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SAMS –Newsletter

Vol. 3, March 2019

www.sams-project.eu

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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@SAMS_EU_H2020

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1.19. 02./ 03. 2019 - Indonesia Monthly Team Meeting

1.20. 03. 2019 - Establishing of a YouTube Channel

Upcoming Events

Monthly Dissemination, Bandung, Indonesia

03. 2019 - First Step of Prototype Implementation with Uni Kassel in Indonesia

03. 2019 - SAMS Talk Show – Tap into modern beekeeping - with Uni Kassel in Indonesia

03. 2019 - Survey and Assessment 2nd Phase to *A. mellifera* and *A. cerana* Beekeepers

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

07. 2019 Co- creation - User Requirements Workshop, Bandung, Indonesia

07. 2019 Indonesian Development Forum (IDF) 2019, Jakarta, Indonesia

2. Conferences and Events

2.1. 03. 2019 - Entomological Society of Austria conference, Graz, Austria

1. Project activities since January 2019

A wrap up of SAMS & it´s first implementation year

Taking stock of SAMS first implementation year: After we´ve conducted our first project meeting in January last year in Feldafing the year has passed by very quick and the consortium has grown together through several other project meetings and field trips to Indonesia and Ethiopia.

Within the last months, the SAMS project made some major steps starting from the former ITAPIC project idea towards initiating first steps to the individual SAMS products. As it has been described in our former newsletter a main success factor for enabling us to get closer to the final products is the User Centered Design, which helps us to understand the local conditions, beekeeping behavior and needs way better than we would have done it without it. Strong and reliable partners in the countries are the backbone for this process and for establishing trust to the local beekeepers and stakeholders! Based on that we were able to prepare the ground by conducting first user needs assessments and research activities combined with international user centered design workshops in Indonesia and Ethiopia, where Advisory Board members, policy makers, beekeepers and other stakeholder had the chance to step actively in this international community of SAMS. This were solely possible due to the efforts of our local partners: iceaddis, the Oromia Agricultural Research Institute Holeta Bee Research Center, Universitas Padjadjaran and CV. Primary Indonesia.

In addition to the user centered process, which is a living process and goes on over the whole project duration of SAMS, other partners started different studies and test. The University of Kassel did e.g. a test on prevent swarming of colonies, while our partner from Latvia University of Life Sciences and Technologies did studies on using different devices to find out which one can fulfill the planned SAMS requirements and is in addition easy to use as well as stable enough and low in purchasing and maintaining costs. These efforts have been accompanied by the research on available bee related literature in Indonesia and Ethiopia by our partner University of Graz and brought together into the SAMS wiki. This SAMS wiki is for sure also a living document, which is now open for the public and will grow further in the future. And as we all know all of the mentioned effort means nothing if we do not share our findings, failures and lessons learnt with the world – so SAMS took also part in different conferences and is present on twitter to spread the word!

So as you can see each partner and its expertise is of great value for the future and ambitious activities we have planned to fulfill our SAMS goals and create individual SAMS products, which meet the needs of beekeepers in Indonesia and Ethiopia but also all over the world. For sure that applies also for all other experts who share their knowledge with us.

So thank you to all Advisory Board members, beekeepers and stakeholders who have taken part in SAMS and followed us on our journey during the first year! We hope we will keep going way further from this!

& for sure also a big thank you to all of our partners for deciding on being a part of the project, for sharing your thoughts and views with us, for doing a great work and for the great times we´ve spend together and where we´ve shared so many laughs! Let´s work hand in hand together for a second great implementation year of SAMS with many more outstanding memories and a further growing team spirit!

By GIZ

SAMS project poster & flyer

In addition to our project flyer, the final SAMS project poster is now available on our SAMS website. If you are interested check out our official SAMS promotion material under Dissemination.

By GIZ

SAMS on twitter

Follow us and be always up to date on the SAMS project, our activities and on other bee related topics – follow us on twitter

By GIZ

SAMS Wiki database - News

Our open access knowledge source on beekeeping and the beekeeping sectors in Ethiopia and Indonesia is now officially open for access. There are still plenty of knowledge gaps to fill. If you are interested, please feel free to create an account and to add new information to our SAMS Wiki. You know someone, who is also interested in bees and beekeeping and wants to share his/her knowledge with us? SPREAD THE WORD! You find all the relevant instructions on the website.

