

SAMS –Newsletter

Vol. 2, December 2018

Dear SAMS community,



Smart
Apiculture
Management
Services

We would like to inform
you with this quarterly
update about news and
upcoming events on our
project activities.

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Upcoming Events

Monthly dissemination process,
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4th SCM, 21.-22.02. 2019, Graz, Austria

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Entomological Society of Austria,
16.03. 2019, Graz, Austria
<http://www.entomologie.org/>

BSE Conference, 08.-10.05. 2019 Tartu,
Estonia
<http://bse.emu.ee/important-dates/>

1. Project activities since October 2018

Project website

Our project website <https://sams-project.eu> is constantly growing and updated. So, since the last newsletter, we were able to add new content for our interested readers. Now you have the possibility to download our deliverables, follow SAMS on media, or look up the SAMS' Advisory Board members. If you cannot wait until the next newsletter in March, you are able to read about the latest events, SAMS was participating in.



The SAMS project website

By University of Graz

Adapting the SAMS technology - Estimation of honey chamber weight by using beehive impulse response data

A monitoring system should incorporate the minimum of hardware (e.g. controllers, sensors, scale) as possible. Some preliminary measurements of the acoustics of a beehive brought the team of the University of Kassel to the idea to use acoustic information to estimate the size of the honey chamber, i.e. the compartments in which bees store collected pollen and nectar.

Acoustically, a beehive can be treated as a linear and time invariant system. The fairly simple rectangular shape of a beehive may amplify certain wavelengths within the beehive according to the dimensions. Presumably, a growing honey chamber will affect location (frequency) and magnitude (relative strength) of these resonances. Thus, a relative reduction may be used as a cue to estimate honey chambers size.

The figure below shows a 16-hour spectrogram taken from a single beehive, starting immediately after opening the hive and removing some honey supers. Bee arousal as indicated by the relative shift of the peaks at 250~Hz and 500~Hz, declines after approximately 4 hours. The spectrogram shows low frequency traffic noise in the evening from 5 to 8 pm as well as in the morning hours starting at 5 am.

Relevant for the estimation of honey supers' size is the structure of harmonics in the frequency region between 1 kHz to 4 kHz. These harmonics are not linked to bee activity (as it remains constant over time) but to the resonances of the beehive. Some simulations and impulse response measurements of empty hives are in progress. A long-term study of the change of acoustic patterns with respect to the honey chamber size and weights is planned. If the experiments are conclusive, a correlation between acoustic pattern and weight of the honey supers may be drawn. A subsequent step will be to investigate whether the beehive impulse response can be deduced without predefined excitation. In other words, whether

the acoustic excitation driven by bee sounds, wind- and environmental noise is sufficient to estimate the resonance pattern of the hive.

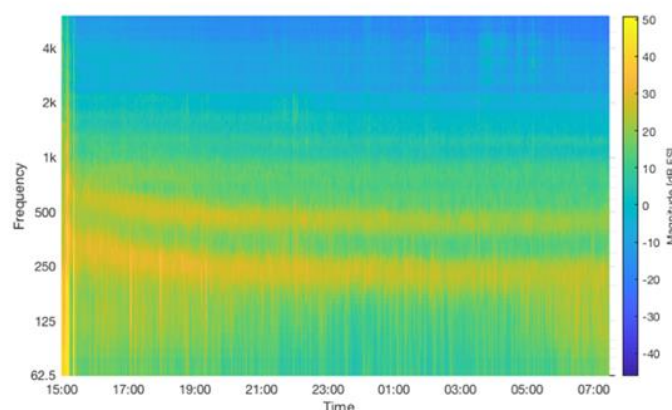


Figure: Spectrogram of the acoustic recordings in a beehive at the Department of Agricultural and Biosystems Engineering from the University of Kassel

