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BeeConSel - Joint Effort for
Honey Bee Conservation and
Selection

DELIVERABLE 8

**Draft legislature adjusted
to each beneficiary
country' specifics based
on model results and
evaluation of mated
controls**

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Deliverable driver: J Prešern

Contributors: B Dahle, M Kovačić, Z Puškadija, G Aleksovski, B Pavlov, A
Uzunov, J Bubnič, P Kozmus

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EXECUTIVE SUMMARY

One of the goals of the BeeConSel project were suggestions on how to amend the legislation regulating beekeeping and queen breeding in beneficiary countries. Legislation is meant to support the efforts of queen breeders and beekeepers in partner countries and to improve and promote the quality of queens of local honey bee subspecies. The legislation differs significantly between the countries; it was also noted that in some cases it may hamper the efforts.

In Deliverable 4, we have presented the joint study on the existing legislation, about the differences between the countries and the possible weak points within the legislation. We have also proposed a model about what the legislation regulating honey bee breeding and mating control should include.

In this document, we have formulated the customized solutions based on D4 and D7 for each beneficiary country. Most of the important items presented in D4. Several members of the BeeConSel team and the advisory group are members of official expert panels which allows us to present and promote our results in the form of written or oral communication to the stakeholders. This also guarantees the sustainability of the BeeConSel results.



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LEGISLATION PROPOSALS

This deliverable is based on the starting points already provided in D4 (Table 1). We have discussed the legislation suggestions at several consortium meetings. Several members of the BeeConSel team (Prof. Zlatko Puškadija, Assist. Prof. Marin Kovačić, both from Croatia; Assist. Prof. Janez Prešern, Slovenia) and the advisory group (Dr Peter Kozmus) are members of official expert panels at respective ministries which allows us to present and promote our results in the form of written or oral communication. The Macedonian team member, Prof. Aleksandar Uzunov is also in touch with respective ministry.

The core legislative are several legal acts that have been developed in varying degrees in the beneficiary countries. While Croatia and Slovenia are members of the EU and part of their regulation stems from the EU regulative, this is not the case for N. Macedonia, therefore it is impossible to provide a point-by-point comparison of the legislations. In both Slovenia and N. Macedonia, the main laws regulating animal husbandry are now open which gives us the rare opportunity to influence these laws.

The secondary legislation, especially trans-EU CAP / Strategic interventions in Agriculture - Beekeeping, which provides financial support for measures aiming to increase productivity in the sector of Apiculture, is in force in two beneficiary countries (Croatia and Slovenia). Although the measures vary



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from one European country to another, it is possible to amend the program based on feedback of previous season. We are targeting several proposals at that level. In N. Macedonia, there is secondary legislation which is currently in a process of acceptance after amendments and adjustments with the new Law on Zootechnics (Official Gazette of the Republic of North Macedonia N°87/2023) that has replaced the former Law on Animal Husbandry (Official Gazette N° 07/2008). Beside the suggestions that were already included (see Policies Already influenced during the BeeConSel), additional suggestions presented below will be forwarded to the Ministry of Agriculture, Forestry and Water Management (MAFW) to be considered during preparation/adjustments of the legislation and the preparation of the yearly amended Program for financial support of rural development and Program for financial support in Agriculture.

This document also considers the results of the previous deliverable D7 - Modelling of countries' specific population structure under mating control options. The D7 findings clearly show the usability of our results and demonstrate the reasons for amendment of the legislation, where needed.

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Table 1. Cross-comparison of important points in the legislature and financial support between countries as shown in D4.

