

OP-143 [Bee Health]

A review of bee health in Africa: From a development perspective

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The same pests and diseases, such as varroa destructor, nosema, and American Foulbrood, devastating colonies in Europe and North America are present across Africa. Despite no to minimal treatment, research and informal discussions with beekeepers have not shown high colony losses.

Most African honey bee colonies are wild or kept with minimal management. Management is often limited to monitoring colonies and preventing external pests, with no disease treatment. Despite low colony losses many development programmes, especially government and tertiary education level, focus on European and North American disease management techniques and the need for African beekeepers to adopt so called modern practices.

Research has explored the possible resistance of African honey bees and recently begun to consider how this may relate to beekeeping practices. This scoping review explores the recent research on honey bee diseases, their impact, and potential lessons for extension and development practitioners from a beekeeping development perspective. The following questions guided the review article selection: What is the spread and recorded impact of honey bee diseases across Africa? Is there a consensus on African honey bee disease resistance and its relation to beekeeping practices? Finally, what beekeeping best practices for extension and development can be drawn from the current African bee health situation? Research articles and review papers from across Africa over the last 20 years were assessed.

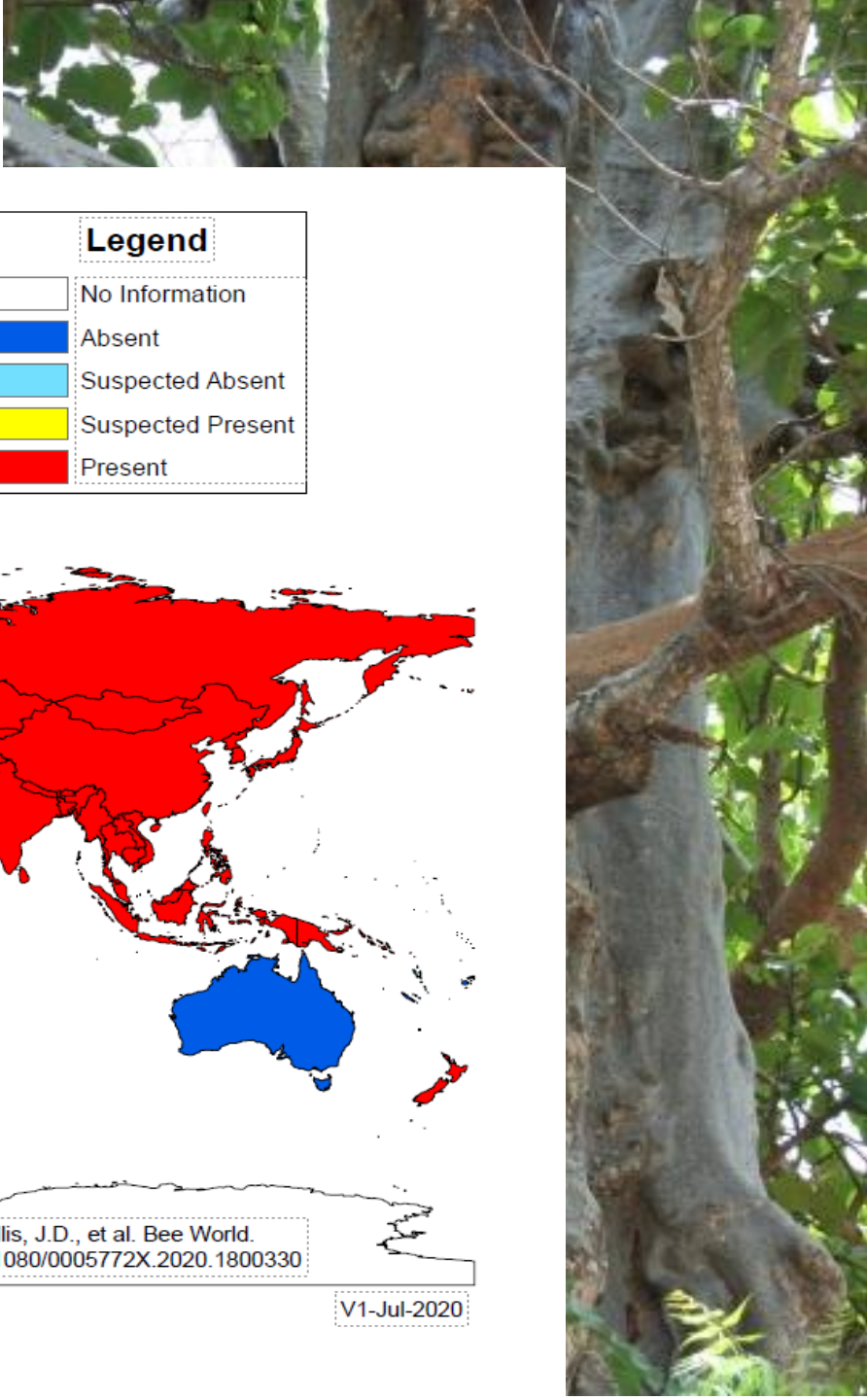
In general, the review demonstrates the need for a network of the network of African researchers and universities collaborating to understand the spread and impact of pests and diseases. Research should consider how an African system of beekeeping can support relevant, sustainable practices which encourage natural resistance. The review findings are applied to the development context and guide the development of specific future research questions.