By University of Kassel

A new tool: The SAMSwiki database

As mentioned in the last newsletter (Vol. 1, September 2018), the University of Graz (UNIGRA) contextualized the situation of honey bees and beekeeping in the two target countries Ethiopia and Indonesia in a scientific literature study, complemented by expert opinions from the two countries. The intermediate results of this ongoing process are publicly available as “D5.1 – Bee-Management and Bee-Health indicators” on our website. The last few months UNIGRA worked on transferring the findings of the deliverable in a glossary style database - the SAMSwiki. The SAMSwiki is an open access knowledge source and allows every interested person to participate with their own content. An excerpt of topics: the countries’ key numbers of apiculture, honey bee products and beesector, bee forage, hive management, honey bee health, or smart bee management.

For more information visit our SAMSwiki database: https://wiki.sams-project.eu/index.php/Main_Page

By University of Graz

News on the SAMS UCD progress in Ethiopia and Indonesia

In the first SAMS newsletter, we already have drawn the attention on a central component of the SAMS project - the User Centered Design – which will enable the SAMS project team to develop a solution, which is understandable and useable for all user groups - beekeepers as well as scientist and commercial users – and which is the primary success factor of SAMS. To meet this success factor, the SAMS project relies on all project partners, especially on the local partners when it comes to the user proximity.

Driven by our local partners, Labtek Indie (ID), University Padjadjaran (ID), iceaddis (ET) and the Holeta Bee Reasearch Institute (ET), much more has happened after the successful UCD workshop implementation in Indonesia (06.2018) and Ethiopia (07.2018).

In-depth interviews with different beekeepers have been carried out in Indonesia to narrow down Real Profiles and Insights in order to acquire Persona Profiling for the further human-centered research process towards finding the user (or early adopter) and user requirements for SAMS technology.

Based on these interviews three different personas have been developed which represent the most recent practitioners in beekeeping in Indonesia:

1. The traditional Veteran Beekeeper who does beekeeping as side job in combination with farming or gardening activities;
2. The Gatekeeper of traditional beekeepers who has a great network and is really passionate about beekeeping but still does beekeeping as a side job; and
3. The next generation of beekeepers who are full-time beekeepers with a wider access to information and resources and which are able to adapt to current and new technologies.

In Ethiopia in-depth interviews were carried out in the towns of Holeta, Gedo and Bako. Six technical staff members of our partners at the Agricultural Research Institute and affiliated sites were interviewed. Since these technicians will be the first caretakers of SAMS hives in Ethiopia, the research's aim was here to learn their current beekeeping practices in order to identify existing gaps and how SAMS system can be best integrated into their activities and enhance their experience.

The elaboration of these personas as representatives of the Indonesian and Ethiopian beekeepers as well as further interviews will shape the interface of the SAMS Advisory Support System technology, identify specific requirements to be able to serve specific needs towards the users and point out similarities and differences between the user groups.

It is especially important for the current ongoing hardware adaption of the SAMS system to avoid error-prone. The first hardware prototypes will be implemented in Ethiopia and Indonesia in spring 2019. Collected data will then be thoroughly analyzed respective its scientific potential the before it will be used as basis for the Decision Support System.

By GIZ

The issues of pollination in Ethiopia

Literature and field inquiry studies have been conducted from September to November 2018 to identify the current situation in Ethiopia related to pollination and sustainable agriculture. Based on the assessment, from 76 food crops grown in Ethiopia, 53% are pollinator-dependent but pollination is an overlooked “free” ecosystem service. The societies fail to recognize the importance of pollinators and 70% of 30 beekeepers and 100% of 30 non-beekeeper farmers, contacted during a survey, had no awareness on pollinators and the contribution of bees in food production. From literature studies and current field inquiries, agronomists recommended different fertilizer rates to minimize the yield gaps in oilseed and pulse crops but the effort failed, because pollination was never or only rarely considered as agronomic factor. Even, the national biodiversity strategy didn't clearly incorporated pollination as ecological service due to a lack of awareness of the role of pollination in agricultural production and plant conservation. So, in SAMS business development, the pollination issue must be mainstreamed into agriculture policies, national biodiversity conservation strategies, environmental impact assessment plans and national adaptation plans for climate change in Ethiopia.