		Norway	Croatia	N. Macedonia	Slovenia
Legal regulation of honey bee breeding	Regulated by Animal Husbandry Law	Y	Y	Y	Y
	Existence of secondary legislation	Y	Y	Y	Y
	Native population (full or partially) protected or recognition	Y	Y	Y	Y
Financial support of honey bee breeding	Performance testing	Y*	Y	Y	Y
	Management of breeding organization	Y*	Y	Y	Y
	Queens propagation	N	Y	Y	Y
	Instrumental insemination capacity building	N	N	N	N
	Promotion	N	N	N	N
Legal regulation of mating control	Isolated area definition	Y	Y	Y	Y
	Isolated area protection	Y	N	N	Y
	Queens mated in full geographic isolation conditions are legally recognized as full pedigree	N	N	N	Y
	Mating control as a public service in the breeding program	N	N	N	N
Financial support of mating control	Compensation for logistical and technical costs for the mating station	Y*	N	N	Y**
	Compensation for II	N	N	N	N
	Compensation for verification of isolated location	N	N	N	Y*
	Promotion	N	Y	N	N

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Legal regulation of honey bee breeding

Legal regulation of honey bee breeding exists in all countries to some extent. The most important is section 3, **Protection of locally adapted gene pool**. Local subspecies are legally protected to some extent in all three beneficiary countries; but the level of the protection differs considerably from country to country. We propose an equalization of this protection based on maximum example.

Protection of locally adapted gene pool in Slovenia

Key section currently regulating local gene pool protection is section 70 of Animal Husbandry Act (ZŽiv 18/02, 110/02) with its amendments (ZdZPKG 45/04, ZdZPVVHVR 90/12, ZŽiv-A 45/15). Paragraph 1 currently stipulates:

»In order to protect the existence of the autochthonous Carniolan bee, breeding and trading with breeding material of other breeds of bees is not permitted in the territory of the Republic of Slovenia«.

Current: Animal Husbandry Act

Target: successor of Animal Husbandry Act

The Animal Husbandry Act is currently under revision. The expert body was to provide adjustments of the parts that concern beekeeping. The Ministry of Agriculture, Forestry and Food (MAFF) provided the council with several pointers.

Propositions given

Expert body at MAFF has been given pointers and propositions as follows:

1. to set provision to limit acknowledgment (and thus a financial support) of breeding programs to a single breeding program, approved through the ministry expert body and a single breeding organization, which will be approved and appointed by the ministry.

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2. definition of morphological parameters for Carniolan honey bee, either in *Animal Husbandry Law* or in the following sub acts (*Rules*).
3. higher percentage of hybrids is allowed along the Italian border, the percentage defined in the annex of the Law.
4. monitoring of international honey bee colony migrations from other countries into Slovenia is established, including those returning from foraging abroad.

Suggested amendments:

The BeeConSel consortium, suggests the following amendment of the given pointers:

2. definition of morphological **and molecular** parameters for Carniolan honey bee, either in *Animal Husbandry Law* or in the following subacts (*Rules*).
3. in the breeding operation there is **null tolerance** to hybrids.

Source: Secondary Legislation / Rules on the criteria for the approval of queen bee breeding stations, testing stations and the approval of other beekeeping organizations and on the conditions for the production and trade in bee genetic material (Official Gazette 125/03, 34/04 and 100/10; EVA 2001-2311-0093)

Target: Secondary Legislation / Rules on the criteria for the approval of queen bee breeding stations, testing stations and the approval of other beekeeping organizations and on the conditions for the production and trade in bee genetic material

Mentioned Rules are a key secondary legislation, defining parties involved in the honey bee breeding and conditions of participation as well as the breeding material.

Article 21: honey bee breeding material

Honey bee breeding material are queens, bred and mated at approved queen bee breeding facilities in accordance with a certified

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breeding program. Likewise, honey bee breeding material is also the germplasm of honey bee drones if the drones have a known origin and come from a certified queen bee breeding facility. The honey bee breeding material also includes queen bees of another origin of the native Carniola bee, ***provided that her direct descendants of the worker bee have undergone an analysis of morphological breed characteristics and a molecular genetic analysis in accordance with the approved breeding program.***

Suggested amendments:

The BeeConSel consortium suggests the following diction regarding the labelled text above:

“... provided that queens' offspring worker bees pass either morphometric analysis or molecular analysis in accordance with the approved breeding program.”

Protection of locally adapted gene pool in N. Macedonia

Current: Law on Zootechnics (Official Gazette of Republic of North Macedonia N°87/2023)

Target: amended Law on Zootechnics

In the current Law on Zootechnics (*Official Gazette of Republic of North Macedonia N°87/2023*), *Apis mellifera macedonica* is recognized as an autochthonous honey bee population and is under a special protection regime by the state biodiversity protection program. Despite this, the import of queens or breeding material of other breeds of honey bees is not prohibited.