Bee health in Africa: A learning opportunity? A review

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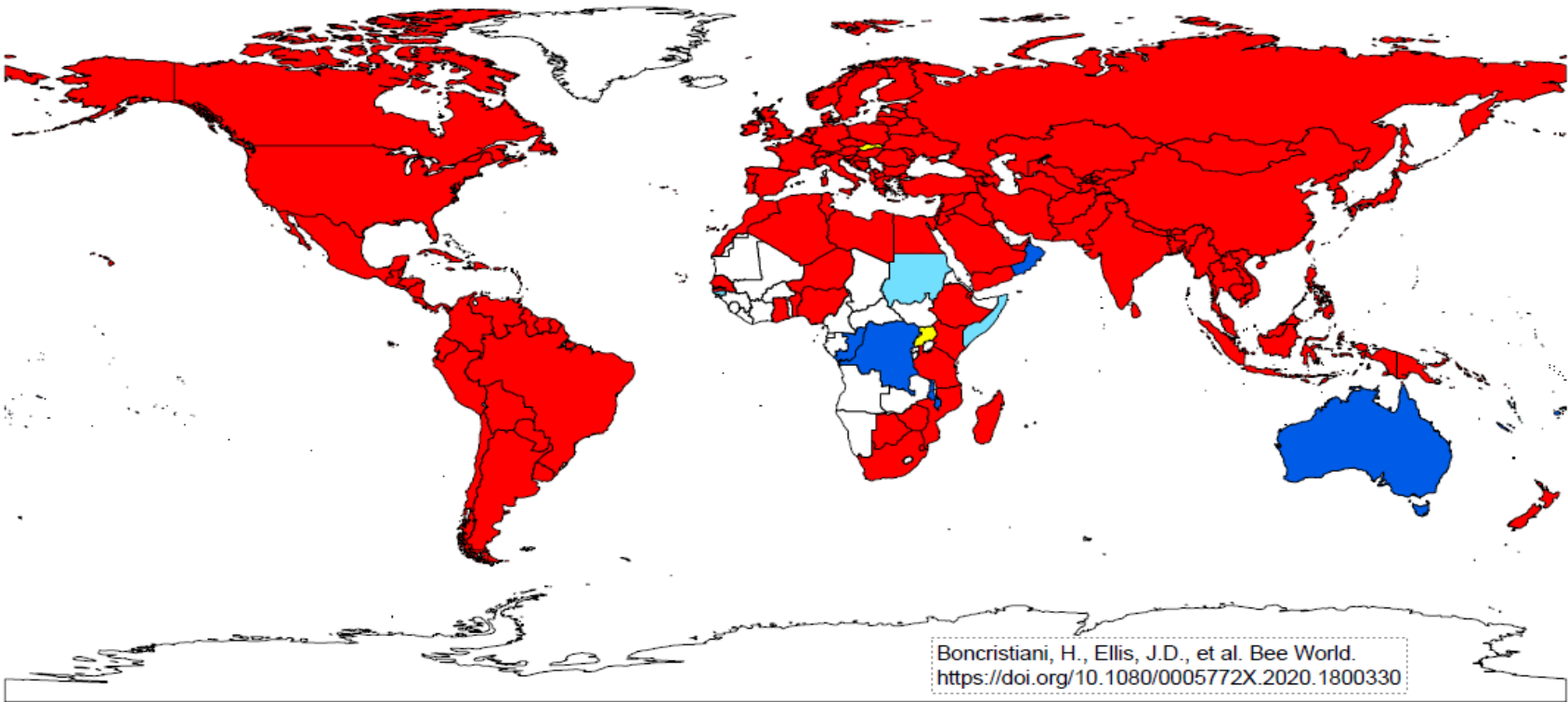