By Oromia Agricultural Research Institute, Holeta Bee Research

08. - 12. 2018 - Experiences in User Centered Design Research for SAMS

It has been quite a journey for Indonesia's User Centered Design Research team, since the dry season up to the rainy season, we have been going back and forth to a couple of areas where we conducted our research. Our research started with very broad objectives and with an access to do a homestay in a beekeeper's house to feel firsthand experience how he and his family live daily. We then had the

opportunity of several in-depth conversations with several beekeepers in Sukabumi, Indonesia. When we were building rapport, we acted as sponges and deeply listened to their stories that were mostly about motivations, life struggles, family, and hopes as beekeepers. We were invited to visit their homes, shared meals, and we were able to observe the beekeepers' interactions with their bees, including their beekeeping practices.

We continued our research with a bridging phase to deeper introduce SAMS as a technology that could benefit them in such that they are going to be involved in this research process. At first the beekeepers thought that we only were interested in their bees and hives, but after explaining that we actually were interested in them as beekeepers and their behaviors, they were on the same level of understanding why we, as the design researchers, want to spend more time with them.

At the moment, we have a better perspective in giving recommendations on who will be the early adopter of SAMS, and currently we are extracting detailed behavior and pain points on each behavior that will eventually be transformed into a User Story instead of User Requirements.



Left: Mr. Usep, a member of the Indonesian UCD team, demonstrates his method to harvest Trigona honey and to transfer Trigona colonies from bamboo to wooden box hives. Right: Mr. Usep shows how to recognize queen cells.

By CV. Primary Indonesia

10. 2018 – Program Exposure to Indonesian Advisory Board nominees

Universitas Padjadjaran (UNPAD) and CV. Primary Indonesia, the SAMS project's beneficiaries in Indonesia, hosted a program exposure with the Advisory Board. Strategic institutions were asked for their expert advices regarding additional possibilities for SAMS implementation in Indonesia. This action was necessary to ensure that the international SAMS project can be, based on local requirements and knowledge, implemented in Indonesia.

The aim of this event was to nominate Advisory Board members, contributing to the SAMS project implementation in Indonesia with their expert opinions, inputs and additional visions on utilization in context with local beekeeping activities. Within this event, participants also tried to elaborate the competences from the involved institutions. Furthermore, UNPAD was trying to expand the impact of the SAMS project among the local community. The event was held on 21st of November 2018 at the UNPAD campus, Jatinangor, Sumedang. The invited institutions and nominated/asked Indonesian Advisory Board members were Lulu Labida from West Java Research and Development Agency (Badan Penelitian dan Pengembangan Daerah (BP2D) Provinsi Jawa Barat), Didik Budi Purwanto and Yusri Satriana from

Indonesian Apiary Association (Asosiasi Perlebahan Indonesia), Ramadhani Eka Putra as an expert in insect and pollination from School of Life Sciences & Technology Institut Teknologi Bandung, Gustaf Iskandar from Common Room. Indonesian SAMS beneficiaries in this event were represented by Anas Bunyamin and his research team from UNPAD and CV. Primary Indonesia represented by Amanda Mita.

The updates and findings of the implementation process were confirmed and validated in a meeting with the Advisory Board and the same method was also applied to define solutions on the SAMS project's technology adaption process in Indonesia. In a next step, an exposure meeting was planned.



Left: Bridging SAMS project's value and elaboration points to the audience. Right: Group discussion.



The Indonesian SAMS project team and Advisory board nominees.

By Universitas Padjadjaran

11. 2018 - SAMS UCD Meeting, Wustermark, Germany

Due to the fact that our partner from ICEADDIS, Yemi, participated in the World Food program Bootcamp in Munich, GIZ, University of Kassel and ICEADDIS were able to schedule a meeting in Wustermark to discuss further UCD steps for the SAMS implementation in Ethiopia, Indonesia and Europe.

