KAP Survey Report

Report on the Knowledge, Attitudes and Practices Survey on Pollinators and Pollination in Trinidad And Tobago

Biodiversity and Ecosystem Services Network,
Trinidad and Tobago Project

MINISTRY OF PLANNING AND DEVELOPMENT

BESNet
Biodiversity and Ecosystem Services Network

UNDP

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Inside cover

Citation

BES-Net TT (2022) - Report on the Knowledge, Attitudes and Practices Survey on Pollinators and Pollination in Trinidad And Tobago

Acknowledgements

The KAP survey was executed by the Project Management Unit (PMU) of the Biodiversity and Ecosystem Services, Trinidad and Tobago Project (BES-Net TT), a two-year initiative overseen by the Government of Trinidad and Tobago (GOTT) through the Ministry of Planning and Development (MPD), in collaboration with the United Nations Development Programme (UNDP). This project's funding is provided by the BES Solutions Fund, established within the Global Biodiversity and Ecosystem Services Network.

Leading the survey development and distribution were Lena Dempewolf, the Biodiversity Specialist from the Ministry of Planning and Development (MPD), Shane Ballah, serving as the Project Manager, along with Celeste Chariandy in her role as Science Communications Officer. Further support was contributed by the Public Education Officer of the Environmental Management Authority (EMA), who aided in raising awareness of the survey among school-based environmental clubs.

The collection of data at farmers' markets was organized by the Ministry of Agriculture, Land and Fisheries (MALF), facilitated by the collaborative efforts of the National Agricultural Marketing and Development Corporation (NAMDEVCO), in partnership with the University of the West Indies (UWI), Department of Food Production's 'Seed Swap' initiative. The execution of market surveys was assisted by individuals including Dan Jaggernauth, Carla Smith, Samantha Williams, Clare Bowen-O'Connor, and Joan Bowen-Superville.

Significantly, stakeholders and the general public displayed a cooperative attitude in responding to survey requests, participating actively through both survey submissions and face-to-face interviews.

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A programme at Stockholm Resilience Centre

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IKI INTERNATIONAL CLIMATE INITIATIVE

CONTENT

ACRONYMS

BES-NET	Biodiversity and Ecosystem Services Network
EMA	Environmental Management Authority
EPPD	Environmental Policy and Planning Division
GOTT	Government of Trinidad and Tobago
IKI	International Climate Initiative
KAP	Knowledge, Attitude and Practice
MALF	Ministry of Agriculture, Land and Fisheries
MPD	Ministry of Planning and Development
NAMDEVCO	National Agricultural Marketing and Development Corporation
PMU	Project Management Unit
PPM	Pollination and Pollinator Management
UNDP	United Nations Development Programme

SUMMARY

Pollinator challenges in Trinidad and Tobago result from data gaps, low public awareness, and inadequate management. To address this, a KAP survey was conducted from September 2021 to July 2022. It aimed to establish a baseline understanding of public knowledge, perception, and appreciation of pollination and pollinators' roles.

The PMU of the BES-Net TT project designed the survey, which was administered through SurveyMonkey online and in-person at chosen Farmers Markets.

A total of five fundred and eight (508) respondents participated in the survey. including one hundred and sixty-eight (168) males and three-hundred and thirty-six (336) females. The 35-44 years age cohort made up the largest group of respondents, accounting for 29.92% of total respondents.

Seventy-four percent (74%) of respondents (380 persons) were holders of advanced academic qualifications and the majority worked in the in the education (23.23%), agriculture (15.5%), and environment (15.35%) sectors.

Fifty-six percent (56%) of respondents came from suburban areas, 26% from urban areas and 18% from rural areas Within Trinidad the majority of respondents resided in the Tunapuna-Piarco Regional Corporation 18.5%. Tobago was under represented in the survey with just above 4% of the total number of respondents.

Survey partcipants were quite knowledgable on pollinators with 44% identifying honeybees as pollinators. Most respondents (91.49%) indicated that pollinators contributed directly or indirectly to food production and security.

The majority of respondents (62.86%) showed an understanding of pollination and its process. About 19.71% claimed to have a comprehensive knowledge, while roughly 15% acknowledged its importance but were uncertain about the specifics. Notably, 95% (458 persons) of respondents advocated for greater efforts to raise awareness about pollination's benefits in their local areas.

Respondents' preferences for selecting fruits and vegetables at the market were highlighted with the top criteria for selection being cost/price (80.74%). Regarding pest control methods used at home, the primary approach was insecticidal sprays (70% of respondents).

Roughly half of the respondents knew of stingless bees and most were interested in learning more about them (70.46%). Seventy-nine percent (79%) of respondents are interested in learning more about pollinators

The findings from this survey will be utilized in shaping the communication strategy of the project.

INTRODUCTION

Background

The Biodiversity and Ecosystem Services Network Trinidad and Tobago project or BES-Net TT project is a two-year project administered by the Government of Trinidad and Tobago (GOTT), Ministry of Planning and Development (MPD) with the support of the United Nations Development Programme (UNDP). The project is financed by the BES Solutions Fund of the Global Biodiversity and Ecosystem Services Network.

Issues facing pollinators in Trinidad and Tobago largely stem from a lack of data, public awareness and pollinator-appropriate management. This project aims to approach these challenges by engaging a broad range of stakeholders through a range of activities to address the science, policy and practice of pollination and pollinator management in Trinidad and Tobago.

The three expected outcomes are as follows:

- **Outcome 1**: Improved scientific knowledge of pollinators and pollination services in Trinidad and Tobago for improved decision-making
- **Outcome 2**: Improved conservation of pollinators and pollination services through improved plans and policies
- **Outcome 3**: The provision of education, tools and support to improve the practice and application of pollinator and pollination science in multiple contexts

Outcomes 1 and 2 are closely linked with research activities to build information on the science of pollinators and pollination and to gather information to guide the supply of recommendations on policy development inclusive of standards on honey production in stingless bees. To support successful realisation of Outcome 3 and contribute to the implementation of the project's approach to communication, a Knowledge, Attitudes and Practices (KAP) survey was initiated on 16th September 2021. This report presents the results of the survey.

What is a KAP survey?

A KAP survey is a representative study of a specific population to identify knowledge (K), attitudes (A) and practices (P) on a particular topic.

KAP surveys reveal misconceptions or misunderstandings that may represent obstacles to the activities that one would like to implement and potential barriers to behavior change.

This KAP survey initially took the form of an online questionnaire which was later adapted for face-to-face interviews with the public in selected locations.

AIMS & OBJECTIVES

The KAP survey was conducted to gather baseline information on the public's knowledge about pollination and pollinators, and its general understanding and valuing of the role of pollinators. The survey also sought to assess whether persons are exercising positive or negative actions towards pollinators and their interest in learning more about this group of organisms.

