniques, marketing and diversification of hive products, digitalisation of apiaries, disease management, therapeutic uses, CCD prevention and climate adaptation — are increasingly relevant for both young and experienced beekeepers. Young entrants require updated skills aligned with technological and environmental developments, while experienced beekeepers need structured support to adapt to changing ecological and market conditions. Identifying strengths and gaps in current training structures provides a foundation for strengthening competence-based approaches within the BeeBridge framework. In the BeeBridge partnership, Türkiye is represented by Naturelder (Mediterranean Natural Life Association).

1. What techniques of efficient beekeeping are currently promoted or applied in Türkiye?

Efficient beekeeping techniques in Türkiye are primarily promoted through national guidelines issued by the Ministry of Agriculture and Forestry, vocational education programmes developed by the Ministry of National Education (MEB), and training materials used within formal and non-formal VET contexts.

National guidelines, manuals and recommendations

At national level, efficiency in beekeeping is largely framed in terms of colony productivity, honey yield per hive, colony strength and reduction of seasonal losses. Official sector reports and technical publications emphasise productivity-oriented management and disease control as the main pillars of efficient beekeeping (TEPGE, 2025; Ministry of Agriculture and Forestry, 2024).

The dominant efficiency-oriented practices promoted at national level include:

- Systematic seasonal colony inspections
- Controlled queen rearing and regular queen replacement

- Monitoring and treatment of *Varroa destructor*
- Swarm control management
- Supplementary feeding during nectar shortages
- Migratory beekeeping (transhumance) to optimise nectar flow

Migratory beekeeping is widely applied in Türkiye as a strategy to increase productivity by following regional flowering cycles and maximising nectar availability (TEPGE, 2025). Efficiency is therefore primarily understood through biological performance indicators such as honey yield, colony survival and queen quality.

Training materials used in VET and extension services

Vocational education programmes, especially those issued by MEB, reflect a strong practical orientation. The Arıcılık Kurs Programı (84 hours) and related modular programmes focus on:

- Colony biology and hive structure
- Seasonal colony management
- Queen rearing techniques
- Disease recognition and prevention
- Harvesting and basic post-harvest handling

These programmes emphasise hands-on colony management and practical skills development (MEB, 2023a). The modular structure allocates the majority of training time to applied hive management and disease prevention, indicating a productivity-driven approach.

Similarly, applied manuals and technical materials used in extension services prioritise seasonal task planning, colony strengthening and disease control as key efficiency strategies.

Practices promoted by beekeeper associations and advisory bodies

Beekeeper associations in Türkiye, including regional beekeeper unions and the national federation (TAB), play an advisory and coordination role. They may organise seminars, seasonal information meetings, field demonstrations and awareness campaigns, particularly in relation to disease control and queen management.

Through these activities, practical knowledge on colony management, migratory practices and disease prevention is disseminated among members. However, publicly available, structured and standardised national-level training manuals produced directly by beekeeper associations are limited compared to formal VET curricula issued by MEB. Most documented and systematised training frameworks are institutional rather than association-based.



Approaches related to productivity, sustainability and colony management

Productivity is primarily addressed through:

- Strengthening colonies before nectar flow
- Maintaining optimal queen performance
- Reducing winter losses
- Applying preventive disease management

Sustainability is generally interpreted in biological and management terms (colony continuity, disease prevention, feeding management) rather than through broader environmental resilience or climate-adaptive frameworks.

Colony management approaches are structured around seasonal cycles and preventive interventions, reflecting a traditional and experience-based model of efficiency.

Identified limitations and gaps in existing training materials

Despite the technically strong and production-focused structure of current national training frameworks, several limitations can be identified:

- Efficiency is predominantly defined through yield indicators rather than competence-based performance outcomes.
- Digital monitoring tools and data-based decision-support systems are not systematically integrated into VET curricula.
- Climate-related adaptation strategies are not explicitly embedded in efficiency-oriented training modules.
- Structured competence frameworks and measurable learning outcomes are not consistently visible in publicly accessible documentation.
- The pedagogical integration of modern audio-visual and demonstrative training formats remains limited.

Overall, Türkiye demonstrates a technically robust and production-oriented approach to efficient beekeeping. However, efficiency remains largely yield-focused, with limited integration of digitalisation, climate adaptation and competence-based pedagogical frameworks within existing vocational training structures.

