

A COMPETENCY IMPROVEMENT NEEDS OF BEEKEEPERS IN HONEY PROCESSING FOR HUMAN CAPITAL DEVELOPMENT IN SOUTH EAST NIGERIA

¹NWANKWO, C. U, ²ANEKE, C. U & ³IFEANYEZE, F. O.

^{1&3}*Department of Agricultural Education, University of Nigeria, Nsukka.*

²*Department of Technical and Vocational Education, Enugu, State University of Science and Technology (ESUT) Enugu*

clara.nwankwo@unn.edu.ng, aneke.catherine@esut.edu.ng,

florence.ifeanyeze@unn.edu.ng

Abstract

Request for honey is on increase and beekeepers unable to meet the demand. It was observed that honey produced by bees are wasted or contaminated due to beekeepers in-competencies. It was therefore necessary to determine deficient competencies of beekeepers in processing honey so that they can be improved through retraining. The study was carried out to determine the competency improvement needs of beekeepers for human capital development in south east Nigeria. The study adopted survey research design. Three research questions and three null hypotheses guided the study. Population of the study was 924 (43 Agricultural education lecturers from Federal Universities, 590 extension officers and 191 registered beekeepers. The sample for the study was 307 made of 43 lecturers, 199 extension officers and 65 beekeepers selected through proportionate random sampling techniques. The instrument for data collection was 43 questionnaire item developed from literature review. Each item had two categories required and performance. Each categories had four columns. The questionnaire was validated by three experts. Reliability of the instrument was established using Cronbach Alpha which yielded 0.87. Mean and improvement need index was used to answer research questions while ANOVA statistic was used to test null hypotheses at 0.05 level of significance at 289 degrees of freedom. The findings of the study revealed that beekeepers were deficient in 43 skill items (planning 12, honey processing 24, and marketing 7) identified by the study. It was recommended that the identified skill items be packaged and utilized in re-training of beekeepers for better performance.

Keywords: competency; improvement; skills; honey processing

Introduction

Honey is a sweet, sticky yellowish-brown fluid made by bees. It is the natural sweet substance, produced by bees from the nectar of plants which bees collect, change by joining with specific substances of their own, deposit, store and leave in honeycombs to ripe and mature. (Codex 2019). Honey is an organic natural substance that is produced from nectar of flowers by *apis mellifera* and is a sweet, tasty fluid (Liyanage & oradugoda 2017). Honey is a natural sweet product which is

produced by bees from nectar of flowers and tasty deposits from plants (Tatjana, Viktorija, Kalevska, & Stamatovska 2019). In this study honey is a yellowish-brown, sticky, sweet, fluid, produced by bees hid in comb and utilized by humans due to its contents. Honey contains nutrients like carbohydrates, proteins, 22 amino acids, organic acids, 31 different minerals, vitamins, enzymes, aromatic substances, pigments, and 30 types of bioactive compounds such as polyphenols which is antioxidants that clears inflammation and reduces risk of heart disease and cancer cases, beeswax, and pollen that gives it colour, smell and flavor. (Tarjiana et al 2019, Ryan 2018, Liyanage & Horadugoda 2017). Honey is good for sight (vision), break up hard masses, quenches thirst, balances kapha, useful to reduce toxicity, stop hiccups, bleeding, urinary tract disorders and diabetes, skin diseases, worm infestations, bronchial asthma, cough, diarrhea, nausea, vomiting and cleanse wounds and serves as food and medicine in all generations (Liyanage & Horadugoda 2017). The authors adds that newly harvested honey increase weight and is mild purge while old stored honey helps in metabolism of fat and scraps kapha. To derive the benefits contained in honey it requires processing.