1. **Knowledge about pollination and pollinators, and the general understanding and valuing of the role of pollinators.**
2. **Attitudes towards pollinators and the threats they face within the environment.**
3. **Practices about pollination and pollinator management.**

Expected Outcomes

The expected outcomes of the 2022 KAP survey were:

- **To provide an assessment of the knowledge of the public on Pollination and Pollinator Management (PPM)**
- **To establish a baseline against which future efforts can be measured**
- **To inform the strategy, recommendations, and methodologies for addressing issues related to PPM to the public and stakeholders.**

Timeline for Conduct

2021 September

Planning

Including development of the questionnaire and review using in-house resources and identification of target stakeholders.

2021-2022 September to Janauary

Implementation

including distribution of the questionnaire using the SurveyMonkey online survey software, monitoring of data collection, quality control of data, and data entry.

2022 February

Review & Extension

including distribution of the questionnaire using the SurveyMonkey online survey software, monitoring of data collection, quality control of data, and data entry.

2022 July

Analysis & Reporting

Questionnaires from face to face interviewers were manually entered and merged with online responses. The final data set was analysed and the results presented for review. A final report documenting the process was prepared.

RESEARCH DESIGN

Methodology

The KAP survey was designed to collect quantitative and qualitative information from primary sources. Primary data was collected from two main sources including individual online respondents and individual face-to-face conduct of interviews.

Survey Questions

The survey questions were developed by the PMU with feedback from the EPPD and key stakeholders. It comprised 23 questions, 19 of which allowed selected responses and 4 which were open-ended requiring the respondent to type in a response. The survey questionnaire is attached as Appendix 1.

Target Audience & Survey Locations

The survey was conducted online using the using the SurveyMonkey online survey software platform and expanded to face-to-face survey delivery. Face-to-face deliveries were conducted at Farmers markets located in Trinidad (Figure 1).

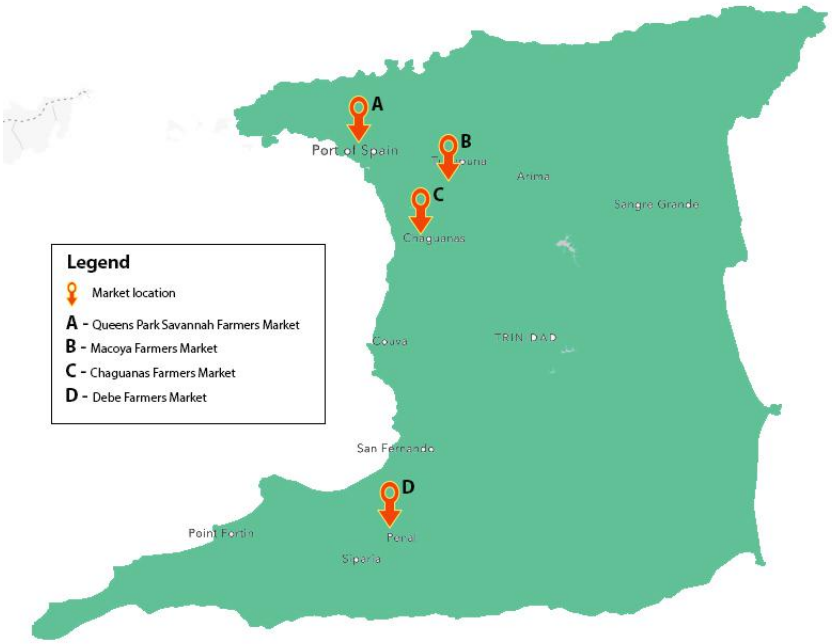


Figure 1. Map showing location of Farmers Markets.

Structure and Delivery of Survey

The survey comprised of 23 questions, 19 of which allowed selected responses and 4 which were open-ended requiring the respondent to type in a response. The survey questionnaire is attached as Appendix 1.

The survey was delivered online using the Survey Monkey platform and was open from September 2021 to January 2022. A link to the survey was widely shared in various networks through e-mail messaging from the BES-Net TT project team and through promotional advertising on the BES-Net TT Facebook page and Facebook pages of the Environmental Policy and Planning Division and the Ministry of Planning and Development.

The decision to conduct the survey using the online platform as opposed to face-to-face survey delivery or other options (e.g. telephone, mail) was made in light of existing restrictions on movement due to the ongoing Covid-19 pandemic. Online delivery using this platform also provided additional advantages of receiving purely anonymous responses and in reaching respondents from a wide geographic range.

In February 2022, a review of the survey responses was undertaken to produce a report. It was noted however that the response rate was low, as at that time, there were 348 responses. Additionally, when examining the demographic data of respondents, it was found that while each geographic district had representation (by Regional Corporation and Tobago), there was a preponderance of respondents from urban and suburban areas.

Perhaps because of the method of delivery of the survey, the level of educational qualification was mainly among persons holding advanced (post-secondary) qualifications. While there was some representation of persons who do not hold this level of qualifications, this percentage was less than 10% of respondents. There were also few respondents from the under 18 years age category.

A decision was taken to re-open the survey and encourage student (under 18 years) participation through advertisement in school environmental clubs through the assistance of the Public Education officer from the Environmental Management Authority. Additionally, the project team decided to undertake face-to-face surveying farmers' markets managed by the Ministry of Agriculture, Land and Fisheries, through the assistance of NAMDEVCO and partnership with the UWI's Department of Food Production 'Seed Swap' initiative.

The survey was officially closed at the end of July 2022.

RESULTS & DATA ANALYSIS

The survey responses were compiled and summarized by Survey Monkey, producing an Excel sheet of data and a PowerPoint presentation. Collated quantitative data is provided in Appendix 2. Key highlights are here provided.

Respondents Demographic Data

Gender:

A total of 508 respondents participated in the survey. One hundred and sixty-eight (168) respondents were male and three-hundred and thirty-six (336) respondents were female and the sex of four (4) respondents was not given. The number of female respondents was therefore approximately twice as many as male respondents.

Age:

Persons from the age category 35-44 years made up the largest group of respondents, accounting for 29.92% of total respondents, followed by 22.05% of respondents in the 45-54 years age category and 20.87% of respondents from the 25-34 years age category. Respondents from these three age categories together comprised approximately 72% of all respondents (Table 1).

Table 1. Number and percentage of survey respondents in various age categories.

Answer choice (years)	Response (numbers)	Response (%)
Under 18	9	1.77
18 – 24	34	6.69
25 – 34	106	20.87
35 – 44	152	29.92
45 – 54	112	22.05
55 – 64	62	12.20
65 – 74	24	4.72
75 or older	9	1.77

Education:

Seventy-four percent (74%) of respondents (380 persons) were holders of advanced academic qualifications, ranging from Associate to Bachelor to Masters degrees.

Respondents Demographic Data cont'd

Employment:

In terms of area of work, the largest percentage of respondents are engaged in education (23.23%), followed by agriculture (15.5%), environment (15.35%), science and research (6.69%) and public services and administration (5.71%). These respondents constituted just over 66.5% of the total number of persons responding to the survey.