2. How are effective marketing strategies and hive by-products (including apitherapy) addressed in existing training and sector materials?

In Türkiye, existing beekeeping training and sector materials are predominantly production-oriented. While hive by-products are technically recognised and partially covered, structured and competence-based marketing education is limited within publicly available vocational curricula.

How marketing of honey and other hive products is currently covered

A review of national VET curricula, particularly the Arıcılık Kurs Programı issued by the Ministry of National Education (MEB), indicates that no dedicated, structured marketing module is explicitly embedded within the core beekeeping programme (MEB, 2023a). The curriculum primarily focuses on colony management, disease control, and harvesting practices.

Post-harvest handling and basic product processing are addressed; however, systematic training on:

- Branding and product positioning
- Market segmentation
- Pricing strategies
- Certification schemes (e.g. organic, geographical indication)
- Export readiness
- Digital marketing and e-commerce

is not formally structured as a competence-based module within publicly accessible VET documentation.

Sector reports issued by national institutions provide macro-level information on honey production volumes, export figures and product categories (TEPGE, 2025; Ministry of Agriculture and Forestry, 2024). However, these reports function as statistical and policy documents rather than structured marketing training materials.

Therefore, marketing is generally addressed at an informational level rather than through a pedagogically defined entrepreneurship or business competence framework.

The role of side products of the hive (pollen, propolis, wax, apitherapy-related products)

Hive by-products such as pollen, propolis, beeswax and royal jelly are acknowledged within both sector materials and specific training modules.

The MEB programme on “Arı Sütü Üretimi ve Ana Arı Yetiştiriciliği” includes structured content on royal jelly production techniques (MEB, 2018). General beekeeping manuals and applied training materials also refer to the technical production of pollen and wax.

However, the integration of these side products into a broader diversification and value-added market strategy is not systematically developed within VET curricula. The emphasis remains on production technique rather than on:

- Product portfolio diversification planning
- Market differentiation strategies
- Regulatory frameworks for high-value products
- Quality assurance and certification pathways

Apitherapy-related products are more clearly regulated and structured within the healthcare domain than within mainstream beekeeping vocational education. Although apitherapy is recognised at institutional level in Türkiye, its integration into general beekeeping training programmes is limited and not systematically embedded within basic VET curricula.

Gaps in business, marketing and diversification knowledge among beekeepers

Based on the analysis of publicly available national curricula and sector materials, several structural gaps can be identified:

- No clearly defined entrepreneurship or business planning module within basic beekeeping VET curricula.
- Limited structured training on value chain analysis and market positioning.
- No explicit integration of digital marketing, online sales channels or data-driven marketing strategies.
- Diversification is presented primarily as additional production (e.g. royal jelly) rather than as a strategic business model.
- Limited structured guidance on certification schemes and international market standards.
- Apitherapy-related diversification is not systematically linked to vocational-level competence development.

Overall, while hive by-products are technically recognised and partially addressed, marketing knowledge within existing training frameworks remains predominantly operational and production-focused. A structured, competence-based approach to entrepreneurship, branding, diversification and digital market integration is not systematically embedded in current vocational training materials.

3. How is the digitalisation of apiaries (Beekeeping 4.0) reflected in national training materials and practices?

The review of publicly available national vocational training curricula and sector materials indicates that digitalisation of apiaries (Beekeeping 4.0) is not systematically integrated into formal beekeeping education in Türkiye. Existing programmes primarily emphasise traditional colony management practices based on manual inspection and observational assessment.

Use of digital tools in apiary management

Digital apiary management typically includes remote hive monitoring systems (temperature, humidity, hive weight sensors), digital record-keeping applications, data-driven decision-support tools and GPS-based tracking for migratory beekeeping.

However, an examination of the Arıcılık Kurs Programı and the Uygulamalı Arıcılık Kurs Programı issued by the Ministry of National Education does not reveal a dedicated module addressing digital monitoring systems, electronic record keeping, sensor-based management or data-supported decision-making (MEB, 2023a; MEB, 2023b).

Efficiency and productivity are presented primarily through biological and manual management practices, including seasonal inspections, disease control and colony strengthening. Digital optimisation tools are not explicitly embedded within the documented learning outcomes of these programmes.