Processing is one of the operations in agricultural production demonstrates essential role in nutrition scheme. Food processing is any variety of operations by which raw foodstuff are made suitable for consumption, cooking or storage, this includes basic preparation, alteration of the product into another form, preservation and packaging methods (Britannica 2022). Food processing are series of activities that interrelate to produce outcome (Nwankwo, Ifeanyieze & Isiwu 2021). Dietrich and Heribert (2019) stressed that food processing separates eatable from non-eatable foods. The authors further noted that processing ensures safe, functional and nutritional supply, efficient in preservation, increase palatability, transportation stability and production convenience. In this study processing is the act of separating honey from comb, beeswax and debris to get pure clean honey. Honey processing requires de-capping, crushing, breaking up the honey comb and placing them on a straining cloth with micro holes or piece of fine white line and pouring it over a mesh or nylon cloth to filter/separate from impurities like beeswax and dead bees (Ryan 2018). It is a process of separating honey from comb, straining, filtering and packaging (Andrai, 2016). The author reported that honey processing undergoes some stages such as de-capping of honey comb; breaking combs, placing the de-capped break comb on a straining cloth or piece of fine white line, tied over the top of a container while facing de-capped side downward; letting the honey drip through the cloth until the cells are empty; turn over the comb and repeat the above process; and pour honey in clean dry jar with well-sealed lid. Blog (2021) opined that honey processing is necessary to remove impurities, moisture content, protect against contamination by ant and flying insects, fermentation and crystallization. For honey to be pure and moisture content free, beekeepers need some level of processing competency.

Competency is ability or capability in a definite area or being able to perform well. Competency is identified knowledge, skills, abilities, and mindsets, evaluated

through demonstrated behaviours, which directly and positively contribute to the success of the employee in his/her job role (Wikjob 2022). Competency is development of skills, abilities, behaviours and knowledge required for effective performance in a specific job area (Shaw 2020). Noor, Noor and Dola (2015) stressed that competency is essential skills, knowledge and personal characteristics required for successful performance in a work area. In the context of this study, competency is the skills, abilities, knowledge and behaviors required by the beekeepers for successful performance in honey processing. Aija (2019) grouped importance of competency under academic sector, business sector and public sector - Academic sector, entails advancement of learner's skills and abilities, upgrading quality and efficiency of instruction, optimization of the development standard, Business sector -contribute to the development of organization, expansion of human resources, Improves company's performance, Public sector - basis for employee's assessment. Competency help to focus employees' conduct on things that matters most to an organization for success, coordination, and capacity building (Maher 2017). In this study been competent will help beekeeper to expand, upgrade and efficiently handle processing aspect of honey production to meet the demand of populace in south east Nigeria.

In south east Nigeria the request for honey is constantly on increase and beekeepers are not able to meet the demand. The researchers observed that most honey produced by bees are wasted and some contaminated. This could be as a result of in-competencies of beekeepers to handle certain areas in bee production such as honey processing. Etensh, Abebe, Yeshambel and Abulu (2018) opined that beekeepers are faced with challenges of not processing required quantity of honey that could serve the demand and provide the farmers with enough income due to lack of competency. Aregawi, Zewdu, and Woreknes (2018) stated that beekeepers lack adequate training and insufficient management practices in honey production. The deficient competencies of beekeepers in honey processing could be improved through re- training. Re-training of beekeepers can only be effective if their improvement needs gap were determined. Therefore, the study was carried out to determine the competency improvement needs of beekeepers for human capital development in south east Nigeria. Specifically, the study determined: -

1. competency improvement needs of beekeepers in planning for honey processing
2. competency improvement needs of beekeepers in honey processing and packaging
3. competency improvement needs of beekeepers in marketing honey