Location:

Approximately ninety-five (95%) of respondents were from Trinidad and Tobago (= 484 respondents) while seventeen (17) others came from other Caribbean territories. Of the Trinidad and Tobago respondents, the distributions by Corporations included 18.5% (94 persons) for Tunapuna/Piarco, 10.04% (51 persons) for Couva/Tabaquite, and 4% (22 persons) from Tobago (Figure 2).

The contribution of respondents from Tobago to the overall total numbered 22 persons and was just above 4% of the total number of respondents. Fifty-six percent (56%) of respondents came from suburban areas, 26% came from urban areas and 18% came from rural areas.

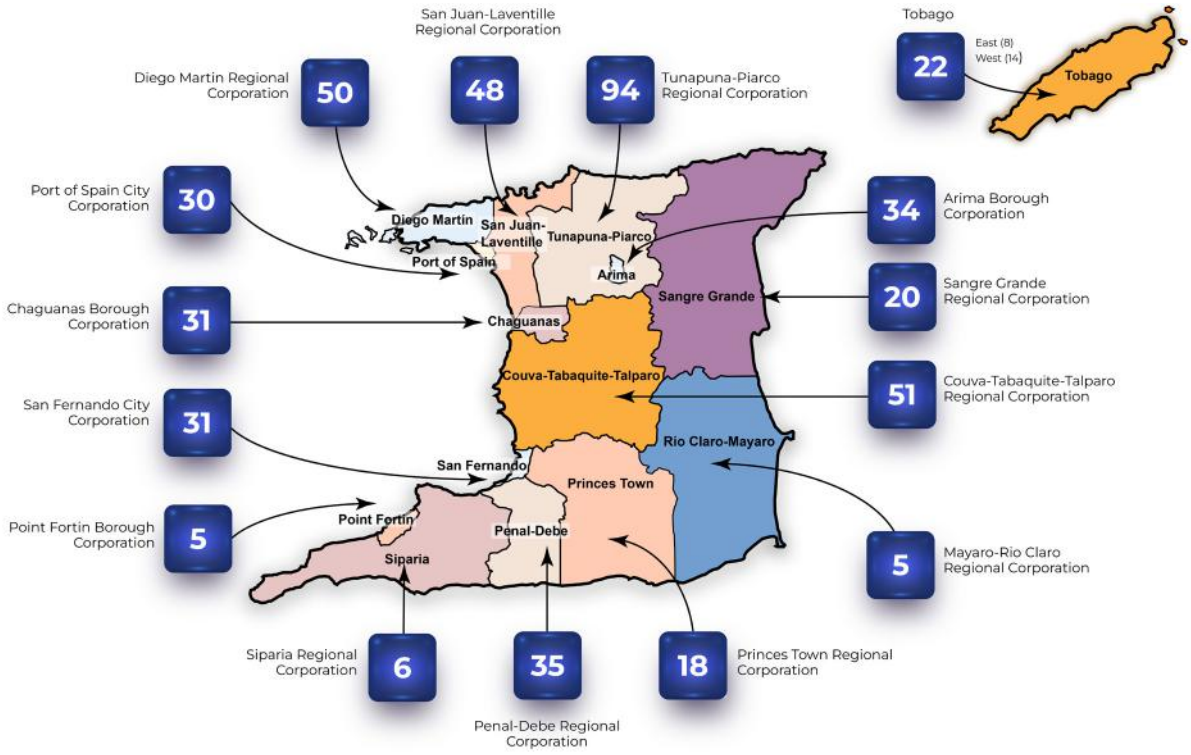


Figure 2. Map showing distribution numbers for respondents from municipalities in Trinidad and for Tobago

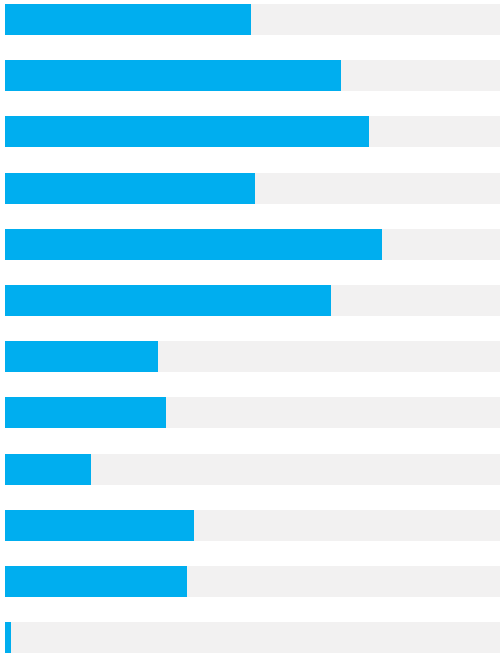
Knowledge of Pollinators

Respondents indicated their knowledge of a range of pollinators; large numbers of respondents indicated awareness of pollination by honeybees (370 persons), butterflies (359 persons), birds (332 persons) and native bees (321 persons). Less persons were aware of pollination by wasps (242 persons), bats (240 persons) and humans (185 persons). One hundred and eighty (180) persons indicated that they were aware of pollination by all ten (10) animal types listed in the question, while four (4) persons were unaware of pollination by any of the listed animals (Figure 3).

Approximately forty-four percent (44%) of respondents (211 persons) considered honeybees to be the most important pollinators, while approximately thirty-five percent (35%) of respondents (170 persons) considered native bees to be the most important, together accounting for 79% of persons who responded to this question.

Most respondents (91.49% = 441 persons) indicated that pollinators contributed

Answer Choice	Response	N
Bats	49.79%	240
Birds	68.88%	332
Butterflies	74.48%	359
Wasps	50.21%	242
Honeybees	76.76%	370
Native bees	66.60%	321
Flies	30.50%	147
Ants	33.61%	162
Lizards	17.43%	84
Humans	38.38%	185
All of the above	37.34%	180
None of the above	0.83%	4



N = No of responses.

Figure 3. Survey respondents' knowledge of pollinator types.

directly or indirectly to food production and security. Other popular responses were that they contributed to: Diversity of other plants and animals (412 persons), Source of income for farmers (381 persons) and Aesthetic value of the environment (340 persons). Seventy-two percent (72%) of 483 respondents thought that pollinators were extremely, very or somewhat important to the health of the area in which the respondent lives.

Knowledge of Pollination

Most respondents (303 persons = 62.86%) indicated that they understand what pollination is and how it occurs. Ninety-five (95) persons (= 19.71%) said they know more than 'their fair share', while seventy-four (74) persons (approximately 15%) indicated that they know it is important but are not too sure exactly how it occurs. Ninety-five percent (95%) of respondents (= 458 persons) indicated that more should be done to increase awareness of the benefits of pollination where the respondents live.

Pest Control Matters

Respondents indicated the criteria applied when selecting fruits and vegetables in the market. The most selected criteria were cost/price (80.74%), followed by general appearance (73.52%), local vs foreign (64.33%), nutrient content (40.84%) and if pesticide-free grown (40.26%) (Table 2).