At sector level, although digital monitoring technologies are emerging in commercial beekeeping practice, their structured reflection within publicly accessible national VET documentation remains limited (TEPGE, 2025). Digitalisation appears to be innovation-driven rather than curriculum-driven.

Availability of digital or online training resources

The reviewed national course programmes do not describe a structured national e-learning framework specifically dedicated to digital beekeeping competences (MEB, 2023a; MEB, 2023b). While digital tools may be used in general assessment procedures or information dissemination, arıcılığa özgü dijital yeterliliklere yönelik sistematik bir uzaktan eğitim modülü tanımlanmamaktadır.

Online seminars, webinars or informational videos may be organised occasionally by institutions or associations; however, these are not embedded within a unified, standardised national curriculum structure.

Therefore, digital knowledge acquisition in beekeeping appears largely informal and dependent on individual initiative rather than structured vocational pathways.

Barriers related to digital competences

The absence of explicitly defined digital competence modules within national VET curricula suggests structural limitations in the integration of Beekeeping 4.0 approaches.

Several potential barriers can be identified based on curriculum structure and sector characteristics:

- Core training programmes do not include defined digital competence learning outcomes.
- Data interpretation and sensor-based decision support are not incorporated into standard training frameworks.
- The sector includes a significant proportion of traditionally trained beekeepers, which may slow the adoption of digital technologies.
- Investment costs associated with advanced monitoring systems may limit uptake among small-scale producers.

Overall, digitalisation within Turkish beekeeping practice remains at an early and uneven stage. While technological innovations are present in parts of the sector, structured digital competence development is not systematically embedded in national vocational training materials. This represents a clear gap in relation to Beekeeping 4.0 approaches.

4. What approaches to bee diseases are described in national publications and training materials?

National publications and vocational training materials in Türkiye place significant emphasis on bee diseases and colony health management. Disease prevention and control are consistently presented as core components of efficient beekeeping practice within both official guidelines and VET curricula.

Common diseases and health risks addressed in training content

A review of the Arıcılık Kurs Programı and related applied training materials confirms that bee diseases and pests are explicitly included in the curriculum (MEB, 2023a; MEB, 2023b). The content primarily addresses:



- *Varroa destructor* infestation
- American foulbrood (*Paenibacillus larvae*)
- European foulbrood
- Nosema disease
- Brood diseases and colony weakening conditions

Within national technical materials, varroa management is consistently prioritised as a central health risk requiring regular monitoring and intervention (Ministry of Agriculture and Forestry, 2024).

Training content also recognises general colony health risk factors such as:

- Poor nutrition
- Weak or aging queens
- Seasonal stress conditions
- Inadequate hive hygiene

These risks are framed within the broader objective of maintaining colony strength and reducing seasonal losses.

Recommended prevention and management practices

National curricula and technical publications emphasise preventive management as the primary approach to disease control. Recommended practices include:

- Regular seasonal inspection of colonies
- Symptom recognition during field-based hive assessment
- Timely application of officially approved treatments against varroa
- Replacement of low-performing or aging queens
- Maintenance of strong colony populations
- Hygienic handling and isolation of infected materials

The MEB curricula allocate instructional time to disease recognition and intervention strategies, particularly in relation to varroa monitoring and treatment cycles (MEB, 2023a).

Official publications additionally stress compliance with approved veterinary products and biosecurity principles (Ministry of Agriculture and Forestry, 2024).

Level of practical guidance provided to beekeepers

The reviewed training materials demonstrate a strong practical orientation in disease management. Instruction focuses on:

- Visual symptom identification
- Seasonal treatment timing
- Field-based management routines

Disease control is primarily presented as an observational and field-based competence. Manual inspection and beekeeper experience are central to the diagnostic approach.

Structured instruction on laboratory-based diagnostics, advanced pathogen detection methods, systematic health data recording or digital disease-monitoring systems is not explicitly embedded within publicly available national VET documentation.

Overall, national training materials in Türkiye provide clear and operational guidance on common bee diseases, particularly in relation to varroa control and preventive colony management. The approach is field-oriented and practice-based. However, integration of advanced diagnostic frameworks and structured health surveillance systems is not explicitly defined within core vocational curricula.

5. How are healing apiaries and therapeutic uses of beekeeping addressed at national level?

At national level in Türkiye, apitherapy is institutionally recognised and regulated primarily within the healthcare domain. In contrast, publicly available beekeeping vocational education (VET) curricula focus mainly on production and basic processing of hive products, and do not define a structured training track for healing apiaries or therapeutic beekeeping services.