Methodology

The study was carried out to determine the competency improvement needs of beekeepers for human capital development in south east Nigeria. The study adopted survey research design. Four research questions and three null hypotheses guided the study. Population of the study was 924 respondents (43 Agricultural education lecturers from Federal Universities, 590 agricultural extension officers and 191

registered beekeepers) in the study area. The entire lecturers participated because their population was manageable while proportionate random sampling techniques was used to select 264 respondents comprising 199 extension officers and 65 beekeepers based in population using Taro Yamane formula with a total sample size of 307. The instrument for data collection was 43 questionnaire items grouped into planning, processing and marketing. These items were developed from literature reviewed for the study. Each item had two categories which are required and performance. The required categories had four columns highly required (HR), averagely required (AR), slightly required (SR) and not required (NR) with values of 4, 3, 2, 1 respectively. The performance category also had four columns corresponding to four response options of– high performance (HP), average performance (AP), low performance (LP), and no performance (NP), with values of 4,3,2,1 respectively. The questionnaire items were face validated by three experts, one each from departments of agricultural education, science education and animal science all from University of Nigeria Nsukka. Reliability of the instrument was established using Cronbach Alpha which yielded 0.87. Data were collected by researchers and five assistants. The assistants were instructed to request lecturers, extension officers and beekeepers to respond to required category while only beekeepers responded to performance category. The data collected were analyzed using mean and improvement need index for research question1, while ANOVA statistic was used to test null hypotheses at 0.05 level of significance at 298 degrees of freedom. To take decision on the required item, a mean of 1.50 or above was indicated as required but if below, it means the item was not required and so was discarded in calculating the improvement need of the beekeepers. The standard deviation value below 1.96 indicated that the respondents were not far from the mean and each other in their responses. For determining the improvement need of beekeepers, the response on required category and performance category were implicated as follows: $\bar{X}_r - \bar{X}_p = INI$

Where \bar{X}_r = mean required, r = required

\bar{X}_p = mean performance

The improvement required indicators were expected to fall between 0 and 3. From this, the following decisions were taken:

1. Where $\bar{X}_r - \bar{X}_p > 0$
INI was positive. Therefore, improvement was required.
2. Where $\bar{X}_r - \bar{X}_p < 0$

INI was negative

Therefore, improvement will not be required

3. Where $\bar{X}_r - \bar{X}_p = 0$

Therefore, improvement was not required

However, for INI of 0, any of these can occur:

- a. Highly Required - High Performance = 0
- b. Average Required – Average Performance = 0
- c. Slightly Required – Low Performance = 0

The null hypotheses was rejected if calculated value of ANOVA was either equal or greater than the critical ratio or table value at appropriate degree of freedom (d) otherwise it was not rejected. All the null hypotheses were tested using one – way analysis of variance (ANOVA) because three variables or groups were compared to determine whether significant difference exist among the three respondents – Lecturers, Extension Officers and Beekeepers.

Research Question One. What are the competency improvement needs of beekeepers in planning for honey processing for human capital development in south East Nigeria?

Table 1: Mean Rating of Respondents on Competency improvement needs of beekeepers in planning for honey processing for human capital development in South East Nigeria.

| S/N | Item statement | \bar{X}_R | \bar{X}_D | $\bar{X}_R - \bar{X}_D$ | Decision |
|-----|---|-------------|-------------|-------------------------|-----------------|
| 1. | Identify business opportunities in honey processing within the environment. | 3.79 | 2.17 | 1.62 | • IN |
| 2 | Determine objectives to provide direction in honey processing. | 3.81 | 2.21 | 1.60 | • IN |
| 3 | Forecast be nefits or profits that accrue from honey processing business | 3.81 | 2.06 | 1.75 | • IN |
| 4 | Identify options/alternatives in honey business | 3.29 | 2.19 | 1.10 | • IN |
| 5 | Evaluate closely each option in honey processing business | 3.63 | 2.05 | 1.58 | • IN |
| 6 | Select the best and most applicable option for implementation in honey business | 3.60 | 2.25 | 1.35 | • IN |
| 7 | Review the objectives based on market demand for honey | 3.51 | 2.43 | 1.08 | • IN |
| 8 | Identify customers or honey marketing outlets | 3.41 | 2.30 | 1.11 | • IN |
| 9 | Determine appropriate records to keep honey business | 3.38 | 2.40 | 0.98 | • IN |
| 10 | Design label with necessary information to attract customers | 3.21 | 2.52 | 0.69 | • IN |
| 11 | Prepare budget for honey processing | 3.17 | 2.32 | 0.85 | • IN |
| 12 | Determine source of fund for implementing the budget | 3.38 | 2.41 | 0.97 | • IN |
| | Grand Mean | 3.50 | 2.28 | 1.22 | • IN |