Respondents indicated the pest control methods used in their homes. The most popular method was insecticidal sprays (70% of respondents), followed by use of physical barriers (53% of respondents), insect repellents applied to the skin (49% of respondents), hand-held bug/mosquito zappers (40% of respondents) and citronella candles (37% of respondents). Five percent of respondents (17 persons) indicated that they use no method of pest control.

The most common pests that caused problems for respondents were: mosquitoes (334 persons), followed by ants (231 persons), flies (187 persons), mealy bugs (131 persons) and whiteflies (100 persons). Most respondents (370 persons) indicated that they would consider learning new ways to combat insect pests.

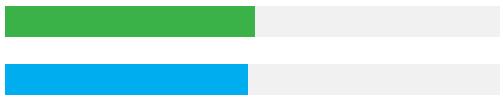
Table 2. Responses for criteria used when selecting fruits and vegetables.

Answer Choices	Number of respondents	Percentage
Cost/price	369	80.74
General Appearance (e.g. large size, no blemishes)	336	73.52
Local vs. Foreign	294	64.33
Nutrient content	185	40.48
Pesticide-free grown	184	40.26
Organically grown	180	39.39
Non-GMO	109	23.85
Convenient and/or attractive packaging	75	16.41
Other	27	5.91
None of the above	3	0.66

Knowledge of Stingless Bees

Fifty-one percent (51%) of respondents have heard about stingless bees and forty-nine percent (49) have not (Figures 4 and 5). Most respondents (70.46%) are definitely interested in learning more about stingless bees and their importance, approximately twenty-six percent (26%) probably would be interested, approximately three percent (3%) probably would not be interested (Figure 4).

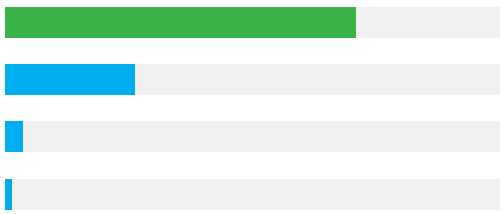
Answer Choice	Response	N
Yes	50.55%	231
No	49.45%	226



N = No of responses.

Figure 4. Survey respondents' knowledge of stingless bees.

Answer Choice	Response	N
Definitely would	70.46%	322
Probably would	25.82%	118
Probably would not	3.06%	14
Not really interested	0.66%	3



N = No of responses.

Figure 5. Survey respondents' interest in learning more about stingless bees.

Interest in Learning About Pollinators

Seventy-nine percent (79%) of respondents are interested in learning more about pollinators. With respect to what persons would like to learn more about, the responses were varied and were categorised into four broad groups of responses (Table 3). Figure 6 presents a clud capture illustration of the responses.

Table 3. Main themes of interest of respondents for more information.

Information on Pollinators	Important pollinators
	Types of pollinators in Trinidad and Tobago
	Pollinators associated with particular plants
	A checklist of native bees in Trinidad and Tobago
	Life cycles of pollinators
	Pollinators in urban environments
	Home gardens and pollinators
	How to identify pollinators
	Honey bees versus native bees
	Stingless bees and rearing them
	Rearing butterflies
	Local threats to pollinators
Pollination	The process of pollination
	Hand pollination
	Food/economic impact of pollination
Management Matters	Bat control
	Natural and safe pest control
	Pollinators that control pests
	Soil health management
	Habitat management to protect pollinators
How to	How to protect and conserve pollinators
	How to educate others about pollinators
	How to introduce pollinators on farms
	How to develop a pollinator garden
	How to develop a hummingbird garden
	How to attract pollinators/what to plant to attract pollinators
	How to get butterflies to return
	How to create sustainable environments for pollinators

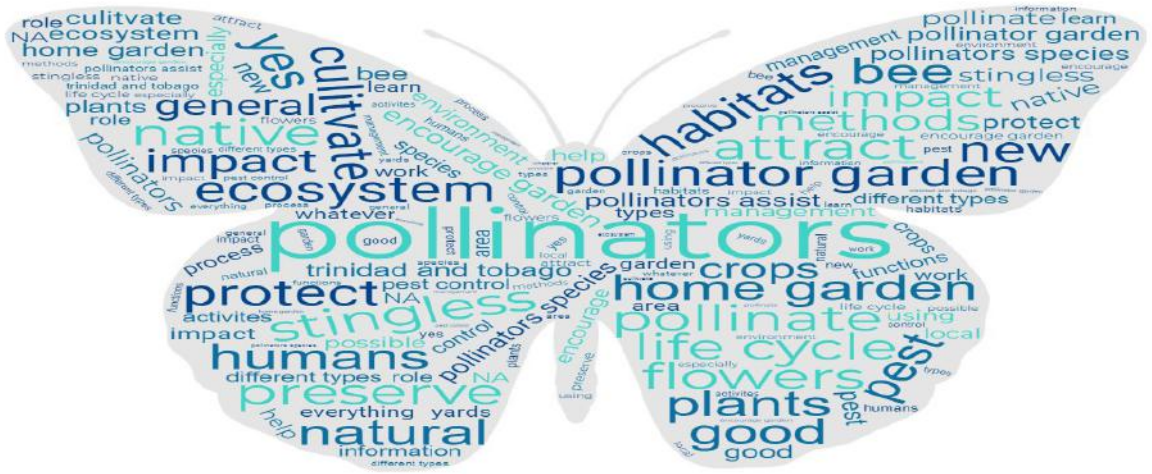


Figure 6. Word cloud capture of responses on areas of interest of respondents on pollination.

Means of communication

Respondents shared their feedback on the preferred media for receiving information. The most popular media selected was a close majority for E-mail and digital newsletters for 258 respondents (57.85%) and Video/You Tube for 257 respondents (57.62%). This was followed by Webinars and online training events for 179 persons (40.13%), Facebook for 170 respondents (38.12%) and website for 161 persons (36.10%) (Figure 7).

Answer Choices	Responses	N
E-mail and digital newsletters	57.85%	258
Instagram	27.13%	121
Facebook	38.12%	170
Twitter	11.21%	50
Webinars and online training events	40.13%	179
Physical workshops	19.96%	89
Via our website	36.10%	161
Printed brochures and other materials	18.83%	84
Video/YouTube	57.62%	257
Other (please specify)	5.83%	26

N = No of responses.

Figure 7. Main media preferred by survey respondents for receiving information.

DISCUSSION

The number of responses to the survey was lower than desired, however the results were examined to provide some useable information. Some discussion of the feedback gathered is provided below.

Demographics of Respondents

The survey captured feedback from respondents spread across both islands. The number of respondents from Tobago was low but contributed to the wide representation from all districts of the two islands. Each regional corporation and city jurisdiction was represented. Initially there was a preponderance of respondents from urban and suburban areas, however the additional face-to-face surveys done through market venues greatly enhanced the number of respondents from rural areas in east and south Trinidad.