Existing initiatives, projects or training related to healing apiaries or apitherapy

Türkiye has a national framework for apitherapy within the Ministry of Health's certification system. The Ministry of Health publishes an official "Apitherapy Certified Training Programme Standard", which was revised in March 2024, indicating that apitherapy training is organised as a certified programme under health-sector governance (Ministry of Health, 2024). A national "Apitherapy Practice Guide" is also available through the Ministry's e-library, further confirming institutional recognition and implementation guidance in the healthcare context (Ministry of Health, 2025).



Within mainstream vocational beekeeping education, the MEB Arıcılık Kurs Programı is publicly available and structured around technical beekeeping competences (colony management, production, harvesting). This programme does not define a dedicated module on apitherapy or healing apiary management (MEB, 2023a). While some hive by-products (e.g., royal jelly) are addressed through specific courses or modules, this content is oriented to production techniques rather than therapeutic use frameworks (MEB, 2018).

At sector level, national agricultural reports acknowledge hive products as economically valuable outputs, but they do not function as structured training materials for therapeutic service provision (TEPGE, 2025).

No publicly documented national VET curriculum specifically dedicated to establishing or operating “healing apiaries” (apiary-based wellbeing or therapeutic environments) was identified within core beekeeping training documentation (MEB, 2023a).

Positioning of therapeutic aspects (health, wellbeing, tourism, education)

Therapeutic uses of bee products are positioned primarily within healthcare regulation and certified training pathways (Ministry of Health, 2024; Ministry of Health, 2025). In this framing, apitherapy is treated as a supervised practice with defined standards and implementation guidance.

In contrast, within publicly available beekeeping vocational training and sector materials, hive products are primarily positioned as agricultural commodities and value-added products, with an emphasis on production and economic outputs rather than therapeutic services (MEB, 2023a; TEPGE, 2025). Links to wellbeing, tourism or experiential education are not systematically defined as competence-based components in mainstream beekeeping VET curricula (MEB, 2023a).

Identified knowledge gaps or lack of structured training

Based on the reviewed public documentation, several gaps can be identified:

- No dedicated, competence-based module within mainstream beekeeping VET curricula on apitherapy principles or healing apiary management (MEB, 2023a).
- Limited vocational-level guidance connecting hive product production with health-sector apitherapy standards and safety requirements (Ministry of Health, 2024; Ministry of Health, 2025).
- No defined competence standards for beekeepers who may wish to develop apiary-based wellbeing or therapeutic service activities within agricultural training frameworks (MEB, 2023a).
- Regulatory, safety and ethical requirements for therapeutic service provision are addressed in health-sector documents, but are not systematically translated into beekeeping VET pathways (Ministry of Health, 2024; Ministry of Health, 2025).

Overall, apitherapy is institutionally established in Türkiye within the healthcare domain, while structured training for healing apiaries and therapeutic beekeeping remains outside mainstream beekeeping vocational curricula.

6. How is the prevention of Colony Collapse Disorder (CCD) addressed in national sources?

A review of publicly available national vocational training curricula and official technical publications in Türkiye indicates that Colony Collapse Disorder (CCD) is not explicitly defined as a standalone topic within mainstream beekeeping education. Instead, colony losses are addressed indirectly through disease management and general colony health frameworks.

Awareness of CCD among beekeepers

In the reviewed Arıcılık Kurs Programı and Uygulamalı Arıcılık Kurs Programı issued by the Ministry of National Education, CCD is not defined as a separate module or learning outcome (MEB, 2023a; MEB, 2023b). Training materials focus on:

- Disease control
- Colony strengthening
- Seasonal management
- Prevention of winter losses

Colony losses are therefore addressed through broader colony health concepts rather than through a defined CCD-specific framework. The term “CCD” does not appear as a distinct instructional category in the reviewed VET documentation.

Preventive measures promoted in training or advisory materials

National training materials promote preventive measures that indirectly relate to colony loss mitigation. These include:

- Monitoring and control of *Varroa destructor*
- Maintenance of strong and productive queens
- Adequate seasonal feeding
- Prevention of brood diseases
- Hygienic hive management
- Compliance with approved veterinary treatments

These measures are presented as general colony health strategies (MEB, 2023a; Ministry of Agriculture and Forestry, 2024). They are not framed as CCD-specific protocols but function as indirect risk reduction practices.