Suggested amendments:

BeeConSel consortium suggests amendment of the Law with two measures to protect the local gene pool:

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- Importation and trade of honey bee queens and other genetic material not belonging to the autochthonous population of honey bees in N. Macedonia (*Apis mellifera macedonica*) is forbidden.
- Exception to this rule is the import of queens or breeding material from non-autochthonous populations of honey bees for scientific purposes only.

Financial support of honey bee breeding / Instrumental insemination capacity building

Instrumental insemination was recognized in three beneficiary countries as a much needed skill. In some countries, notably in Poland, the market for this skill is big enough to support individual enterprises who provide service to the beekeepers. The situation in the three beneficiary countries is quite the reverse: with instrumental insemination not in routine use we expect that at least initially some support should be provided through government mechanisms.

Instrumental Insemination Capacity Building in Slovenia

Current: Not existing

Target: Amended Secondary legislation / CAP Strategic plan 2023-2027 / **SI01 - Knowledge transfer in beekeeping**

Currently, there are three measures regarding education and capacity building:

1. Capacity building in beekeeping
2. Capacity building on honeybee colonies health
3. Upkeep of apiaries and colonies for knowledge transfer and capacity building

These measures aim to improve i) the general education in beekeeping (1, 3) and ii) the health status of the colonies in beekeepers' care (2, 3). Part-

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taking in courses of Measures 1 and 2 are precondition for any subsidies within CAP.

Suggested amendments:

We propose to add 4th measure regarding building instrumental insemination skills either as larger queen rearing / breeding course or stand-alone. The financial support will be obtained through relocation of funds from intervention SI02 - Support of beekeepers and beekeeping associations.

4. CAP SI01.04 aims to supports the legal entity for implementation of instrumental insemination capacity building course.

alternatively

4. CAP SI01.04 provides refunding directly to participants of instrumental insemination capacity building course.

The latter definition could set some (pre)conditions such as use of skills withing national breeding program, feedback with data on skill use for certain period.

Instrumental Insemination Capacity Building in Croatia

Current: Secondary legislation / CAP Strategic plan 2023-2027 / Intervention 55.1.a.01: Education, expert lectures and workshops organized by beekeepers' associations and unions, and the costs of collecting information about beekeepers and their method of beekeeping (Official Gazette, No. 24/2023)

Target: Secondary legislation / CAP Strategic plan 2023-2027 / Intervention 55.1.a.01: Education, expert lectures and workshops organized by beekeepers' associations and unions, and the costs of collecting information about beekeepers and their method of beekeeping

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Instrumental insemination of queen bees has not been used in Croatia so far in the Breeding Program. Consequently, there are no provisions within the current legislation to define it and/or to support it.

1. vocational education for trades of beekeeper, sensory analysts or apitherapeut and expert lectures, workshops organized by beekeepers' associations and for costs of collecting informations about beekeepers and their ways of keeping bees.
2. production of information material, webpages, support of print and delivery of specialized journals, development of information systems and participation of beekeepers in meetings.

These measures aim to provide i) the necessary skills for the trade and (1) and (2) the material to assist beekeepers to gain the knowledge and information.

Suggested amendments:

The BeeConSel consortium proposes the initiation of the education in the coming beekeeping season: As a first step, we propose to educate queen breeders about the benefits of using instrumental insemination in breeding. In the next step, we propose either i) a support of organization of workshop for interested stakeholder either ii) compensation of participants at such workshop.

We aim this education program for queen breeders to be accepted as a part of the Intervention in the beekeeping sector within the Strategic Plan of the Common Agricultural Policy of the Republic of Croatia 2023-2027, under measure 55.1.a.01 the costs of collecting information about beekeepers and their method of beekeeping, which will also provide source of the financing.

3. CAP 55.1.a.01 aims to supports a legal entity for implementation of instrumental insemination capacity building course.

alternatively

3. CAP 55.1.a.01 provides refunding directly to participants of instrumental insemination capacity building course.

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The latter definition could set some (pre)conditions such as use of skills withing national breeding program, feedback with data on skill use for certain period.