Background:



Varroa destructor
(Varroa mite)

Legend	
	No Information
	Absent
	Suspected Absent
	Suspected Present
	Present



Boncristiani, H., Ellis, J.D., et al. Bee World.
<https://doi.org/10.1080/0005772X.2020.1800330>

Objective: To determine the research consensus on African honey bee varroa resistance and what this means for beekeeping development.

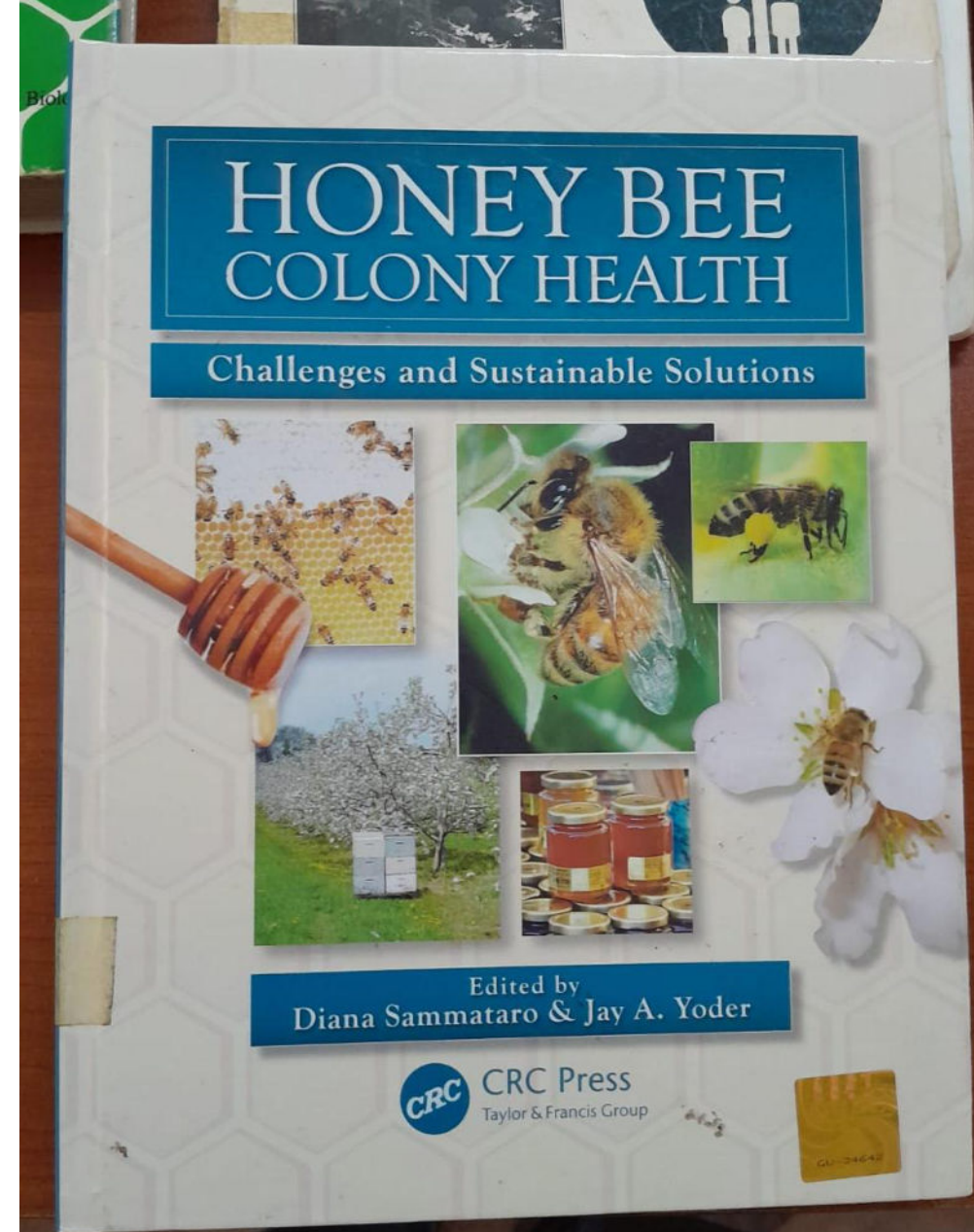
1. What is the recorded impact of varroa across Africa?
2. Is there a consensus on African honey bee varroa resistance?
3. Finally, what beekeeping best practices for extension and development can be drawn from the current African varroa situation?