Data presented in table 1, on the competency improvement of beekeepers in planning for honey processing revealed that all 12 items has their mean values ranged from 3.17 – 3.81. These values were within 1.50 – 4.00, indicating that the 12 items were activities required in planning for honey processing. The data in Table 1 **further** revealed that performance gap values for the 12 items ranged from 0.69 – 1.75. All the values were positive indicated that beekeepers required improvement in all the 12 competency items in planning for honey processing for human capital development in South East Nigeria.

H₀₁ There is no significant different in mean responses of lecturers, extension officers and beekeepers in competency improvement needs of beekeepers in planning for honey processing for Human Capital development in South East Nigeria.

Table 2: One-way ANOVA on the mean responses of lecturers, extension officers and beekeepers on competency improvement needs of beekeepers in planning for honey processing for Human Capital development in South East Nigeria.

| Sources of Variation | df | Sum of Squares | Mean Squares | F-cal | Sig. | Decision |
|----------------------|-----|----------------|--------------|-------|-------|----------|
| Between groups | 2 | 42.477 | 21.239 | 2.325 | 0.100 | |
| Within groups | 298 | 2722.725 | 9.137 | | | |
| Total | 300 | 2765.203 | | | | |

Table 2 revealed the significance level of F-cal. of 2.325, the value of 0.100. is greater than 0.05, indicating that there was no significant difference in the mean rating of the three groups of respondents on the competency required by beekeeper in planning for honey processing. The null hypothesis of no significant difference was therefore upheld.

Research Question Two What are the competency improvement needs of beekeepers in honey processing and packaging?

Table 3: mean Rating of Respondents on Competency improvement needs of beekeepers for honey processing and packaging for human capital development in South East Nigeria.

| S/N | Item statement | \bar{X}_R | \bar{X}_p | $\bar{X}_R - \bar{X}_p$ | Decision |
|-----|--|-------------|-------------|-------------------------|----------|
| 1 | Wash containers with clean water and soap or detergent | 3.60 | 2.55 | 0.05 | * IN |
| 2 | Turn upside down the washed containers on big clean trays | 3.63 | 3.48 | 0.15 | * IN |
| 3 | Put on hand gloves (plastic/nylon), apron, nose mask | 3.54 | 3.08 | 0.62 | * IN |
| 4 | Carry de -capped honey comb from the hive site to the processing center. | 3.56 | 3.46 | 0.10 | * IN |
| 5 | Break honey combs into pieces with small wood | 2.41 | 2.32 | 0.09 | * IN |
| 6 | Tie straining cloth over container to drain honey | 2.27 | 2.21 | 0.06 | * IN |
| 7 | Put broken combs in a straining cloth over container (A) for honey to drip. | 2.38 | 2.27 | 0.11 | * IN |
| 8 | Remove large particles with coarse strainer into container (B) | 3.11 | 2.37 | 0.74 | * IN |
| 9 | Pack the coarse sieved pieces for further processing | 3.22 | 2.43 | 0.79 | * IN |
| 10 | Remove smaller particles with tiny holes strainer. | 3.13 | 2.29 | 0.84 | * IN |
| 11 | Untie the straining cloth and carefully remove it from the container (A) | 3.25 | 3.19 | 0.06 | * IN |
| 13 | Squeeze the tiny combs inside the untied straining cloth into fresh container (C) to bring out remaining honey | 2.98 | 2.88 | 0.10 | * IN |
| 14 | Tie a fresh straining cloth over to another container (D) | 2.85 | 2.73 | 0.12 | * IN |
| 15 | Pour the squeezed honey on the straining cloth in (E) for final dripping. | 2.73 | 2.64 | 0.09 | * IN |
| 16 | Bring out the stocked honey from container (B) coarse sieved combs with straining bag. | 2.95 | 2.0 | 0.05 | * IN |
| 12 | Drain all dripped honey from A,C,D, and E into container (F) to get cleaner honey | 3.01 | 2.76 | 0.25 | * IN |
| | Packaging | | | | |
| 17 | Pour strained honey from container (F) into filtering bucket | 3.24 | 3.09 | 0.15 | * IN |
| 18 | Place funnel over each bottle of different sizes | 3.11 | 3.03 | 0.08 | * IN |
| 19 | Pour the honey into each of the bottles | 3.30 | 3.02 | 0.28 | * IN |
| 20 | Cork each bottle air tight against moisture. | 3.22 | 2.22 | 0.19 | * IN |
| 22 | Clean off honey on each bottle with wet clean towel | 3.13 | 2..32 | 0.81 | * IN |
| 23 | Place a label with useful information on each bottle | 3.21 | 3.00 | 0.21 | * IN |
| 23 | Pack in carton and keep in a well dried store for onward transportation for sell. | 3.29 | 2.90 | 0.39 | * IN |
| 24 | Store in a cool dry place fo r onward transportation for sell | 2.81 | 2.08 | 0.73 | * IN |