No CCD-specific monitoring system, diagnostic protocol or structured CCD prevention guideline was identified in the reviewed national VET documentation.

Links between management practices, environmental factors and colony losses

National technical publications and sector reports acknowledge that colony losses may be influenced by parasites, diseases and seasonal stress conditions (Ministry of Agriculture and Forestry, 2024; TEPGE, 2025). These factors are addressed within separate thematic units in VET curricula.

Civil society publications in rural development projects, including Naturelder's project on civil society development in rural areas, highlight environmental stressors such as drought, agrochemical use and herbicide exposure as risks affecting agricultural sustainability and pollinator health (Naturelder, 2021–2022). These publications frame environmental pressures as contributing risk factors; however, they are not embedded within formal national VET curricula.

Within the reviewed vocational documentation, explicit integration of environmental stressors, pesticide exposure and management practices into a structured CCD prevention model is not clearly defined.

Overall, national sources in Türkiye address colony loss prevention primarily through disease control and general colony management strategies. While environmental stress factors are acknowledged in sector and civil society discourse, a clearly defined CCD-specific prevention framework is not explicitly embedded within mainstream vocational beekeeping curricula.

7. How do existing training materials address the impacts of climate change on beekeeping?

A review of publicly available national vocational training curricula indicates that climate change is not defined as a standalone instructional module within mainstream beekeeping education in Türkiye. However, certain management recommendations indirectly relate to environmental variability and seasonal stress.

How climate change effects are reflected in beekeeping recommendations

In the reviewed Arıcılık Kurs Programı and Uygulamalı Arıcılık Kurs Programı issued by the Ministry of National Education, climate change is not presented as a distinct thematic unit (MEB, 2023a; MEB, 2023b). Training content focuses on:

- Seasonal colony management
- Feeding during nectar shortages
- Preparation for overwintering
- Strengthening colonies before major nectar flows

These recommendations address operational responses to seasonal variability. However, they are not explicitly framed within long-term climate change adaptation strategies.

National sector reports describe regional production variability and environmental pressures affecting agricultural output (TEPGE, 2025). These analyses remain primarily statistical and economic rather than structured as climate adaptation guidance for beekeepers.

Adaptation of seasonal practices and colony management

Existing training materials provide practical instruction on adjusting colony management according to seasonal cycles. This includes:

- Timing of feeding in response to forage availability
- Regular inspection routines
- Colony population management
- Winter preparation strategies

While these practices can function as adaptive responses to environmental conditions, the reviewed VET documentation does not explicitly link them to:

- Long-term climate change scenarios
- Climate risk assessment
- Extreme weather preparedness
- Systematic adaptation planning

Civil society publications in rural development projects, including Naturelder's project on civil society development in rural areas, highlight drought, agrochemical pressure and environmental degradation as emerging risks affecting agricultural sustainability and pollinator health (Naturelder, 2021–2022). These publications frame environmental stress

within a sustainability context. However, they are not formally integrated into national beekeeping VET curricula.

Gaps in climate-related knowledge and preparedness

Based on the reviewed documentation, several limitations can be identified:

- Climate change is not defined as a dedicated thematic unit within mainstream beekeeping VET curricula (MEB, 2023a; MEB, 2023b).
- Long-term climate adaptation strategies are not systematically incorporated into learning outcomes.
- Structured guidance on managing heat stress, prolonged drought or shifts in flowering periods is not explicitly defined in publicly available curricula.
- Environmental sustainability is addressed primarily through colony health and productivity rather than through climate adaptation planning.

Overall, national beekeeping training materials in Türkiye address environmental variability at an operational level. However, explicit and structured integration of climate change impacts and adaptation strategies is not clearly embedded within mainstream vocational education frameworks. Civil society publications recognise climate-related risks, but these perspectives remain outside formal VET structures.

8. What national initiatives, training programmes, educational materials or projects address the above thematic areas, and what gaps do they highlight?

The review of publicly available national training documentation indicates that institutional programmes in Türkiye cover core beekeeping competences such as production, colony management and disease control. However, several thematic areas analysed in Sections 1–7 are not explicitly integrated into a unified vocational framework and appear fragmented across institutional and project-based sources.