Rationale:

- Development and tertiary education teaching NA and European style beekeeping
- Research consensus?
- What does this mean for development?

Right, textbook from a Ugandan forestry college teaching beekeeping



Methods: Scoping review

- Map existing evidence
- Keyword search
- Excel data extraction
- Thematic analysis Q.3

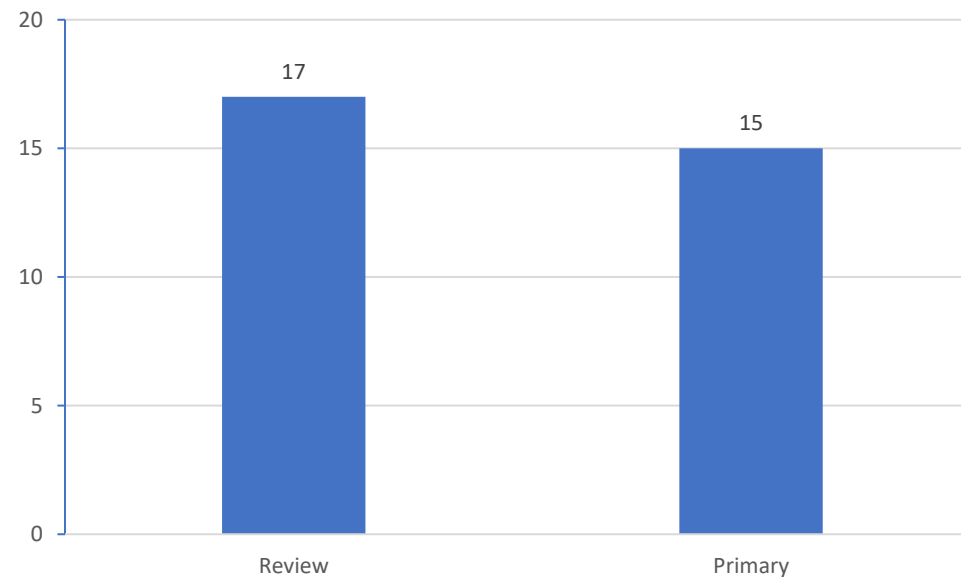
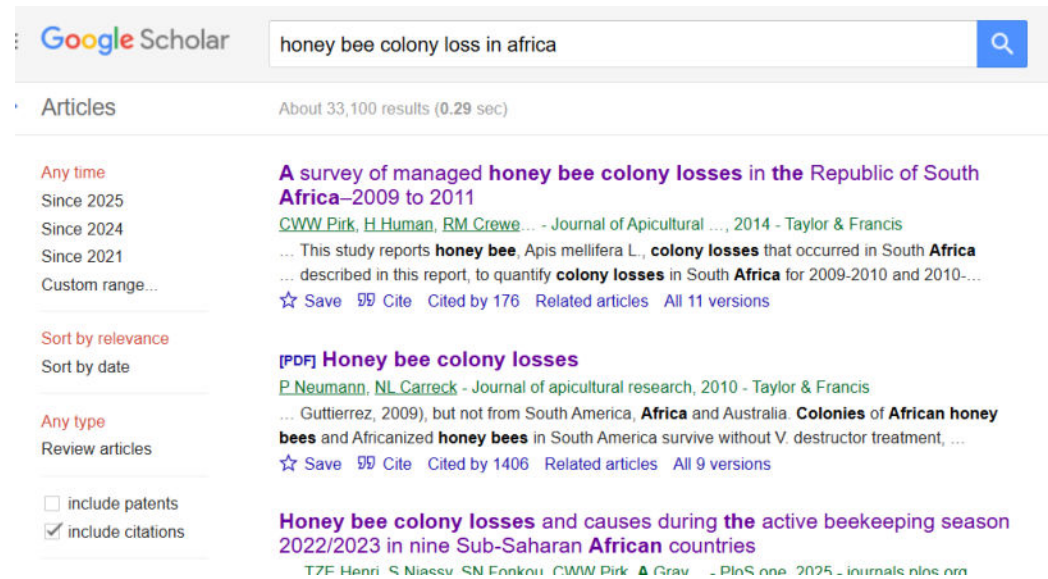


Figure 1. 32 articles, 17 reviews and 15 primary

Results: Q1 What is the recorded impact of honey bee diseases across Africa?