Data presented in table 3 on the competency improvement of by beekeepers in honey processing revealed that all the 24 items had their mean values ranged from 2.72 – 3.63. These values were within 1.50 – 4.00, indicating that the 24 items were activities in honey processing. Table 3, also revealed that the performance gap values of 24 skill items ranged from 0.05 – 0.84 were all positive. The values indicated that beekeepers required improvement in all the 24 competency items in honey processing for human capital development in South East Nigeria.

H₀₂ There is no significant difference in the mean responses of lecturers, extension officers and beekeepers in competency improvement needs of beekeepers in honey processing and packaging.

Table 4: One-way ANOVA on the mean responses of lecturers, extension officers and beekeepers on competency improvement needs of beekeepers in honey processing and p ackaging for Human Capital development in South East Nigeria.

| Sources of Variation | df | Sum of Squares | Mean Squares | F-cal | Sig. | Dec |
|----------------------|-----|----------------|--------------|-------|-------|-----|
| Between groups | 2 | 136.658 | 68.329 | | | |
| Within groups | 298 | 10817.010 | 36.299 | 1.882 | 0.154 | |
| Total | 300 | 10953.668 | | | | |

Data in table 4 showed that the significance level of 1.882, the value (0.154) is greater than 0.05; indicating that there was no significant difference in the mean rating of the three groups of the respondents on the competency improvement needs of beekeepers in honey processing for human capital development.

The null hypothesis of no significant difference was upheld.

Research Question Three: What are the competency improvement needs of beekeepers for honey marketing for human capital development in South East Nigeria?

Table 5: Mean Rating of opinions of the Respondents on Competency improvement of beekeepers for honey marketing for human capital development in South East Nigeria.

| S/N | Item Statement | \bar{X}_R | \bar{X}_P | $\bar{X}_R - \bar{X}_P$ | Decision |
|-----|---|-------------|-------------|-------------------------|----------|
| 1 | Provide information about honey on media to get customers | 2.90 | 2.41 | 0.49 | * IN |
| 2 | Determine the means of distribution of product to customers | 3.00 | 2.32 | 0.68 | * IN |
| 3 | Put flex/sign post with information about honey for direction | 2.98 | 2.30 | 0.68 | * IN |
| 4 | Carry some bottles of honey to public gatherings like schools, hospitals, offices, conferences, workshops etc | 2.90 | 2.87 | 0.03 | * IN |
| 5 | Collet money at the point of sell | 2.89 | 2.88 | 0.01 | * IN |
| 6 | Sell online | 2.81 | 2.02 | 0.79 | * IN |
| 7 | Engage some people to help sell in open market. | 2.90 | 2.00 | 0.90 | * IN |

Table 5 revealed that the 7 items had mean (X) values ranged from 2.81 – 3.00. These values were within 1.50 – 4.00, indicating that the 7 items were activities in marketing honey. Table 5 further, revealed that the performance gap values of 7 skill items ranged from 0.01 – 0.90 were all positive. The values indicated that beekeepers required improvement in 7 competency items in honey marketing for human capital development in South East Nigeria.