Instrumental Insemination Capacity Building in N. Macedonia

Current: Law on Zootechnics (Official Gazette of Republic of North Macedonia N°87/2023)

Target: Program for financial support of rural development / Program for financial support in Agriculture

According to the current Law on Zootechnics (*Official Gazette of Republic of North Macedonia N°87/2023*) and the secondary legislation that is in a phase of amendments and adjustments with the current Law on Zootechnics, the instrumental insemination of queens is one of the allowed models for controlled mating of unfertilized queens. Additionally, in the past there were occasional attempts for establishing instrumental insemination service that were not succesfully concluded, primarily due to the absence of quality training for performing instrumental insemination of queens.

As a result of the activities of the BeeConSel project, three people have been trained for instrumental insemination of the queens. The activities conducted under BeeConSel encouraged a private company to invest and establish a lab for II as a part of public-private partnership with the Faculty of Agricultural Sciences and Food in Skopje.

Suggested amendments:

The BeeConSel consortium suggests provisions within the Program for financial support of rural development and the Program for financial support in Agriculture, which would allow a financial support for capacity building and education of stakeholders to the extent that they will be able to perform instrumental insemination of queens independently.

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Legal regulation of mating control

Mating control is the key to any genetic progress. Legal regulation is in some cases not well thought out to the point of being an administrative obstacle such as is the case with Slovenian requirement on absolutely isolated mating station.

Queens mated in full geographic isolation conditions are legally recognized as full pedigree in Slovenia

Current: Secondary legislation / Rules on zootechnical standards applicable to pedigree *Apis mellifera carnica* (Official Gazette 94/03)

Target: Amended Secondary legislation / Rules on zootechnical standards applicable to pedigree *Apis mellifera carnica* (Official Gazette 94/03)

The rules are based on the Animal Husbandry Act which is being reworked. After successful completion, all rules based on the previous Animal Husbandry Act will be void. New, but in content similar, rules will be passed.

Rules on zootechnical standards define types of queen bees reared in Slovenia. In a nutshell, two categories are defined:

1. Full pedigree queens that are daughters of queens mated at mating stations where drones are of known (and controlled) origin, sons of one or more queens.
2. Open mated queens as daughters of queens that were not mated under conditions that guarantee **full control** of drone origin.

Such diction provides us with two extremes, leaving a huge gap in between. The main issue is that not a single tested location proved to be isolated. That is, in isolation tests not all the queens set up remained unmated. Thus, none of the mating station could provide full pedigree in *lege artis* fashion. Consequently, the paternal side is not recorded, and this made queens less desirable by the customers.

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Suggested amendments:

We propose to use a less strict wording, using the results of the BeeConSel field experiments to enable full pedigree recording. A certain level of paternity assignment must be achieved. A test must be performed to evaluate the level of paternity.

1. Controlled honey bee queen mating is mating at the mating stations where drones of controlled origin achieve paternity assignment of **at least 70 %**. Controlled honey bee queen mating can be achieved also through another approach (e.g. temporal isolation) providing same threshold is reached. Controlled honey bee queen mating can be reached also via use of instrumental insemination.

Queens mated in full geographic isolation conditions are legally recognized as full pedigree in Croatia

Current: Breeding program for gray honey bee (2019 - 2029)

Target 1: Breeding program for gray honey bee (2030 - ...)

Target 2: Secondary legislation / CAP Strategic plan 2023-2027 / Intervention **55.1.d.01 - Maintenance or increase of the existing number of beehives, including queen rearing** (Official Gazette, No. 24/2023)

The current breeding program has no concept for full pedigree queens. Consequently, it is impossible to formally follow both the maternal and the paternal side; calculations of estimated breeding values are therefore impaired. The revision of the breeding program is expected in year 2029.

Suggested amendments:

The BeeConSel consortium suggests provision on defining full pedigree queens and means to achieve them, e.g.:

»Full pedigree queens bees come from any method where drones of controlled origin achieve paternity assignment of at

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least 70 %. Full pedigree queens can also be achieved via use of instrumental insemination with drones of known origin».