For the User Research in Ethiopia, ICEADDIS will get into a strategy building, select sides and make a focusing for the first implementation for development. In addition, they will involve the partners of the honey project 'Yenemar', a design investment, into the SAMS project. Yemi introduced the Ethiopian beekeeping community structure, including extension worker – individual farmer – cooperatives (e.g. coffee cooperatives).

For the upcoming UCD-requirement Workshop 2019, we discussed how we can organize a workshop that is easily accessible to all partners and where it can take place. Everyone agreed that the workshop should be held in Indonesia, as CV. Primary, Laptek Indie and UNPAD have an excellent expertise and facilities. Before this, UNIKAS will start their first implementation trips to Ethiopia and Indonesia in early February

2019 to set up the adapted IT monitoring hive-system. Maybe they can already present first results on the next Steering Committee Meeting in Graz, February 21-22.



Participants of the UCD meeting: S. Fiedler (UNIKAS), A. Zur (GIZ), A. Eckey (UNIKAS), Y. Tadesse (ICEADDIS).

By GIZ

12. 2018 – Indonesian SAMS project's Consolidation Meeting

Common Room hosted a consolidation meeting together with Indonesian SAMS project beneficiaries, UNPAD and CV. Primary Indonesia (Labtek Indie) to review the so far reached milestones of the SAMS project implementation process in order to define future milestones for 2019. The event was held on 2nd of December 2018 in Cigadung, Bandung. Participating people were: Dwi Purnomo, Marlis Nawawi, Fajar Susilo and Yeti Yuli from UNPAD, Aditya Sumarlan, Adityo Pratomo, Amanda Mita and Tanti Sofyan from CV. Primary Indonesia (Labtek Indie), and Gustaf Iskandar from Common Room.

The latest research results showed that the local beekeepers are divided into two groups: beekeepers practicing traditional beekeeping and the new generation of beekeepers. Within this meeting, we also discussed the possibilities of how we could approach both groups, in West Java – Indonesia. At the moment, defining how to encourage beekeeper groups whether through beekeeping itself or its derivative products and services are taken into account. The major challenges are to translate and assess the true needs from existing and new generation beekeepers. This process will determine the early output and/or recommendations concerning the SAMS hive prototype and its early implementation process.



Indonesian SAMS project beneficiaries after the consolidation meeting in Cigadung (December, 2018)

By Universitas Padjadjaran

12. 2018 – Expert Sharing to Deepen UCD Perspective

UNPAD was invited by CV. Primary Indonesia to participate in a mini seminar, aiming the dissemination of bee species specific beekeeping methods and better framework for the further research regarding the SAMS implementation process. The topic involved bee ecosystem and beekeeping methodology in Indonesia. Therefore, Mr. Yadi Supriadi, a lecturer from Faculty of Agriculture, Padjadjaran University, and Mr Ramadhani Eka Putra, an insect expert from Bandung Institute of Technology, were invited to speak in front of the audience. The event was held on December 11, 2018 at Jalan Titiran. The participants were mostly design researchers, who are involved in the User Centered Design Research process of SAMS in order to gain a better perspective on the standardized methodologies and to better understand the beekeepers' behaviors. Besides, the event was also open for public, mostly young millennials who have environmental awareness participated. This event was based on intense informal discussions between the speakers and participants. This event attended by more or less 15 youngsters with passion and curiosity about bees' ecosystem and their characteristics. It was a small, yet intimate and heartfelt discussion with deep engagement between the speakers and attendees. The discussions served as objectives for the design researchers to enrich their 360° perspectives, increasing their awareness on the bee issues, and the SAMS technology implementation possibilities for wider audience. At the end of the event Mr. Ramadhani donated his Trigona colony, including the beehive to one of our participants to be taken care in his urban farm area, signed by all discussion participants as a symbol of community ownership.