Figure 2. Review of 11 primary articles, only 1 directly shows an impact, and one an initial impact (high colony loss). 82% suggested no significant impact.

Results: Q1 What is the recorded impact of honey bee diseases across Africa?



Madagascar

Despite its low rate of dispersal compared to other studies, the local monitoring of infested colonies over one year showed a mortality rate of 60 %. (Rasolofoariva et al. 2013, Madagascar)

South Africa

“Varroa has not left a trail of destruction in South Africa as had been expected and no large-scale collapse of the honeybee population occurred” (Allsoop, 2006, South Africa)

“Although the diseases and parasites that are present in South African colonies are the same as those found elsewhere, the impact of these on colony health appears to be less threatening” (Pirk et al. 2014)

Colonies of both apiaries did not show any signs of disease or collapse and were developing normally in the presence of Varroa mites, suggesting a low cost of the tolerated parasite population on colony development within the period investigated. (Strauss et al. 2018)

Results: Q2. Is there a consensus on African honey bee varroa resistance?

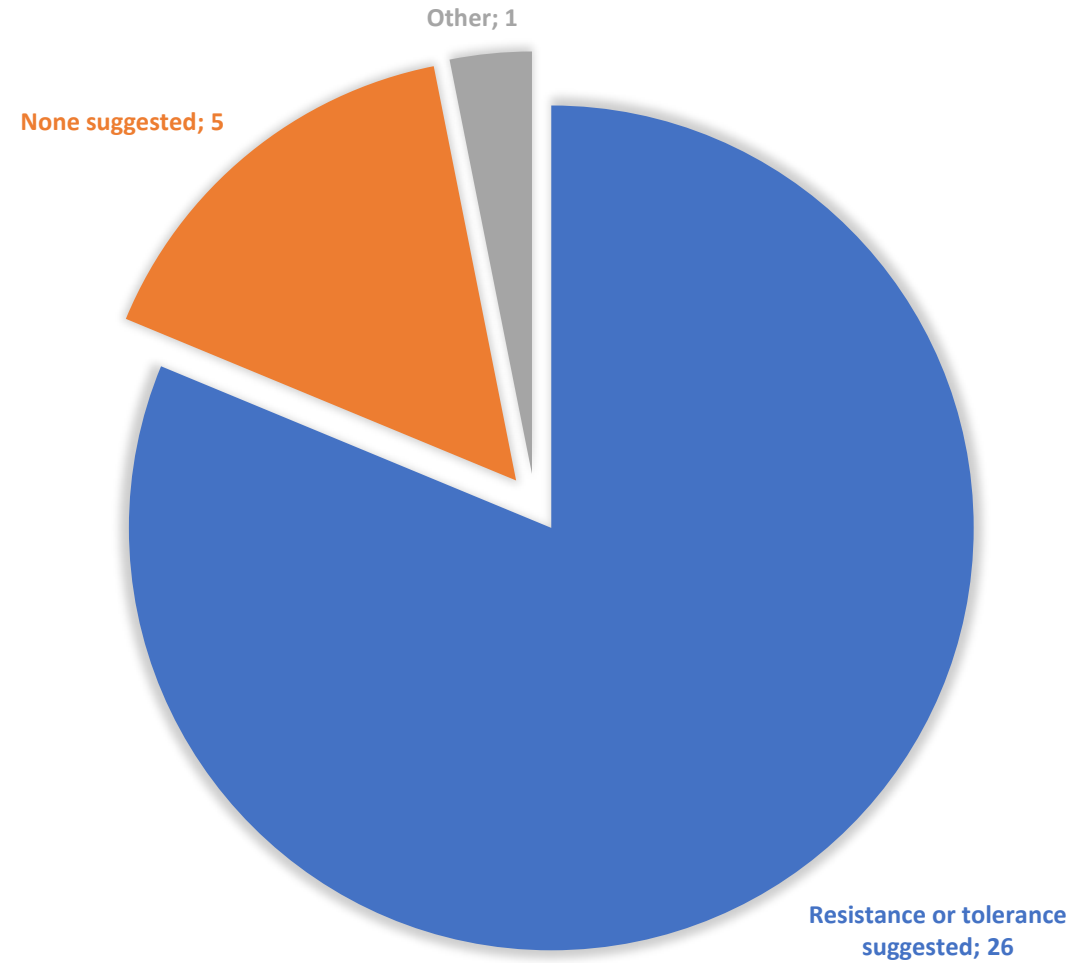


Figure 3. Of 32 articles reviewed, 26 (87%) considered African honey bees have some form of resistance.

Results: Q2. Descriptions of varroa resistance

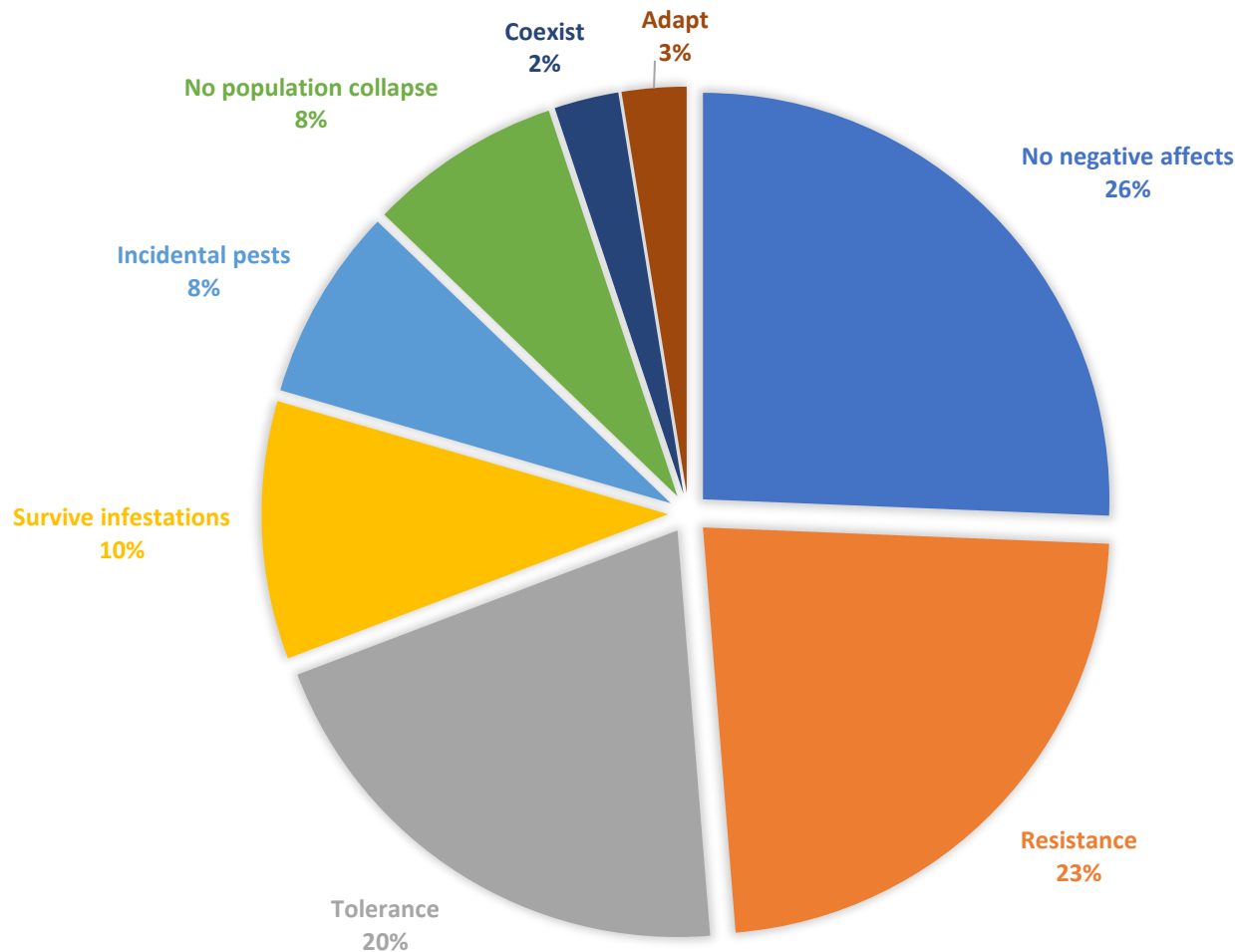


Figure 4. Thematic analysis of 26 articles shows the percentage of articles mentioning words/phrases related to either no impact or resistance/tolerance