Queens mated in full geographic isolation conditions are legally recognized as full pedigree in N. Macedonia

Current: Rulebook for the method of rearing and sale of bee queens intended for sale, the transportation of bees and bee reproductive material, as well as the size of the protected area around the approved bee breeding apiary (Official Gazette of Republic of North Macedonia N°24/2011)

Target: successor of current Rulebook: **Rulebook for the method of rearing, production and sale of bee queens intended for sale, the form and content of the zootechnical certificate for the queen bee, the transportation of the bee reproductive material, as well as the size of the protected area around the registered bee breeding apiaries** under new Law on Zootechnics (Official Gazette of Republic of North Macedonia N°87/2023), being in process of acceptance

According to current rule book, the queens intended for sale must be accompanied with pedigree and zootechnical document

Suggested amendments:

The BeeConSel consortium suggest defining two types of pedigree in the successor of the above mentioned Rulebook, following the diction below:

1. Full pedigree queens are queens with known parentage both on the maternal and the paternal side.
2. Half-pedigree, with known parentage only on the maternal side or only on the paternal side.

Model of controlled mating of the queens should be written in the pedigree document. According to the BeeConSel results, we recommend the following controlled mating models:

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- Geographical isolation – isolated mating stations within the protected areas.
- Biological isolation – saturation with drones/drone producing colonies.
- Delayed time mating flight model - cooling and labyrinth.
- Instrumental insemination.

Isolated area definition/protection in N. Macedonia

Current: Rulebook for the method of rearing and sale of bee queens intended for sale, the transportation of bees and bee reproductive material, as well as the size of the protected area around the approved bee breeding apiary (Official Gazette of Republic of North Macedonia N°24/2011)

Target: successor of current Rulebook: **Rulebook for the method of rearing, production and sale of bee queens intended for sale, the form and content of the zootechnical certificate for the queen bee, the transportation of the bee reproductive material, as well as the size of the protected area around the registered bee breeding apiaries** under new Law on Zootechnics (Official Gazette of Republic of North Macedonia N°87/2023), being in process of acceptance

According to current rule book, open mating of the queens takes place within the protected area.

...“A protected area represents land space within a radius of at least 3000 m around the approved breeding apiary location or a location where the queens are going to be mated. In this protected area, honey bee colonies with queens no older than two years can be reared, originating only from the breeding material of the approved breeding apiary in the protected area”...

Based on the BeeConSel experience and the existing literature, the protective radius of 3000 m is insufficient to reach an acceptable level of isolation. Additionally, the permitted presence of other lines of breeding material interferes with the mating control. To allow controlled mating of the queens, it is necessary that no other honey bee colonies other than the

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drone producing colonies from known origin should be present in the location where the mating will take place. A satisfactory level of controlled mating is considered to have been achieved when at least 70% of drones of controlled origin have mated the queens.

Suggested amendments:

The BeeConSel consortium suggested increase of the protective radius to 7000 m, which is compromise between an ideal situation and the interest of other beekeepers. This measure has been already inserted in the proposed secondary legislative as reported in the chapter Policies Already influenced during the BeeConSel.

The corrected wording of the cited paragraph:

“Geographically isolated mating station represents land space with a radius of at least 7000 m, in which only approved drone producing colonies are present.”

Mating control as a public service in the breeding program in Slovenia

Current: None

Target: the Secondary Legislation / **Rules on the criteria for the approval of queen bee breeding stations, testing stations and the approval of other beekeeping organizations and on the conditions for the production and trade in bee genetic material** (Official Gazette 125/03, 34/04 and 100/10; EVA 2001-2311-0093)

Slovenian legislation lacks the institution of mating station as an independent service. So far, it was acknowledged that mating stations are part of queen breeding operation, putting the whole burden on queen breeders through the approved breeding program.

However, the Rules on the criteria for the approval of queen bee breeding stations, testing stations and the approval of other beekeeping organizations and on the conditions for the production and trade in bee

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genetic material defines parties involved in the honey bee breeding and conditions of participation.