Perhaps because of the initial method of delivery of the survey, the level of educational qualification was mainly among persons holding advanced (post-secondary) qualifications. Representation of persons who do not hold this level of qualifications was initially less than 10% of respondents, but this increased upwards to 26% after face-to-face delivery of surveys was undertaken.

The areas of employment of most respondents were mainly in education, agriculture and environment.

Knowledge of Pollinators and Pollination

Given the advanced qualifications held by most respondents, it was unsurprising that there were stated high levels of knowledge of pollinators – validated by the number of persons who were able to identify key pollinators – and some knowledge of pollination.

The results however indicated that there is some scope to build knowledge about lesser-known pollination agents, such as bats and wasps, which were known to less than 50% of respondents. Information on the importance of the pollination process also need to be shared.

Knowledge of stingless bees was only marginally better than no knowledge, but

The results indicated that there is scope to build knowledge of lesser-known pollinators, including bats and wasps.

Most respondents use insecticidal sprays for pest control and are interested in obtaining information on alternative pest control methods.

most respondents indicated their interest in learning more about these pollinators.

Most respondents were in fact supportive of more being done to build awareness of pollinators and the importance of pollination within their communities.

Attitudes and Actions

An examination of the results regarding criteria for selection of produce in the market and pest control strategies in the home was able to reveal some of the attitudes and actions of respondents.

Pesticide-free cultivation was less a criterion for selection of fruits and vegetables at the market than appearance or cost of the items. This may be because the consumers do not ask about pesticide use or because the goods do not come with any notification of pesticide use during cultivation, or that it does not matter to these respondents.

There was widespread use of insecticidal sprays by respondents, with only a narrow majority of them opting to use physical barriers and insect repellents for pest control. A minority of respondents used pest-specific control methods or no pest control at all. The main insect pests cited were mosquitoes, flies and ants. Interest was expressed in learning about alternative pest control methods.

Interest in learning more about pollinators

Most respondents are interested in learning more about pollinators, despite a stated high level of awareness of these organisms. The avenues which were identified as preferred means of communication demonstrated strong use of the Internet by these respondents, in their choices of You Tube, e-mail, Facebook, webinars and website, in that order. Printed matter and physical workshops were less preferred; a further examination of these responses indicated that the selection of these methods was mainly by persons aged 25-54 years. On the other hand, use of Twitter was prefeed by those aged 25-44 years.

The survey captured feedback from respondents from every Regional Corporation District and from Tobago.

Approximately three-quarter of the total number of respondents were holders of post-secondary / degree qualifications.

GOING FORWARD

The results of this survey will be referenced in the development of the project's communication plan, to advise on areas of emphasis for sharing of information and engagement of stakeholders in project activities. Through its connection to relevant Government agencies and non-governmental organizations, the BES-Net TT team will also promote these findings to the extent that their consideration may be useful in the operations of these bodies.

Figure 5A. Celeste Chariandy, Science Communications Officer of the PMU interacts with a respondent at the Chaguanas Farmers Market.

Figure 5B and 5C. Respondents complete surveys at the Queens Park Savannah Farmers Market

APPENDIX I

Survey Questionnaire

Biodiversity and Ecosystem Services Network Trinidad and Tobago Project

Knowledge, Attitude and Practice (KAP) Survey Questionnaire

This questionnaire was developed to conduct a survey of the public to gather information pertaining to pollination and pollinator management in Trinidad and Tobago. All information is captured anonymously and the findings at the conclusion of the survey exercise will be shared with the public.

1. What is your gender? ☐ Male ☐ Female

2. What is your age? _____

3. What is the highest educational level you have completed?

☐ Primary school
☐ Some high school, but no diploma
☐ High school diploma
☐ Some college or university, but no degree
☐ Associate degree
☐ Bachelor degree
☐ Graduate-level degree
☐ None of the above

4. What sector do you work in?

☐ Accountancy, banking & finance
☐ Agriculture
☐ Business, consulting & management
☐ Charity & voluntary work
☐ Creative arts and design
☐ Education
☐ Energy & utilities
☐ Engineering and manufacturing
☐ Environment
☐ Healthcare
☐ Hospital & event management
☐ Information technology
☐ Law
☐ Law enforcement & security
☐ Leisure & sport
☐ Marketing, advertising & PR
☐ Media & internet
☐ Property & construction
☐ Recruitment & HR
☐ Retail
☐ Sales
☐ Science & research
☐ Social care
☐ Tourism
☐ Transport & logistics
☐ Other (please specify

5. Where in the Caribbean do you currently reside? _____

Survey Questionnaire

6. If you currently live in Trinidad and Tobago, where do you live? (If you live elsewhere, check "N/A")

☐ Arima Borough Corp
☐ Chaguanas Borough Corp
☐ Couva-Tabaquite-Talparo Regional Corp
☐ Diego Martin Regional Corp
☐ Penal-Debe Regional Corp
☐ Point Fortin Borough Corp
☐ Port of Spain City Corp
☐ Princes Town Regional Corp
☐ Rio Claro Mayaro Regional Corp
☐ San Fernando City Corp
☐ San Juan-Laventille Regional Corp
☐ Sangre Grande Regional Corp
☐ Siparia Regional Corp
☐ Tunapuna-Piarco Regional Corp
☐ Tobago

7. Do you live in an urban, suburban or rural area?

☐ Urban ☐ Sub-Urban ☐ Rural

8. Pollination is the transfer of pollen grains from the male reproductive parts to the female reproductive parts of a flower to allow for fertilization, which results in seeds and fruits. Depending on the type of plant, this is carried out by wind or animals and is very important to food production and biodiversity. Can you identify any known pollinator from the list below? Click all that apply.

☐ Bats
☐ Birds
☐ Butterflies
☐ Wasps
☐ Honeybees
☐ Native bees
☐ Flies
☐ Ants
☐ Lizards
☐ Humans
☐ All of the above
☐ None of the above

9. Which of the following answers to Question 8 do you believe to be the most important pollinator?

_____

10. Which of the following do you think pollinators contribute to directly or indirectly? Click all that apply.

☐ Diversity of other plants and animals
☐ Water quality
☐ Nutrient cycling (elements such as carbon and nitrogen are recycled and made available to other organisms)
☐ Source of income for farmers
☐ Food production and security
☐ Air quality
☐ Aesthetic value of the environment (for example, spiritual values, enjoyment of nature, etc.)
☐ None of the above

Survey Questionnaire

11. How important do you think pollinator are to the health of the area where you live as a whole?

☐ Extremely important ☐ Very important ☐ Somewhat important

☐ Not so important ☐ Not at all important

12. How much knowledge do you think you have involving the process of pollination and the animals that carry it out?

☐ I know everything there is to know ☐ I know more than my fair share

☐ I understand what pollination is and how it occurs ☐ I know it is important, but not too sure exactly how it occurs