Left: Yadi Supriadi from UNPAD teaches proper beekeeping methods. Right: Mr. Ramadhani explains the differences between bee species.



Left: Mr. Ramadhani is showing his Trigona colony to the participants. Right: The organizers, speakers and participants of the mini seminar.

By CV. Primary Indonesia and Universitas Padjadjaran

Developing the SAMS advisory support tool

The UNILV team is working on developing a data warehouse for the bee colony data storage and analysis. Architecture of the warehouse is developed and work on user interface development is ongoing. Special design data storage is created for time-based series values. Also work on connecting remote SAMS hives monitoring system to the warehouse is in progress, including access token testing with machine to machine application.

By Latvia University of Life Sciences and Technologies

Conferences and Events

10. 2018 - Agrosym Symposium, Sarajevo, Bosnia-Herzegovina

IX International Agriculture Symposium "AGROSYM 2018" was held in the hotel Termag on Jahorina mountain, near Sarajevo at October 4-7, 2018. SAMS partners (Aleksejs Zacepins, Armands Kviesis and Vitalijs Komasilovs) from the Latvia University of Life Sciences and Technologies presented the topic LoRaWAN technology and its possible application in Precision Beekeeping. In addition, the scientific SAMS project poster was presented during the event (<http://agrosym.ues.rs.ba/index.php/en/>).

We were particularly pleased, when it was announced that the SAMS poster presentation was awarded as the **"best poster presentation"** of the symposium.



Left: LLU team are presenting the SAMS poster. Right: Best poster presentation award winner SAMS

By Latvia University of Life Sciences and Technologies

10. 2018 - Asian Apicultural Association conference, Jakarta, Indonesia 14th Asian Apiculture Association Conference

On 22nd - 24th of October, the team from UNPAD attended the 14th Asian Apiculture Association Conference "Bees, Environment and Sustainability" at Merlynn Park Hotel, Jakarta, Indonesia. The participants of the event were researchers, scientists, beekeepers and shareholders from across Asia, Indonesia, Philippine, India, China, Korea and Japan. The participants were gathering to discuss about their previous researches, trends, challenges and derivatives products of beekeeping.

The team from UNPAD were presenting three posters: "Mapping the Journey of Beekeepers along Their Business with Customer Journey Approach", "SAMS Project Indonesia: Answering Challenges of the Industrial Revolution 4.0 in Beekeeping in Indonesia" and "Flowering Plants Calendar of West Java Area as basic Data in Supporting Beekeeping Activities". UNPAD also opening a booth in the expo. SAMS poster draw some attention to the visitors and some visitors said that they're interested to cooperate and utilize the SAMS technology at their farm when the product is ready.



Left: UNPAD's Booth on AAA 2018 Expo. Right: The visitors tasting our honey derivative products