By University of Graz

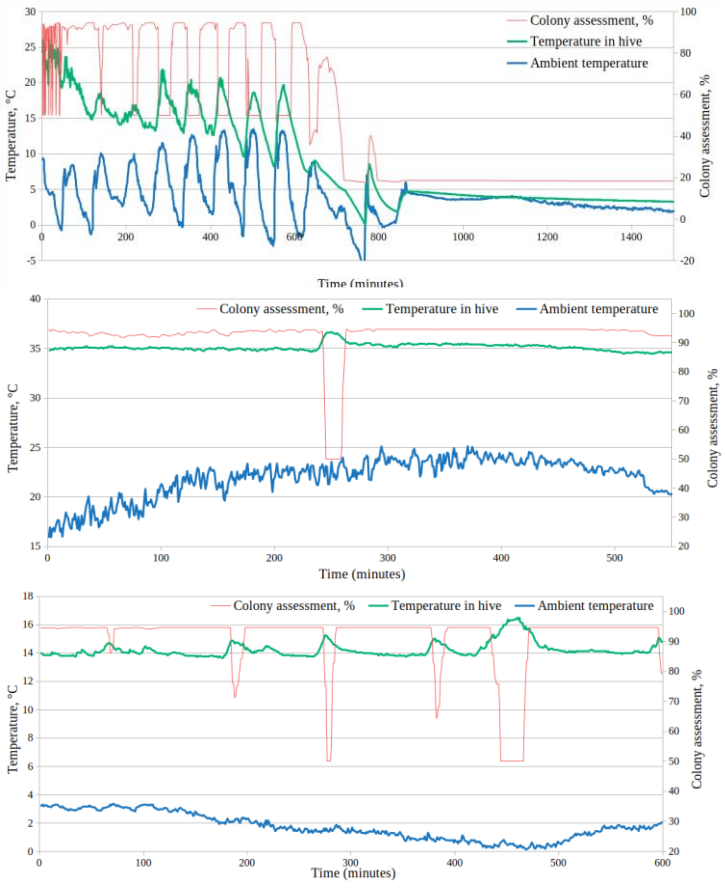
Evaluation of the economic importance of the bee colony swarming detection

Latvian team together with support of other project partners are investigating the economical aspect of possible automatized and remote detection of swarming events in honeybee colonies. The basic idea behind this research is that if a colony has swarmed, beekeepers still have some time (from few hours to more than a day) to catch the swarm and place it back into the hive or a new box. By catching the swarm, beekeepers can minimize the financial losses caused by unwanted bee colony swarming. The aim of this research is to present an approach of calculation of the benefit of catching a bee swarm. Different scenarios are compared and economical importance of the remote bee colony swarming detection will be evaluated. The outcome of this research will be published in a scientific publication.

To ease the process of calculation of all formulas and evaluate the economic feasibility of going to the remote apiary to catch the swarm, an online web tool (application) was developed and published for public use. To login simply use your Google account or sign up.

By Latvia University of Life Sciences and Technologies

DSS development progress



In the past few months, we observed that IF…THEN statements become more complicated, if other monitoring parameters, such as humidity, audio or weight were included. Therefore, Fuzzy logic was introduced. It is a generalization of a standard logic and uses so called “degree of truth” between the values 0 and 1 (Boolean logic uses complete values 0 or 1). One of Fuzzy logic’s advantages is the rule definition – it allows to define rules in a linguistic form, easing the way to add new or to modify existing rules.