H₀₃ There is no significant difference in the mean responses of lecturers, extension officer and beekeepers in competency improvement needs of beekeepers in marketing of honey.

Table 6: One-way ANOVA on the mean responses of lecturers, extension officers and beekeepers on competency improvement needs of beekeepers in marketing honey for Human Capital development in South East Nigeria.

| Sources of Variation | df | Sum of Squares | Mean Squares | F-cal | Sig. | Dec |
|----------------------|-----|----------------|--------------|-------|-------|-----|
| Between groups | 2 | 24.513 | 12.257 | 0.917 | 0.401 | |
| Within groups | 298 | 3984.503 | 13.371 | | | |
| Total | 300 | 4009.017 | | | | |

Data in table 6 showed that the significance level of 0.917 the value of (0.401) is greater than 0.05; indicating that there was no significant difference in the mean rating of the three groups of the respondents on the competency improvement needs of beekeepers in honey marketing for human capital development. The null hypothesis of no significant difference was upheld.

Discussion of Findings

The findings of the study on research question 1, revealed that, 12 items were required in planning for honey processing for human capital development. These items were identify business opportunities in honey processing within the environment, determine objectives to provide direction in processing, forecast benefits or profit that accrue from honey processing business, identify options/alternatives in honey business, evaluate closely each option in honey processing among others. This finding corroborates with the findings of Binod (2015) in a study on Nepalese entrepreneurs: business opportunity, recognition and development process where the author found, identify business opportunities, determining objectives to provide direction in details, identify alternatives/options in the business, evaluate closely each options among others are in planning for a business. The findings were also in consonant with the findings of Avery (2022) on how to strategically plan for business in 7 steps. The author found that scan for business opportunities in the environment, develop goals and objectives, investigate objectives, create strategic direction, evaluate goals and objectives among others in planning for business. The findings revealed that beekeepers were deficient in 12 professional skill items in planning and therefore need improvement for effective planning for honey processing. The findings of the study were in agreement with the findings of Ifeanyiyeze (2010) in a study on professional and technical skill improvement need of teachers of agricultural education programme in farm mechanization for effective teaching in colleges of education in South East Nigeria, where the author found that teachers of agricultural education need professional skill improvement in planning, implementing, and evaluation of instruction. The findings of the study were further inconformity with the findings of Olaitan, Alaribe and Eze (2010) who carried out a study on competency improvement needs of teachers in school farm management for teaching student's practical in crop production in secondary schools in Abia State where the authors found that teachers need improvement in planning for school farm, implementing school farm activities and evaluation of school farm activities.

The result of the study in table 3 research question 2 revealed that 24 items were required by beekeepers in honey processing and packaging, such as wash containers with clean water and soap or detergent, turn upside down the washed containers on big clean trays, put on hand gloves (plastic/nylon) apron, nose mask, carry de-capped honey comb from the hive site to the processing center, break honey combs into pieces with small wood, tie straining cloth over a container to drain honey among others. The findings were in agreement with the findings of Food and