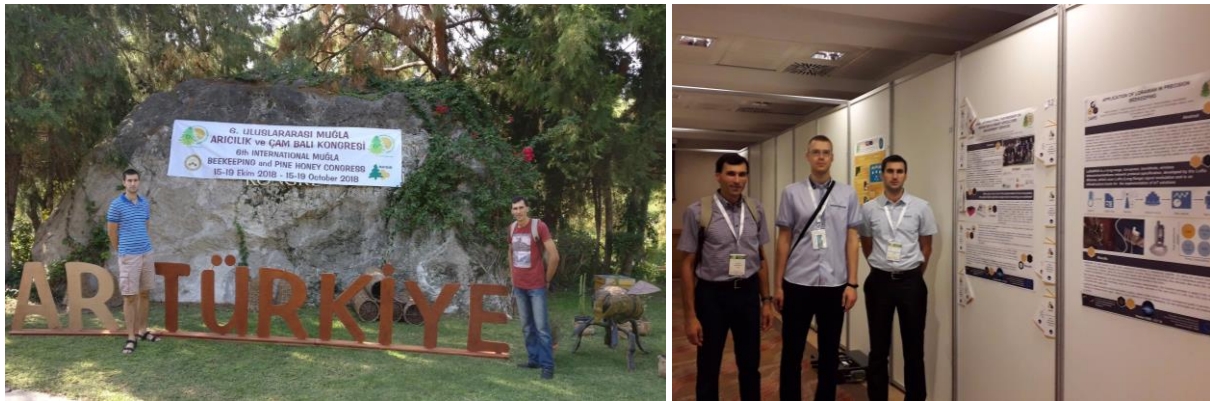


Left: Explaining the SAMS project to the visitors: Right: UNPAD's team on the 14th AAA conference.

By Universitas Padjadjaran

10. 2018 - 6th International Mugla Beekeeping & Pine Honey congress

Between the 15th and 19th of October 2018, the team from Latvia University of Life Sciences and Technologies (Aleksejs Zacepins, Armands Kviesis and Vitalijs Komasilovs) attended the "6th International Muğla Beekeeping and Pine Honey Congress" at Liberty Hotels Lykia, Fethiye – Ölüdeniz, Turkey. Participants of the congress were researchers, scientists and shareholders of the beekeeping sector on the international level. Participants are gathered to discuss and share knowledge and ideas in the field of beekeeping including technical and economic challenges. SAMS partner team from Latvia University of Life Sciences and Technologies presented two posters: "SAMS-International Partnership on Innovation in Smart Apiculture Management Services" and "Application of LoRaWAN in Precision Beekeeping" (<http://muglacongress.org/eng/>).

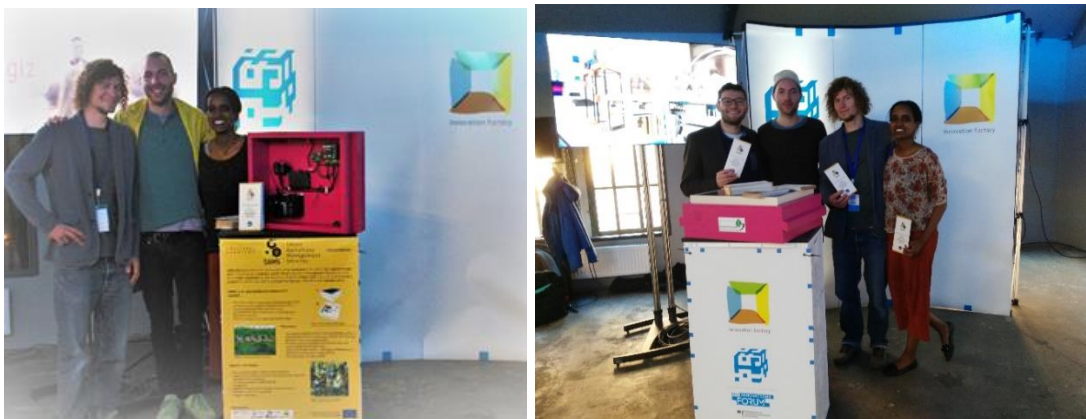


Left: At the International Mugla Beekeeping & Pine Honey Congress. Right: LLU team presenting posters

By Latvia University of Life Sciences and Technologies

11. 2018 - BMZ Innovation Forum, Berlin, Germany

With the guideline "new digital tools for global impact", practice-oriented examples for the use of digital innovations were presented and discussed at the Innovation Forum in Berlin. The forum was initiated by the German Federal Ministry for Economic Cooperation and Development (BMZ) to present new innovative approaches to the public and to highlight technologies, that are helping to shape successful development today. Under the title: "global partnerships for promoting digital innovations for sustainable development - explore interdisciplinary approaches in ICT4ag for small-holder farmers ", SAMS was presented as one of the showcase projects of the GIZ Innovation factory at the BMZ Marketplace.