☐ I don't really want to know

13. Do you believe we should do more to increase awareness of the benefits of pollination where you live?

☐ Yes ☐ No ☐ No opinion

14. What criteria do you use in selecting your fruits and vegetables in the market? Click all that apply.

☐ General appearance (e.g., large size, no blemishes) ☐ Nutrient content

☐ Organically grown ☐ Cost / price

☐ Convenient and/or attractive packaging ☐ Non-GMO

☐ Pesticide-free grown ☐ Local vs foreign

☐ Other (please specify) _____

15. What type of pest control method do you use in your household? Click all that apply.

☐ None at all ☐ Handheld bug zappers / mosquito rackets

☐ I don't know, that is left to my gardener ☐ Insect light traps/bug zappers

☐ Insecticidal sprays (e.g., BOP, Protox, Baygon, Det etc.) ☐ Burning of plant material

☐ Mosquito coils, Bugmat ☐ Citronella candles

☐ Agricultural pesticides/chemicals (including sevin powder) ☐ Insect repellent sprays or creams applied to the skin (e.g., Off, Odomos, natural insect repellent sprays, etc.)

☐ Natural means (marigold, garlic etc.) ☐ Bats (for insects, rats, snails, etc.)

☐ Physical barriers – screens, turning over of water containers, etc. ☐ Diatomaceous earth

Survey Questionnaire

16. What pests cause the most problems for you? Click all that apply.

☐ Whiteflies	☐ Mole crickets	☐ Flies	☐ Earthworms
☐ Crickets	☐ Ants	☐ Mosquitoes	☐ Birds
☐ Assassin bugs	☐ Beetles	☐ Aphids	☐ Rats
☐ Nematodes	☐ Giant African Snail	☐ Mealybugs	☐ Stink Bugs
☐ Diamondback Moth	☐ Snails (other than Giant African Snail)	☐ Other	☐ None of the above

17. Would you consider learning new ways to combat insect pests?

☐ Definitely would ☐ Probably would ☐ Probably would not ☐ Not really interested

18. Have you heard about stingless bees? ☐ Yes ☐ No

19. Are you interested in learning more about stingless bees and their importance?

☐ Definitely would ☐ Probably would ☐ Probably would not ☐ Not really interested

20. Want to learn more about pollinators?

☐ Yes please! Where do I sign up? ☐ No thanks, I'm good.

21. If so, what would you like to learn about pollinators?

_____

22. What is your preferred media to receive information about pollinators and pollination? Click all that apply.

☐ E-mail and digital newsletters	☐ Physical workshops
☐ Instagram	☐ Via our website
☐ Facebook	☐ Printed brochures and other materials
☐ Twitter	☐ Video/YouTube
☐ Webinars and online training events	☐ Other (please specify)

23. If you would like to be added to our e-mail list for future newsletters, bulletins, and information about upcoming pollination events and projects, please provide us with your name and e-mail address below. You may leave the rows below blank if you wish to remain anonymous.

Name _____

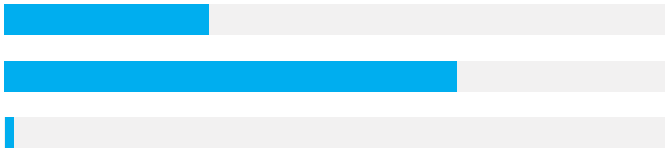
E-Mail _____

APPENDIX II

Survey Collated Results

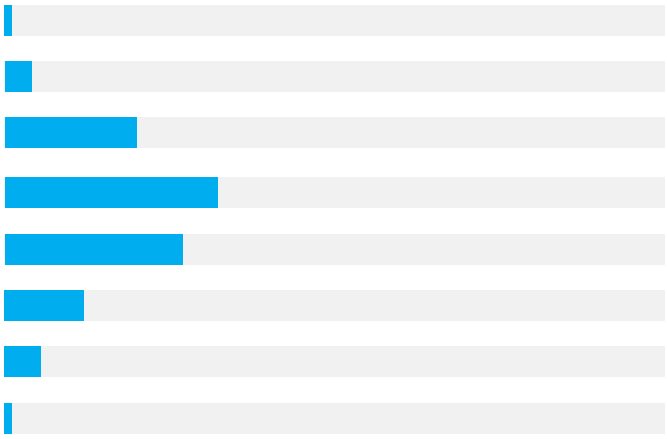
Question 1.
What is your gender?

Male	**33%**
Female	**66%**
Other	**1%**



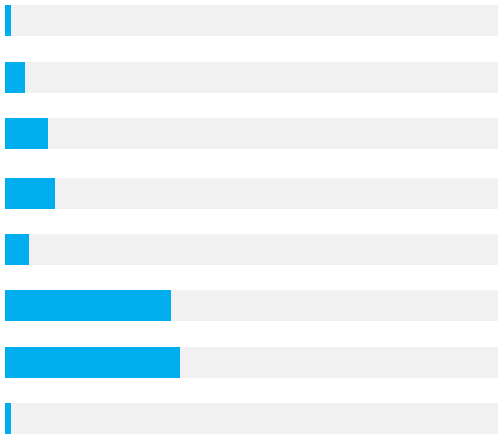
Question 2.
What is your age?

Under 18	**1.77%**
18 to 24	**6.69%**
25 to 34	**20.87%**
35 to 44	**29.92%**
45 to 54	**22.05%**
55 to 64	**12.20%**
65 to 74	**4.72%**
75 or older	**1.77%**



Question 3.
What is the highest level of chool that you have completed?

Primary school	1.58%
Some high school but no diploma	4.14%
High school diploma	8.48%
Some college or University but no degree	10.06%
Associate degree	4.73%
Bachelor degree	34.52%
Graduate level degree	35.70%
None of the above	0.79%



Survey Collated Results

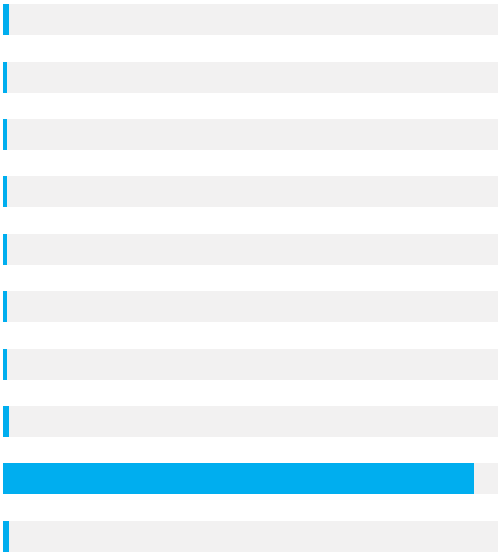
Question 4.
What sector do you work in?