Article 3 (approved organizations in beekeeping)

Approved organizations in beekeeping, regulated by this Rules, are test station and queen breeding centre.

Suggested amendments:

We propose to amend the Secondary legislation / Rules on zootechnical standards applicable to pedigree *Apis mellifera carnica* by inserting a definition of the mating station as follows:

*“Approved organizations in beekeeping, regulated by this Rules, are test station, queen breeding centre, **mating station and instrumental insemination centre.**”*

Below are some suggestions regarding the mating station:

1. Mating stations must fulfil the following:
 - technical conditions for keeping bees according to the national legislative
 - has legal representative
 - its area has approved forage cadaster to regulate migratory beekeeping
 - keeps records for a minimum of five years after each season
 - paternity assignment of known drones is over the set threshold (see above)

2. Tasks of the mating station are to provide mating of honey bee queens with drones of controlled origin.
 - maintains drone colonies with approved pedigree
 - provides logistics to queen breeders
 - records the arrived queens
 - records the queens that mated successfully
 - passes the records on successful matings while keeping the copy

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Mating control as a public service in the breeding program in Croatia

Current: None

Target 1: Amended Secondary legislation / CAP Strategic plan 2023-2027 / **Intervention 55.1.a.01 - Maintenance or increase of the existing number of beehives, including queen rearing**

Target 2: Amended Secondary legislation / CAP Strategic plan 2023-2027 / **Intervention 55.1.d.01 - Maintenance or increase of the existing number of beehives, including queen rearing**

According to the Breeding Program, mating takes place freely at mating stations. The breeding program stipulates that one mating station should be at least 5 km away from each other, and within a 2 km radius of the mating station, there should be no apiaries, to at least partially ensure mating with drones from colonies designated for drone production at the mating station. Based on the BeeConSel results it is unrealistic to expect huge genetic gains through such setup.

Suggested amendments:

The BeeConSel consortium suggests a two-step approach:

1. Raising awareness of the importance of mating control by amending measure 55.1.a.01 (Education) and the costs of collecting information about beekeepers and their method of beekeeping the costs of collecting information about beekeepers and their method of beekeeping, which will also provide source of the financing.
2. In the next step, we suggest provisions in the intervention 55.1.d.01. (Beekeeping – Preservation or increase of the existing number of beehives, including beekeeping) by adding another measure for supporting one or more isolated mating stations in the Interventions in the beekeeping sector

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Mating control as a public service in the breeding program in N. Macedonia

Current: None

Target: successor of current Rulebook: **Rulebook for the method of rearing, production and sale of bee queens intended for sale, the form and content of the zootechnical certificate for the queen bee, the transportation of the bee reproductive material, as well as the size of the protected area around the registered bee breeding apiaries** under new Law on Zootechnics (Official Gazette of Republic of North Macedonia N°87/2023).

Mating control as a public service does not exist. Until now, the mating of the queens took place within the protected area around the approved breeding apiaries or at mating stations that were independently managed by approved breeding centers. The establishment, maintenance and management of the mating stations is a process that involves the engagement of significant human and financial resources that the breeding centers are not in a position to carry out independently, certainly having in mind the underdeveloped market and the habits of the local beekeepers to independently produce queens themselves to satisfy their needs.

Suggested amendments:

The BeeConSel consortium proposes a definition of an isolated mating station or other methods of controlled mating, that will function as a public service, either by amending the Rulebook as given in the Target or by drafting an additional secondary legislation that will allow operators to apply for subsidies

Implemented by:

Financial support of mating control / Instrumental insemination Service

Compensation for instrumental insemination service in Slovenia

Current: Secondary legislation / CAP Strategic plan 2023-2027 / Intervention SI03 - Queen breeding (Official Gazette, 17/23 in 58/23)

Target: Amended Secondary legislation / CAP Strategic plan 2023-2027 / Intervention SI03 - Queen breeding

Currently, there are three measures regarding education and capacity building:

1. Subsidies for queen rearing
2. Basic selection and queen exchange
3. Queen quality

These measures aim to improve i) production of quality queens (1, 3) and ii) support fight against introgression of non-local genotypes (2, 3). Within 1) are provisions for i) supporting of higher quality queens from longer lines ii) for support of mating stations *when* being run by breeder and iii) for support of full pedigree queens through use of a mating station.