First results were promising, showing that the FIS is capable of distinguishing between normal state,

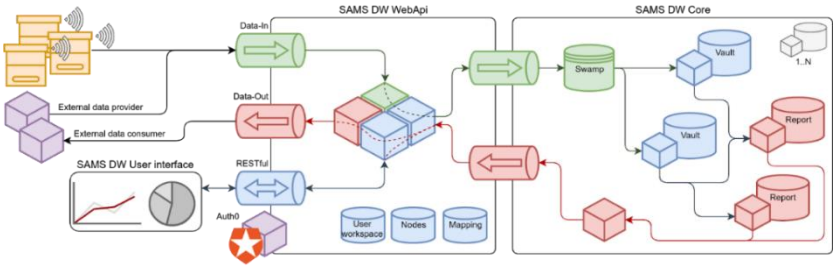
colony death (see picture on top), swarming state (see pic. center) and abnormalities (see pic. bottom) in various seasons.

Figures: on top: Colony death state detected by FIS; center: Colony swarming state detected by FIS; bottom: Abnormalities during winter detected by FIS.

By Latvia University of Life Sciences and Technologies

DWH development progress

Data warehouse (DW) can be considered as a universal system, which is able to operate with different data inputs and have flexible data processing algorithms. Within the SAMS project DW is implemented as a cloud based data storage and processing unit with capabilities to combine different data sources like existing systems and available on-apiary generated data. SAMS DW architecture is as follows and will be published in BSE 2019 conference proceedings in May 2019:



DW consists of three modules: a) Core – main data storage and processing unit; it receives data about various beekeeping objects in predefined format and distributes it through number of vaults and reports, which apply needed transformation to the data (e.g. aggregation, modelling, decision making); b) WebApi – intermediary unit between "outer world" and DW Core; c) Graphical user interface – single-page web application provides user convenient way for managing the sources of incoming data (e.g. hives with monitoring devices) and getting insights into produced outputs (e.g. reports).

By Latvia University of Life Sciences and Technologies

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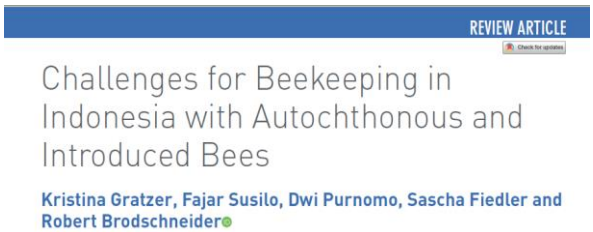
02. 2019 – NEW Open Access Publication

To assess the current beekeeping situation in Indonesia and to discuss the relationship between beekeeping with native and introduced honeybees, partners from UNIGRAZ, Universitas Padjadjaran and University of Kassel cooperated and successfully published a literature-based article in Bee World Volume 96. The publication is open access and ready to download.



By University of Graz

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02. 2019 – 4th SCM in Graz, Austria (hosted by University of Graz)

From February 21 to 22 the 4th Steering Committee Meeting took place in Graz and was hosted by the University of Graz. Since the SAMS project runs for 13 months now, the beneficial partners had a lot to discuss. Four new project members were introduced to the consortium and progress was made within every work package, from SAMS hive development, software design, our SAMS wiki database to UCD or management-topics. On SCM day two, Walter Haefeker, the president of the European Professional Beekeepers Association and member of the European SAMS advisory board, held a keynote speech on beeXML - a project, aiming the development of a self-describing data format to exchange data from bees and beekeeping. The successful meeting ended casually on Friday afternoon with a tour through the city of Graz and a visit of the most important sightseeing spots.

Pictures: top: group picture of the SAMS consortium at the meeting venue, center and bottom: sightseeing activity of the group/visit of Graz' oldtown.

By University of Graz

SAMS Monitoring System, Implementation Workshops ET & IN - Update

The second prototype of the SAMS Hive Monitoring System was successfully completed at the University of Kassel. A control unit manages the energy supply by using a photovoltaic system and delivers power for up to 15 monitoring units, which are installed in the beehives (see first figure below). The installation takes place in one third of a brood frame. In the future, the SAMS Hive System could not only acts as an