National or regional programmes

Publicly available vocational training programmes issued by the Ministry of National Education, including the Arıcılık Kurs Programı and Uygulamalı Arıcılık Kurs Programı, provide structured instruction on:

- Colony biology and seasonal management
- Disease control and colony health

- Basic production and harvesting practices

(MEB, 2023a; MEB, 2023b).

Within these reviewed curricula, structured modules explicitly dedicated to digitalisation of apiaries (Beekeeping 4.0), climate change adaptation, CCD-specific prevention frameworks or healing apiary management were not identified.

Sector publications issued by the Ministry of Agriculture and Forestry and national institutes provide technical and statistical information relevant to beekeeping practice (Ministry of Agriculture and Forestry, 2024; TEPGE, 2025). These sources support sector-level understanding but do not function as competence-based vocational curricula.

Erasmus+ or other EU-funded projects and civil society initiatives

Project-based initiatives contribute to awareness raising and thematic capacity development. In Türkiye, civil society project outputs, including Naturelder's "Civil Society Development in Rural Areas" publications, address environmental stressors such as drought and agrochemical pressure in relation to sustainability and pollinator health (Naturelder, 2021–2022).

However, systematic integration of such project outputs into the reviewed publicly available national VET curricula is not explicitly documented within core beekeeping training programmes (MEB, 2023a; MEB, 2023b).

Vocational training courses and extension services

The reviewed national vocational programmes focus primarily on operational beekeeping competences, particularly colony management and disease prevention (MEB, 2023a; MEB, 2023b). Advisory and extension activities support dissemination of practice-based knowledge; however, their formats and learning outcomes are not consistently documented as structured competence-based programmes for emerging themes such as digitalisation, climate adaptation or therapeutic uses within the reviewed materials.

Materials developed by beekeeper organisations or training providers

Beekeeper organisations contribute to advisory dissemination and practice exchange. Nevertheless, publicly available, nationally standardised curricula produced directly by beekeeper organisations addressing digital apiary technologies, structured climate adaptation strategies, CCD-specific prevention frameworks or healing apiary management were not identified in the reviewed documentation.

Gaps highlighted across initiatives

Across the reviewed institutional programmes and supporting project outputs, the following gaps are observed:



- Digitalisation (Beekeeping 4.0), climate adaptation and CCD are not explicitly embedded as structured competence areas within core VET curricula.
- Therapeutic uses of beekeeping are institutionally defined within the health sector but are not integrated into agricultural vocational pathways.
- Project-based outputs, including civil society initiatives, are not explicitly reflected in standardised vocational learning outcomes within the reviewed national curricula.
- A unified competence framework linking productivity, sustainability, digital innovation and environmental resilience is not clearly defined within the reviewed training structures.

Overall, Türkiye has established formal vocational courses and sectoral publications addressing core beekeeping skills. However, emerging thematic areas analysed in this report remain outside the structured scope of the reviewed mainstream vocational curricula and appear in a fragmented manner across sectoral and project-based sources.

9. List of references used

Ministry of Agriculture and Forestry. Technical publications and sectoral guidance documents on beekeeping. Republic of Türkiye, Ankara, 2024.

Ministry of Health. Apitherapy Certified Training Programme Standard (revision date: 04 March 2024). Republic of Türkiye, Ankara, 2024.

Ministry of Health. Apitherapy Practice Guide. Republic of Türkiye, Ankara, 2025.

Ministry of National Education (MEB). Arı Sütü Üretimi ve Ana Arı Yetiştiriciliği Kurs Programı. Hayat Boyu Öğrenme Genel Müdürlüğü, Ankara, 2018.

Ministry of National Education (MEB). Arıcılık Kurs Programı. Hayat Boyu Öğrenme Genel Müdürlüğü, Ankara, 2023a.

Ministry of National Education (MEB). Uygulamalı Arıcılık Kurs Programı. Hayat Boyu Öğrenme Genel Müdürlüğü, Ankara, 2023b.

Naturelder. Civil Society Development in Rural Areas Project Publications. Available online: <https://naturelder.org/en/projects/civil-society-development-in-rural-areas>

TEPGE (Agricultural Economics and Policy Development Institute). Arıcılık Ürün Raporu 2025. Republic of Türkiye, Ankara, 2025.