The UNIKAS and Iceaddis Ethiopia teams are presenting the SAMS poster. Left: S. Fiedler (UNIKAS), A. Eckey (UNIKAS), Y. Tadesse (ICEADDIS). Right: J. Theis (GIZ), A. Eckey (UNIKAS), S. Fiedler (UNIKAS), Y. Tadesse (ICEADDIS)

By University of Kassel and GIZ

12.2018 SAMS as part of ICT 2018 Networking Session, Vienna, Austria

"ICT 2018 – Imagine Digital – Connect Europe" took place in Vienna on 4-6 December 2018. As research and innovation conference with networking opportunities, an exhibition and an Innovation and Startup forum, the European Union's priorities in the digital transformation of society and industry were presented and discussed.

The project goal of SAMS and its objectives, as well as the partners and the implementation stage of SAMS have been presented in the network session “Building Research Partnerships addressing African Societal Challenges” on December 5 2018.

More information about the “ICT 2018 – Imagine Digital – Connect Europe” Conference can be found under: <https://ec.europa.eu/digital-single-market/en/events/ict-2018-imagine-digital-connect-europe>

More information on the networking session “ “Building Research Partnerships addressing African Societal Challenges” can be found under: <https://ec.europa.eu/digital-single-market/events/cf/ict2018/item-display.cfm?id=21528>

By GIZ

12. 2018 – Apimondia Symposium, Addis Ababa, Ethiopia

APIMONDIA is the International Federation of Beekeepers’ Associations and other organizations working within the apiculture sector and was founded in 1949. APIMONDIA exists to promote scientific, technical, ecological, social and economic apicultural development in all countries.

Over 800 delegates from more than 25 different countries attended APIMONDIA Symposium organized by Ethiopian Apiculture Board together with APIMONDIA and other key stakeholders in Ethiopia from 30 Nov – 04 Dec 2018 in Addis Ababa, Ethiopia. The participants of the event were researchers, scientists, commercial beekeepers, honey-traders, agents for development, technicians and legislators from African, Asian, European, North and South American countries.

SAMS was presented within the “Commercialization and Transformation of Beekeeping” session. As SAMS is an ongoing project, several important feedbacks and inputs for future development were collected from the participants. One key objective related to SAMS is building national and international networks of knowledge and technology transfer through developing ICT in the field of sustainable apiculture. Towards this, a hot discussion was opened on how different national platforms and sector associations take part in the development process so that SAMS will deliver quality services in a sustainable manner after the project phaseout. One of the technical tour programs was the visit of Holeta Bee Research Center facilities and a model beekeeping cooperative farm located in Holeta, run by a group of female beekeepers, which produce, process and market honey and beeswax to local communities.

Generally, SAMS and especially the UCD approach to develop precision farming draw attention of participants from different disciplines. Some visitors from Zimbabwe and Uganda expressed their interest to follow the SAMS development process right away. Therefore, SAMS products can be easily adapted to be a solution for bees and beekeepers to overcome the challenges in a smart way and no more in a state of “business as usual”.



Left: H.E. Mr. Umer Husen, Minister of Ministry Agriculture of Ethiopia on opening speech of APIMONDIA Symposium 2018. Right: Part of the Holeta team participated the APIMONDIA Symposium 2018.



Left: presenting SAMS on one of the parallel sessions. Right: part of the audience.

By Oromia Agricultural Research Institute, Holeta Bee Research

3. SAMS on Media

The SAMS project made it also into international media. Due to the length of the texts, articles and corresponding translations can be found on our website: <https://sams-project.eu/dissemination>

The **Ethiopian Apiculture Board** mentioned the SAMS project in their newsletter “The API News” (Volume 5, Number 3, August 2018). Kibebew Wakjira, a member of the SAMS consortium, introduced the SAMS project and its objectives to The API News readers.