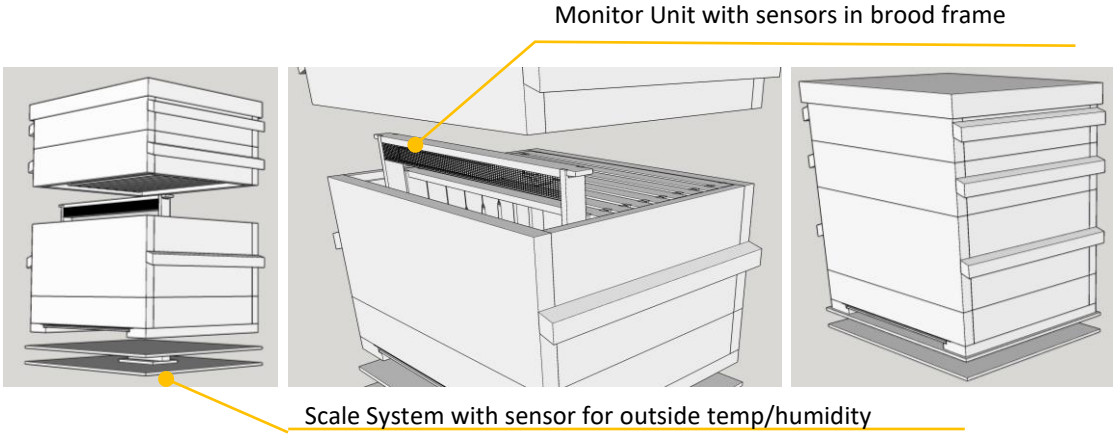

Figure: Scale System as well as Sensor and System placement within a broodframe of a standard Beehive

important tool for monitoring and research for beekeepers and scientists, but also for bee breeders, who could be able to carry out breeding selections on the basis of different parameters in greater detail. The sensors are set up and calibrated via a simple app for the smartphone (see second figure). In March a first SAMS Monitoring System installation workshops took place in Bandung, Indonesia to introduce the second prototype to the project partners. The Ethiopian installation workshop will take place beginning of April in Holeta, Ethiopia together with our local partners. A video tutorial will also be created to train multipliers for the basic installation of the monitoring system.

By University of Kassel

Country activities - Ethiopia

UCD Ethiopia - in-depth interviews

In-depth interviews serve to understand the users from personal and professional aspect. Focus was on the documentation on the users' daily work, challenges, aspirations, opportunities and the local context they are operating. User group in-depth interviews with three participants were conducted: Debel Gerbi (Bako Agriculture Center, East Wollega, Oromia), Girma Beyene (Gedo center, West Shewa, Secondo, Oromia) and Fekadu Alemu (Holeta research , Ulmera, Oromia & Bako research center). Based on the site visits in two different regions in Ethiopia and in-depth interviews with selected user groups, the next step would be defining the user requirements and designing a solution based on them. As iceaddis focuses on the SMEs development, the next user group in-depth interviews will focus on SMEs in the beekeeping sector, and the scientific community in Ethiopia.

By iceaddis

Panel discussion on facilitating mainstreaming pollination issues to existing national policies and strategies

In order to increase the awareness of the importance of pollination by insects and to help bridging the existing policy gap related to pollination and pollinator management, Holeta has planned to organize a day panel discussion with the title **"Facilitating mainstreaming pollination issues to existing national policies and strategies"** in the upcoming 3 to 4 months of the project time. The panel discussion is designed in such a way that it allows all actors and policy makers to analyze the gaps and forward ways to overcome the challenges. A technical paper dealing with the policy gaps and experiences related to pollination and pollinator management will serve as discussion points. The panel discussion will be led by at least two selected renowned discussants. Based on the discussions, an action plan will be developed on how to close the gap between the scientific community (both environmental and agricultural) and the policy makers.