Suggested amendments:

We propose to add 4th measure to support an instrumental insemination service in similar financial dimension as the support of a mating station. The financial support will be obtained through relocation of funds from intervention SI02 -- Support of beekeepers and beekeeping associations.

4. CAP SI03.01.04 aims to supports the legal entity or an individual with certified instrumental insemination training for their service provided in the breeding program.

Implemented by:

Compensation for instrumental insemination service in Croatia

Current: Secondary legislation / CAP Strategic plan 2023-2027 / Intervention 55.1.d.01 - Maintenance or increase of the existing number of beehives, including queen rearing (Official Gazette, No. 24/2023)

Target: Amended Secondary legislation / CAP Strategic plan 2023-2027 / Intervention 55.1.d.01 - Maintenance or increase of the existing number of beehives, including queen rearing

Currently, there are no provisions within the legislation of the Republic of Croatia to support / compensate costs of instrumental insemination service. We expect that after the planned trainings, queen breeders will be interested in the use of instrumental insemination of queens. The size of the market in Croatia will at least initially require financial support.

1. Subsidies for selling selected queens
2. Laboratory analysis of honey bee samples from breeding colonies for purpose of selection

These measures aim to improve production of quality queens (1, 2).

Suggested amendments:

The BeeConSel consortium proposes the compensation of the costs of artificial insemination service through an amendment in the Intervention in the beekeeping sector within the CAP of the Republic of Croatia 2023 - 2027 (Official Gazette, No. 24/2023), especially through changes in measure 55.1.d.01. (Beekeeping – Preservation or increase of the existing number of beehives, including beekeeping) by adding an additional measure:

3. compensation for executed instrumental inseminations for queens from selected lines.

Implemented by:

Compensation for instrumental insemination service in N. Macedonia

Current: Program for financial support of rural development / Program for financial support in Agriculture

Target: Amended Program for financial support of rural development / Program for financial support in Agriculture

Currently there is not any compensation for instrumental insemination of the queens.

Suggested amendments:

Our recommendation is to increase the number of subsidies for supplying instrumentally inseminated queens as a part of a common measure - increased subsidies for supplying full pedigree queens.

Financial support of mating control / verification of isolated location

Compensation for verification of proposed mating station location in Slovenia

Current: Breeding program for carniolan honey bee *Apis mellifera carnica* (2018 - 2023)

Target: Breeding program for Carniolan honey bee *Apis mellifera carnica* (2024 - 2028)

The current breeding program has provisions to financially support testing of isolation of mating stations in a manner as defined in the »Rules on the criteria for the approval of queen bee breeding stations...« This is precondition for production of queen bees with full pedigree.

Implemented by:

Suggested amendments:

The BeeConSel consortium results show that fully isolated locations do not exist in Slovenia which is in concordance with previous experience. For this reason, we propose an amendment of these provisions by offering financial support for testing the rate paternity assignment instead (as suggested in the Legal regulation of mating control).

Compensation for verification of proposed mating station location in Croatia

Current: Breeding program for gray honey bee (2019 - 2029)

Target 1: Breeding program for gray honey bee (2030 - ...)

Target 2: Secondary legislation / CAP Strategic plan 2023-2027 / **Intervention 55.1.d.01 - Maintenance or increase of the existing number of beehives, including queen rearing** (Official Gazette, No. 24/2023)

The current breeding program has no provisions for testing of isolation of mating stations.

Suggested amendments:

The BeeConSel consortium results show that fully isolated locations do not exist in mainland Croatia which in is concordance with previous experience. For this reason, we propose an amendment of these provisions by offering financial support for testing the rate paternity assignment instead (as suggested in the Legal regulation of mating control).

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Compensation for verification of isolated location in N. Macedonia

Current: None

Target 1: Amended **Law on Zootechnics** (Official Gazette of Republic of North Macedonia N°87/2023)

Target 2: Amended **Program for financial support of rural development /amended Program for financial support in Agriculture**

Currently, financial support for verification of isolated mating stations does not exist. This activity is very important for completing the process of testing of potential locations that would be suitable for controlled mating of the queens.