Accountancy, banking & finance	2.95%
Agriculture	15.55%
Business, consulting & management	3.94%
Charity & voluntary work	3.74%
Creative arts and design	3.94%
Education	23.23%
Energy & utilities	3.94%
Engineering and manufacturing	3.94%
Environment	15.35%
Healthcare	4.33%
Hospital & event management	1.97%
Information technology	5.31%
Law	1.57%
Law enforcement & security	2.17%
Leisure & sport	0.39%
Marketing, advertising & PR	2.76%
Media & internet	1.97%
Property & construction	2.17%
Public Services & administration	5.71%
Recruitment & HR	0.20%
Retail	1.77%
Sales	1.57%
Science & research	6.69%
Social care	0.79%
Tourism	3.74%
Transport & logistics	0.39%
Other (please specify	14.76%

Survey Collated Results

Question 5.
Where in the Caribbean do you currently reside?*

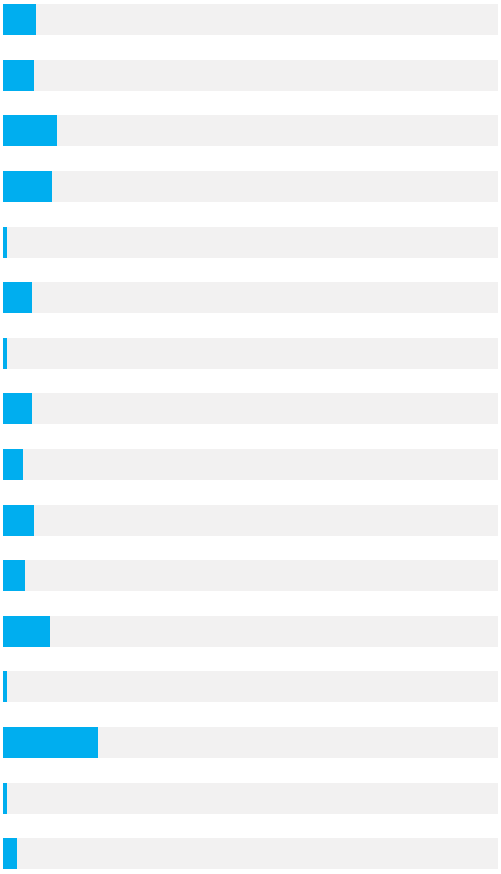
Antigua and Barbuda	0.40%
Aruba	0.79%
Bahamas	0.20%
Barbados	0.40%
Dominica	0.20%
Grenada	0.20%
Jamaica	0.79%
Sain Lucia	0.59%
Trinidad and Tobago	95.84%
Other (please specify)	0.59%



*Only those countries for which responses were received are provided.

Question 6.
If you currently live in Trinidad and Tobago, where do you live?

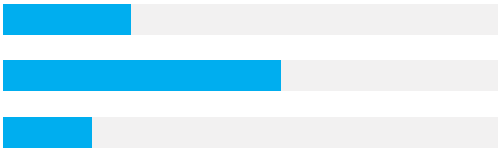
Arima Borough Corp	6.69%
Chaguanas Borough Corp	6.10%
Couva-Tabaquite-Talparo Regional Corp	10.04%
Diego Martin Regional Corp	9.84%
Mayaro-Rio Claro Regional Corp	0.98%
Penal-Debe Regional Corp	6.89%
Point Fortin Borough Corp	0.98%
Port of Spain City Corp	5.91%
Princes Town Regional Corp	3.54%
San Fernando City Corp	6.10%
Sangre Grande Regional Corp	3.94%
San Juan-Laventille Regional Corp	9.45%
Siparia Regional Corp	1.18%
Tunapuna-Piarco Regional Corp	18.50%
Tobago East	1.57%
Tobago West	2.76%



Survey Collated Results

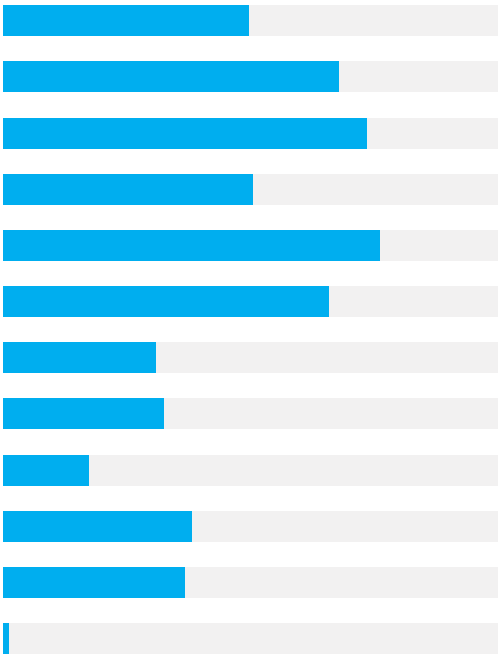
Question 7.
Do you live in an urban, suburban or rural area?

Urban	26.18%
Suburban	56.10%
Rural	17.72%



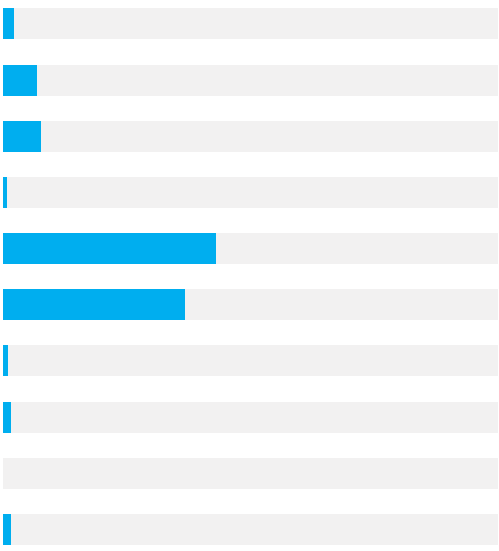
Question 8.
Can you identify any known pollinator from the list below?

Bats	49.79%
Birds	68.88%
Butterflies	74.48%
Wasps	50.21%
Honeybees	76.76%
Native bees	66.60%
Flies	30.50%
Ants	33.61%
Lizards	17.43%
Humans	38.38%
All of the above	37.34%
None of the above	0.83%



Question 9.
Which of the answers to Question 8 do you believe to be the most important pollinator?

Bats	2.28%
Birds	6.22%
Butterflies	6.64%
Wasps	0.83%
Honeybees	43.78%
Native bees	35.27%
Flies	0.21%
Ants	0.41%
Lizards	0.00%
Humans	1.04%

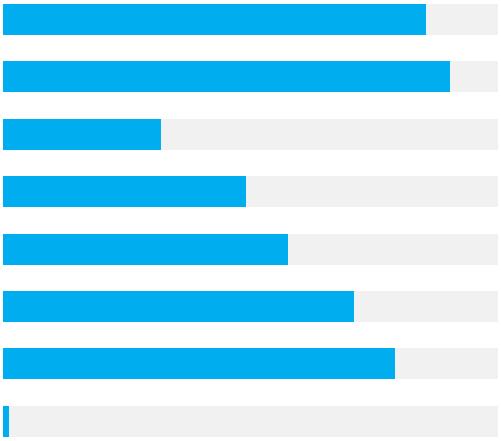


Survey Collated Results

Question 10.