Discussion: Q3. What beekeeping best practices for development can be drawn from the current African bee health situation?

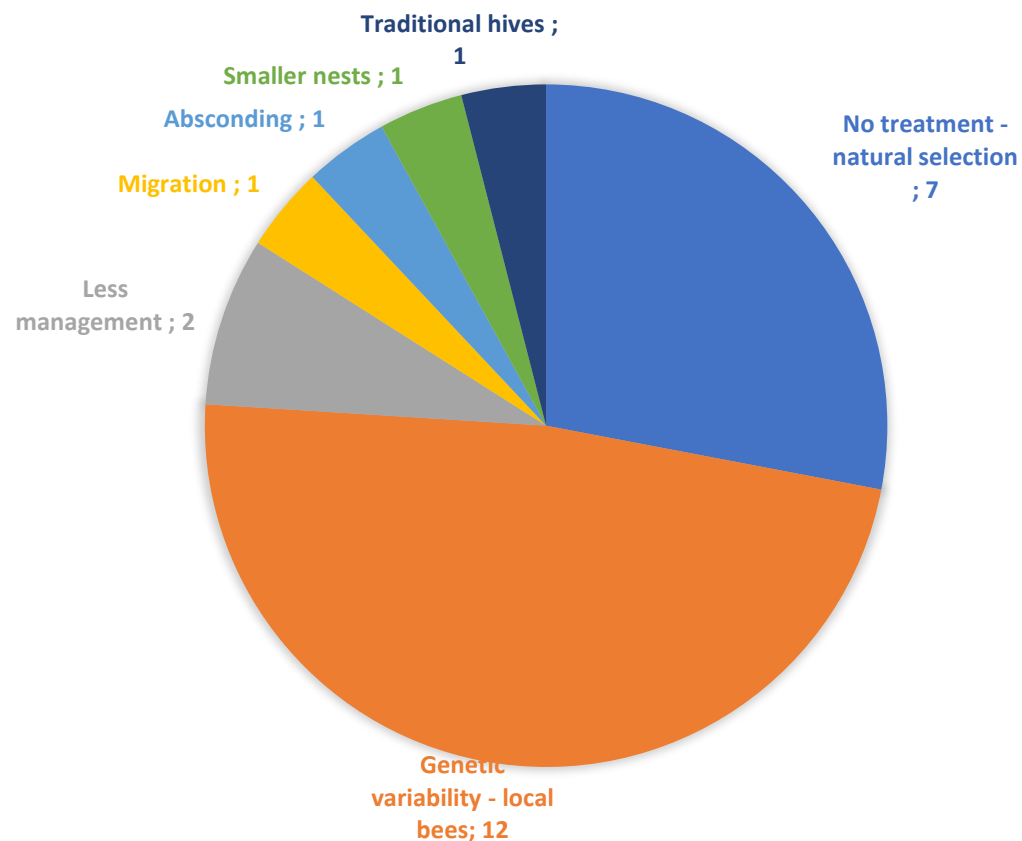


Figure 5. Number of articles referencing terms related to beekeeping techniques.



In the present study, we demonstrated that swarm catching should indeed be preferred over colony splitting as it results in lower mite infestation levels. (Gebremedhn et al. 2019)

Discussion: Beekeeping development best practices

Avoid

- Promoting Europe or North America beekeeping practices as the ideal
- Overemphasising internal colony pest and disease prevention/treatment

Promote Nature-Based Beekeeping

- Local bees
- Local methods
- Local resources

Target beekeeper challenges

- Forage availability
- Impacts of pesticide
- Market access



Future Research:

- Mechanisms of resistance – and relate directly to beekeeping practices
- Impact of fixed comb and moveable comb (top-bar) on colony health
- Colony loss versus absconding and/or migration



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