As already mentioned in the SAMS newsletter volume 1 (September 2018), the Universitas Padjadjaran presented the SAMS project at the **Riung Karsa**, a press gathering in order to socialize research-based products to local communities. This program is regularly held every Friday afternoon.



SAMS and its technology was also introduced in the “**Pikiran Rakyat**” newspaper on July 23, 2018. In total four articles mentioned the SAMS project.

1) “Bees are not merely honey producers” (“Lebah Bukan Sekadar Penghasil Madu”):



The article deals with honey bees and their role as honey producers and important pollinators for plants in general and agricultural crops specifically, and UNPAD's efforts to actively conduct social innovation research in social entrepreneurship activities. Authors mentioned the importance of bringing together social innovation, bees and digital technology for sustainable development goals, like fighting poverty.

2) **“Encouraging the Real Impact of Research on the Community”** (“Mendorong Dampak Nyata Riset bagi Masyarakat”):

The SAMS project and its collaboration of various European and non-European countries, and its pentahelix model (businesses, public authorities, civil society, the knowledge sector and capital + finance) was discussed and seen as a role model for an innovative and fruitful research process.



3) **“The Processed Products of Honey; Added Value for Keeping Sustainability”** (“Olahan Madu, Nilai Tambah, bagi Penjaga Kelestarian”):



The article deals with honey and its economic importance as well as its ingredients and benefits. To demonstrate the high value of honey and its derivative products, UNPAD developed a list of 15 everyday products (from food to hygienic use) containing honey. The list focuses on products that can be easily made at home by locals or by beekeepers with local available materials and processing equipment. In a consequence, honey bee products may help to establish businesses, especially for young people and women.

4) **“Lessons from Honey Bees”** (“Pembelajaran dari Lebah Madu”):

In this article, the SAMS project and its objectives were introduced in detail and the general importance of ICT solutions to fight Colony Collapse Disorder of honey bees was described.



By University of Graz

4. Upcoming Events

From 01. 2019 - Monthly Dissemination, Bandung, Indonesia

In order to raise awareness on bees, beekeeping, and eventually SAMS, CVPI and UNPAD is going to conduct a regular dissemination each month. We will invite experts of bees, beekeeping, and beekeepers (senior and newbies). The objectives are to raise awareness and to support the introduction of SAMS as a technology that supports the movement. This event will be conducted around Bandung, Indonesia, in different places with different hosts, aiming to reach wider audience within and in a next step outside of the city of Bandung.

By CV. Primary Indonesia

02. 2019 - 4th SCM of SAMS in Graz, Austria

From February 21-22, the 4th SAMS steering committee meeting will be hosted by the University of Graz in Graz. The event will take place at the campus of the university and as in every SCM, each work package's progress will be discussed. UNIGRA is looking forward to host the meeting and to introduce Austria to our partners. Subsequently the SCM, the partners have also the opportunity to visit the "Fachtagung des österreichischen Erwerbsimkerbunds 2019" (Symposium of the Austrian Erwerbsimkerbund), a fair where Austria's professional and semi-professional beekeepers get together and network. Each year, visitors can expect a large trade fair exhibition for beekeeping articles and a variety of lectures.

By University of Graz

03. 2019 - Entomological Society of Austria conference, Graz, Austria

The SAMS poster will be presented at the Austrian Entomological Colloquium on March 16 in Graz. The Austrian Entomological Organization, founded in 1975, has the goal to promote entomology in Austria through socializing of Austrian experts and with the public, as well as the representation of Austrian entomologists at international events and committees (<http://www.entomologie.org>).

By University of Graz

05. 2019 BSE (Biosystems Engineering) - Conference, Tartu, Estonia

Two abstracts were submitted by Latvia University of Life Sciences and Technologies for the BSE conference in Estonia. The Biosystems Engineering conference is organized by Estonian University of Life Sciences and deals with fields related to traditional and modern engineering techniques and technical solutions applied to biological systems (<http://bse.emu.ee>).

By University of Graz