Agricultural Organization (2011) who found that break the de-capped honey comb with piece of wood, place de-capped honey comb on a piece of fine white linen tie over the top of container, place the break comb downward for honey to drip, the honey drip through the cloth until the cells are empty, among others were activities in honey processing. The findings is also in consonant with the findings of Tara (2017) in a study of how honey is processed, food technology magazine where the author found that identify ripe honey comb by removing the top bar, uncapping by removing the wax cap from the honey cells, extract by breaking the comb with small wood, place down wards over a container to allow honey to drip out, among others were steps in local processing of honey. The findings also revealed that beekeepers are deficient in all the skill items and need Improvement in the 24 skill items for honey processing. This findings collaborates with the findings of Nwankwo (2017) in a study of enhancing the competencies of bee farmers for poverty reduction in Anambra State. Where the author found that bee farmers possessed competencies of bee production to a low extent and need improvement in all the skill items identified. Furthermore, the findings of the study were in line with the findings of ideyi (2013) on enhancing production competencies of fish farmers for sustainable food security in Ebonyi State where the author found that fish farmers possessed competencies for fish production to a low extent and need improvement in all the skill items identified.

The study further revealed in table 5, research question 3, skills required by beekeepers in marketing of honey. Skill items such as provide information about honey on social media to get customers, determine the means of distribution of product to customers, put flex/sign post with information about honey for direction, carry some bottles of honey to public gatherings like schools, hospitals, offices conferences, workshops etc. among others. The findings of the study were in consonant with the findings of Usman (2021) on how to start honey business and make money in Nigeria. The author found that advertise honey, determine strategies for distribution, identify blog for the product, create social media page/flex/sign post with information concerning honey for direction among others were steps in marketing honey. The finding were also in agreement with the findings of Valosen (2020) in a study on marketing plan for local honey farm. The author found that create social media, advertise the product, carry to public places such as church/school/hospital/offices/open market, provide flyers/flex/sign post among others were steps in marketing honey. The findings also showed that beekeepers are deficient in all the skill items in honey marketing studied and need improvement in all the 7 skill items in marketing of honey. The findings is in line with the findings of Nwankwo (2015) on analysis of harvesting competencies of bee farmers for poverty reduction in south East Nigeria. Where the author found that bee farmers possessed 20 professional skill items for honey harvesting in low extent and need improvement in all the skill items. The findings were also in consonant with the findings of Ekele & Damina (2020) on competency improvement needs of pastoral farmers in pasture preservation for livestock production in North Central States Nigeria. The authors found that pastoral farmers were deficient in all the 32 professional skill items in

planning, implementation and preservation activities and need improvement in all the skill items.

Conclusion

Beekeepers in South East Nigeria were eager to produce honey to meet up with the demand but were found deficient in 43 skill items (12 in planning for honey processing, 24 in processing of honey and 7 in marketing of processed honey). These deficiencies could be traced to inability to embrace re-training programme, rather the beekeepers are used to obsolete skills. It therefore means that concerted efforts must be made to re-train beekeepers in the areas they are found deficient for effective honey processing. It is in this direction that the study was carried out to determine competency improvement needs of beekeepers in honey processing for human capital development in South East Nigeria.

Recommendations

- i. It is therefore recommended that the identified skills in honey processing which were 43 skill items (planning 12, honey processing 24, and marketing 7) be utilized in re-training of beekeepers for better performance in the job.
- ii. The identified skill items should be integrated in retraining manuals for beekeepers by extension agents.
- iii. The re-training programme could be carried out by extension officers through farm education, workshops, seminars and symposiums.