By Oromia Agricultural Research Institute, Holeta Bee Research

Identification of beekeeping constraints in Ethiopia based on UCD analysis

Information required for the UCD analysis were obtained through individual interviews, a field survey study/contextual inquiry, a scientific literature study, expert opinions from the project target areas, advisory board meetings and from other similar networks. Accordingly, information on beekeeping constraints and production system and productivity were identified and categorized into four types of constraints:

- **Biological constraints:** aggressive behavior of the bees, absconding of colonies, honeybee diseases, pests, predators, pesticide use, as well as unstable environmental conditions. Of these constraints, the most serious one is colony loss due to absconding due to a lack of continuous colony follow-ups.
- **Technical constraints:** lack of knowledge of appropriate methods for managing bees, lack of appropriately skilled trainers, materials and training possibilities, and lack of dissemination of new research information related to beekeeping in general.
- **Trade constraints:** The major constraints faced by beekeepers is a lack of market for their products. According to the different sources, the amount of honey sold to from 2008 to 2017 is not more than 2% of the total production.
- **Institutional constraints:** these include the weakness of producer organizations, a weak extension system to support the industry, a lack of certified organizations to analyze and certify products for export and only few organizations have capacity to identify diseases and parasites of bees. Infrastructure to monitor, certify and enable trade in honey and beeswax is also lacking.

By Oromia Agricultural Research Institute, Holeta Bee Research

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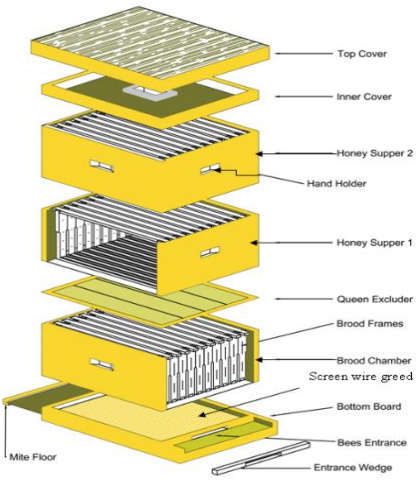
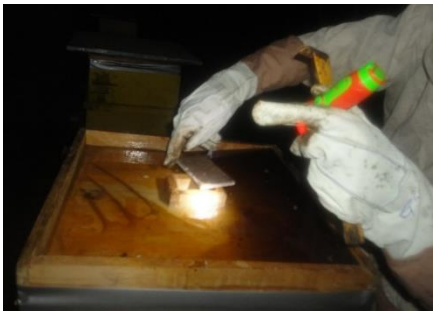
Preparation for field testing and evaluation of the SAMS Hive system in Ethiopia

Preparation for testing the SAMS hive system under field conditions is on good track. Ten honeybee colonies were transferred to modern beehives, constructed according to the "Manual on Beehive Construction and Operation" (deliverable D 3.1). Right now, the bee colonies are well established and well managed at Holeta and ready for conducting the field testing of the HIVE system prototype under real environmental conditions.



As IT adaptation requires sim cards, Ethio telecom agreed to provide GSM sim cards for facilitating data transfer to the remote data server for testing and validating the SAMS Hive system.



Pictures: top: A complete assembled beehive sketch; bottom: sugar syrup provided to a beehive with established colonies

By Oromia Agricultural Research Institute, Holeta Bee Research

Country activities - Indonesia

01. 2019 - UCD Research Part 2

Picture: Research team is in-depth interviewing Tani Kota as real profile who represents the persona "urban beekeeper".

We continued our research to an in-depth interview which resulted in two new personas. One is **the new generation beekeeper**, and the other is **urban beekeeper**. They are quite different form two others we've already created in the previous research phase. One of the respondents is Mr. Iyas who breeds *Apis mellifera* bees. When we visited Mr. Iyas, we could see clearly that he is a very active and busy beekeeper, as honey production from *A. mellifera* bees is higher than it is for *A. cerana*. Mr. Iyas used more modern methods, compared to other beekeepers whom we interviewed before, though few ways are still very analog.

It was a very interesting UCD Research experience for our team since we were able to see the contrast difference of behavior among beekeepers. One of the most interesting findings is, that proximity to the city can affect the beekeeper's behavior, mindset, and network. We are hoping, that our future process will leverage our understanding on how they can benefit through SAMS' implementation.