The activity can be performed by use of molecular analyses; however, such analyses draw considerable one-time costs per location. On the upside, the methodology for paternity verification doesn't differ between the modes of mating control.

Suggested amendments:

The BeeConSel consortium proposes a two-step approach:

1. In the first step the Zootechnical law is amended to provide definitions of controlled mating methods.
2. In the second step, financial support is provided for testing and verification of isolated locations by molecular analyses.

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POLICIES ALREADY INFLUENCED DURING THE BEECONSEL PROJECT

Slovenia

The European Commission partly co-finances efforts to improve the beekeeping sector. The current measures are provisioned in The Strategic Plan of the Common Agricultural Policy 2023 - 2027 (CAP), implemented through the »Decree on the implementation of interventions in the apiculture sector in the Republic of Slovenia for 2023-2027« (UL RS 17/23 and 58/23), while the measure of the previous period were provisioned through the National programmes to improve the production and marketing of apiculture (2020 - 2022) and implemented through the »Decree on the implementation of the Action Programme in Beekeeping in the Republic of Slovenia (2020 - 2022)«. The latter was amended in 2021 for year 2022 (UL RS 97/21). The amended Decree (2020 - 2022) and measures CAP 2023 - 2027 were influenced by the BeeConSel rationale. The expert panel at the Ministry of Agriculture, Forestry and Food (MAFF) accepted suggestions of Assistant Prof. Janez Prešern, the BeeConSel coordinator, and Dr Peter Kozmus the BeeConSel Advisory Group member and the expert leader of the National Honey bee breeding program to increase subsidies for queen bee production for

- (i) recorded queens with full pedigree and
- (ii) recorded queens with longer pedigree

Additionally, members of the KIS BeeConSel team collaborated on the next generation of National Breeding Program for Carniolan Honey bee (2024 - 2028), which was submitted to MAFF on December 4th, 2023).

Croatia

Croatian partners communicated with the Ministry of Agriculture about two pressing issues:

- (i) the price of queen production especially the high-cost production of queens from controlled mating as recorded in WP1 and

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(ii) the isolation of mating stations.

In (i), addressed in 2023 the purpose of communication was to amend the CAP of the Republic of Croatia 2023 - 2027 to create a measure supporting queen breeding and selection. In (ii) suggestions for legal regulation of mating station were passed to the Ministry of Agriculture to legally support isolation of mating yards. The suggestions, passed under (i) were accepted and the subsidy on queen production was amended (NN 24/2023). The suggestions on legal regulation (ii) were inserted in the law, which is scheduled for final approval on January 1st, 2024
(<https://esavjetovanja.gov.hr/Econ/MainScreen?EntityId=21258>)

N. Macedonia

WP3 efforts and WP4 results clearly demonstrated the distances that queen bees can travel to achieve mating, making current provisions on isolation of mating stations inadequate. Consequently, the CARPEA team communicated with the Ministry of Agriculture, Forestry, and Water Economy (MAFWE) that a much larger radius of isolation is required than currently prescribed. Those remarks were included in the proposal for the new Rulebook for the method of rearing, production and sale of bee queens intended for sale, the form and content of the zootechnical certificate for the queen bee, the transportation of the bee reproductive material, as well as the size of the protected area around the registered bee breeding apiaries under the new 2023 Law on Zootechnics: currently the proposal includes a 7 km radius.

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CONCLUSION

Deliverable 8 is the last deliverable in the BeeConSel project. Legislation changes suggested in this deliverable have been derived from the experience and results gained in duration of the project topped with projections from the modelling work.

Several honey bee-related laws and acts were being opened and subjected to changes in all three beneficiary countries at one point or another during the project duration. Some suggestions of legislation changes and proposals were already submitted by consortium members to the relevant ministries as shown above; more will be submitted in the future as further changes are expected in national legislations. Changes in legislation at the national level are not easy to bring about and opening of the various laws that regulate beekeeping was mostly not by our design. However, we believe it is not to bold to claim that these opportunities were maximally exploited and contributed to successful conclusion of the project.



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