References

- Aija, S. (2019). The importance of competency model development. Research Gate (2) 62-71. DOI: 10:18267j.aop.622 <https://www.researchgate.net>
- Andraei, M (2016). The sweet rewards of beekeeping. University at Buffalo
- Aregawi, K, Zewdu, W. and Woreknes, T. (2018) Challenges and opportunities of honey production in North East dry land areas of Amhara national Regional State, Ethiopia. *Academic journal* 10(4) 67-88
- Avery C. (2022) How to strategic plan in 7 steps. Performance .gov. <https://www.perfomance.gov> >blog
- Binod, K.S (2015) Business opportunity, recognition and development process: A study of nepalase entrepreneurs <https://www.researchgate.net/publication>
- Blog (2021). Why is honey processing necessary at the time of harvestin?
- Codex, A (2019) Honey – a natural product – apimondia (news and article) statement on honey fraud
- Ekele, G.E & Damina, U (2020) Competency improvement needs of pastoral farmers in pasture preservation for livestock production in North Central Nigeria. *Journal of agricultural education teachers association of Nigeria* 4(1) 140 - 146
- Encyclopaedia Britannica (2022) <https://www.britannica.com/technology/foodprocessing>
- Dietrich K. and Heribert W. (2019) Food processing at a cross road. Frontiers in nutrition National library of medicine, DOI: 3389/fruit2019.00085 <https://pubmed.ncbi.nlm.gov>
- Etensh, M, Abebe, J, Yeshambel, M. and Abule, E. (2018). The challenges and opportunities of honey production systems in Ada Berga District, West Shoa zone Oromia , Ethiopia. *Journal of food science and quality management* .77 <https://core.ac.uk>
- Idenyi, E. (2014) Enhancing production competencies of fish farmers for sustainable food security in Ebonyi State. *Journal of science and computer education (JOSCED)* 3(2)95 -105
- Jfeanyieze, F.O (2010) Professional and technical skill improvement need of teachers of agricultural education programme in farm mechanization for effective teaching in colleges of education in South East Nigeria. *Nigeria Vocational Association Journal* 15(1)
- Liyanage, D.A.M Arawwawala and Horadugoda G.S.P Hewageegana (2017) Health benefits and traditional uses of honey: A review. *Journal of Apitherapy*. (2)1 DOI: 10.5455/JA.2017028043727 <https://www.japitherapy.com>
- Maher, C (2017) Beyond skill: why competencies are important as organization grows. The HR trove by wills, tower Watson Blob <https://blog.hrtrrove.com>
- Motuma, A. A and Bekesho, G (2016) Medicinal uses of honey. Research Gate (8)2 DOI: 10.4172/0974-8369.1000279 (8)2 <https://www.researchgate.net>
- Nwankwo, C.U, Ifeanyieze, F.O and Isiwu, E.C (2021) Efficacy of evidence –based

- test for assessment of performance of agricultural science students in cassava processing in Enugu State. *Asseren journal of educational research and development (AJRED)* (7)1, 145 - 154
- Nwankwo (2017) Enhancing the competencies of honey bee farmers for poverty reduction in Anambra State. *Refereed interdisciplinary journal, Lux Montis* 5(2) 1-10
- Nwankwo, C.U (2015) Analysis of honey harvesting competencies of bee farmers for improving honey harvesting for poverty reduction in South East Nigeria. *Journal of science and computer education (JOSCED)* 3(3) 74-84
- Noor, K.B, Noor, M. and Dola, M. (2015) Job competencies. <https://www.researchgate.net/publication>
- Olaitan, S.O, Alaribe, M.O and Eze, S.O (2010) Competency improvement needs of teachers in school farm management for teaching students practicals in crop production in secondary schools in Abia State. *Nigeria Vocational Association Journal* 15(1)
- Ponto, J (2015) Understanding and evaluating survey research. *Journal of the advanced practitioner in oncology* 6(2), 168-171
- Ryan, R. (2018). All about raw honey: how is it different than regular honey.
- Shaw, C.W (2020) Competency definition, development and assessment: A brief review: *International journal of academic research in progressive education and development* 9(3), 95 – 114 <https://www.researchgate.net>
- Tara, M (2017) How is honey processed. *Food technology magazine/article. Research Gate* (71)6
- Tatjana, P, Viktorija, S, Kalevska, T, and Stamatovska ((2019) Quality characteristics of honey: A review. *Research Gate* <https://www.researchgate.net>
- Usman, A. (2021) How to start honey business in Nigeria. <https://www.starhustlenow.com>
- Valosen, H. (2020) Marketing plan for local honey farm. *Lab University of Applied Science* <https://www.theseus>
- Wikijob, T (2022) Job competencies: definition, types and examples.