By CVPI

01. 2019 – Survey and Assessment: *Apis mellifera* Beekeepers - Laduni Mutiara Lestari and KTH Karya Lestari

In January, UNPAD surveyed the beekeeper group "**Laduni Mutiara Lestari**", located in Cianjur. Central Java provides natural bee forage and to maximize the honey yield, the interviewed beekeepers migrate their *A. mellifera* colonies from area to area of the region and they prefer to keep migrating their colonies instead of bringing them to their homes. Nevertheless, they always consider the operational costs, efficiency and effectivity of colony management. We observed a unique cooperation among *A. mellifera* beekeepers when it comes to managing the colonies. Local beekeepers look after each other's beehives while the owners go back to their home base or look for the next migration destination. This group has a dream of developing migration sites next to their homes in Cianjur.

Also in January, UNPAD interviewed Mr. Iyas Nuryamin (61), one of the migratory beekeepers on West Java. He was the founder of „**KTH Karya Lestari beekeeping"**, located at Koranji Village, Purwadadi District, Subang Regency, West Java. He managed to split his colonies by migrating them to two different areas, Central Java region and West Java (especially around Subang Regency). The division of the migration territory aimed to discover additional migration sites in the area

of West Java. Currently, he was able to migrate his colonies to mangrove plants in coastal areas in Northern Subang.

Pictures: On top: Team picture in front of KTH Karya Lestari homebase; center: Unpad's Assessment team with Maduni Mutiara Lestari at their prospective site for beekeeping; bottom: KTH Karya Lestari's Apis mellifera beekeeping site.

By Universitas Padjadjaran

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01. 2019 - UCD Workshop: from Findings to User Stories

As we have gathered deeper information of the User Groups, who are represented by different Personas, we downloaded and crafted those findings into meaningful information. Each persona has different and clustered findings, stories and motivations. We held a co-creation workshop to transform those findings into insights that could produce refined problem statements and user stories. For this workshop we invited people with different backgrounds, from our UCD researchers, designers, and developers. By having a cohesive team, we hope that we have better perspectives on the user stories and in a brother sense on user requirements.

Picture: Team is trying to map interconnected Problem Statements before producing related

By CVPI

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01. 2019 – Transferring of Bee Colonies

We were invited to participate in the bee colony transfer from Majalengka Regency to Bandung Regency (23-24 January 2019) by Mr. Yadi Supriadi, beekeeping expert from Faculty of Agriculture, Universitas Padjadjaran. The transfer process had been done at night to not disturb the bee colony. The hive was covered by used newspapers and tied up to avoid the possibility of being damaged or exposed to the external environment. The transferred hive also consist of 3 to 5 frames filled with honey as food deposits for the colonies during their adaptation period.

Pictures: left: Transferring beehive to preferred location; center: Team taking picture at preferred location at Arjasari District, Bandung Regency; right: Frames filled with honey in transferred beehive

By Universitas Padjadjaran

02./03. 2019 - Indonesia Team's Monthly Meeting

Every month, the Indonesian team consisting of CVPI (Labtek Indie) and UNPAD host monthly meetings to update and synchronize each other's plans of the next activities. And if there's any task or administrative needs that we need to coordinate, we shall have the chance to look into it within this monthly meeting. For February edition we focused ourselves to prepare our presentation material for 4th SCM, therefore we draft the presentation together and also share our latest work results. For March edition, we share the results and information from 4th SCM to the rest of the team and then plan for Uni Kassel's visit for the prototype implementation that will happen by mid-March 2019 in Bandung, Indonesia.

Picture: Indonesian team is having its monthly meeting.

By CVPI

03.2019 – Establishing of a YouTube Channel

UNPAD established a YouTube channel named **SAMS-Indonesia**. Implementation activities and other appropriate content related to SAMS' Indonesian team will be published through this YouTube channel. Feel free to visit the channel.

By Universitas Padjadjaran

Conferences and Events

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

The SAMS poster was presented at the Austrian Entomological Colloquium on March 16 in Graz. Approximately 100 interested visitors attended the conference. We were able to present the SAMS project and to establish new, promising contacts.

If you are interested in our German SAMS abstract, please read the conference proceedings:

Beiträge des ÖEG-Kolloquiums in Graz, 16.03.2019: Kurzfassungen der Vorträge und Poster

By University of Graz