Which of the following do you think pollinators contribute to directly or indirectly?

Diversity of other plants and animals	85.48%
Food production and security	91.49%
Water quality	32.16%
Air quality	49.17%
Nutrient cycling	57.88%
Aesthetic value of the environment	70.54%
Source of income for farmers	79.05%
None of the above	0.62%



Question 11.

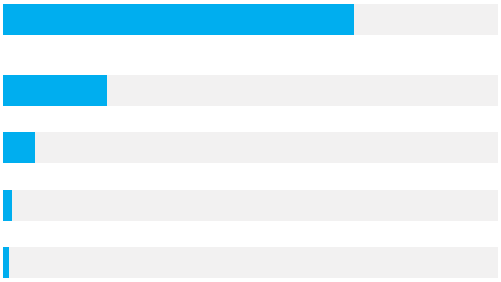
How important do you think pollinator are to the health of the area where you live as a whole?

Extremely important	71.78%
Very Important	20.33%
Somewhat important	6.02%
Not so impoprtant	1.66%
Not at all important	0.21%

Question 12.

How much knowledge do you think you have involving the process of pollination and the animals that carry it out?

Extremely important	71.78%
Very Important	20.33%
Somewhat important	6.02%
Not so impoprtant	1.66%
Not at all important	0.21%

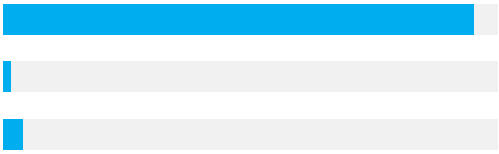


Survey Collated Results

Question 13.

Do you believe we should do more to increase awareness of the benefits of pollination where you live?

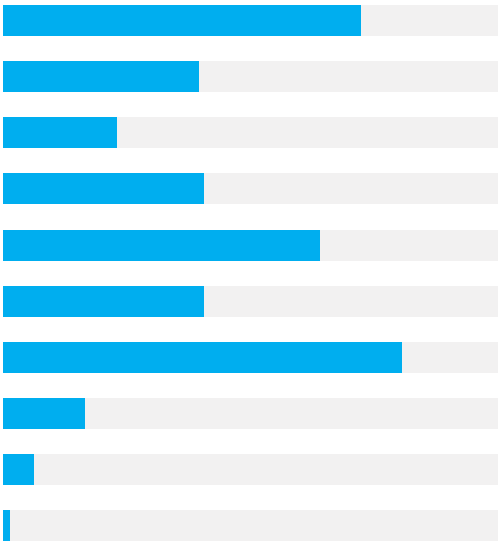
Yes	95.02%
No	1.45%
No opinion	3.53



Question 14.

What criteria do you use in selecting your fruits and vegetables in the market?

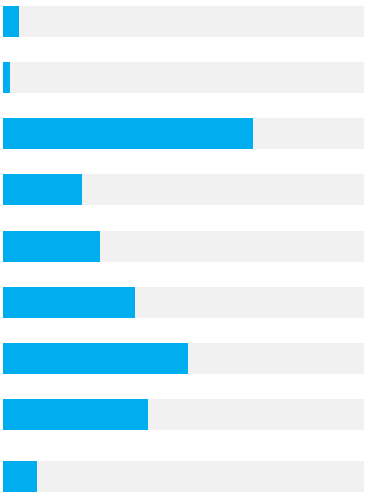
General appearance	73.52%
Organically grown	39.39%
Non-GMO	23.85%
Pesticide-free grown	40.26%
Local vs foreign	64.33%
Nutrient content	40.48%
Cost / price	80.74%
Convenient and/or attractive packaging	16.41%
Other	5.91%
None of the above	0.66%



Question 15.

What type of pest control method do you use in your household?

None at all	4.81%
I don't know, that is left to my gardener	0.88%
Insecticidal sprays (e.g., BOP, Protox, Baygon, Det etc.)	69.80%
Mosquito coils, Bugmat	22.32%
Agricultural pesticides/chemicals (including sevin powder)	25.82%
Natural means (marigold, garlic etc.)	35.45%
Physical barriers – screens, turning over of water containers, etc.	52.52%
Handheld bug zappers / mosquito rackets	39.82%
Insect light traps/bug zappers	9.63%



Survey Collated Results

Question 15. cont'd
What type of pest control method do you use in your household?

Burning of plant material	5.91%
Citronella candles	37.20%
Insect repellent sprays or creams applied to the skin	49.45%
Bats (for insects, rats, snails, etc.)	29.54%
Diatomaceous earth	2.63%
Other	5.03%

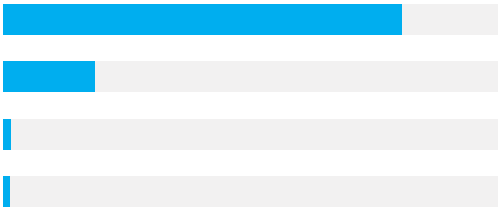
Question 16.
What pests cause the most problems for you?

Whiteflies	21.88%
Crickets	8.10%
Assassin bugs	2.84%
Mole crickets	13.35%
Ants	50.55%
Beetles	4.81%
Flies	40.92%
Mosquitoes	73.09%
Aphids	22.32%
Snails (other than Giant African Snail)	7.44%
Earthworms	0.66%
Birds	7.00%
Rats	20.35%
Nematodes	7.44%
Giant African Snail	16.85%
Mealybugs	28.67%
Stink Bugs	9.41%
Diamondback Moth	6.35%
Other	10.94%
None of the above	2.19%

Survey Collated Results

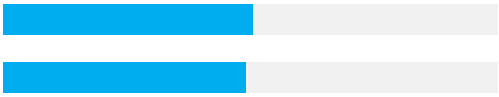
Question 17.
Would you consider learning new ways to combat insect pests?

Definitely would	80.96%
Probably would	18.16%
Probably would not	0.44%
Not really interested	0.44%



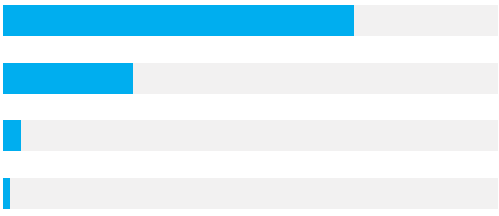
Question 18.
Have you heard about stingless bees?

Yes	50.55%
No	49.45%



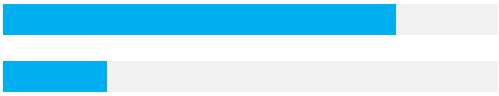
Question 19.
Are you interested in learning more about stingless bees and their importance?

Definitely would	70.46%
Probably would	25.82%
Probably would not	3.06%
Not really interested	0.66%



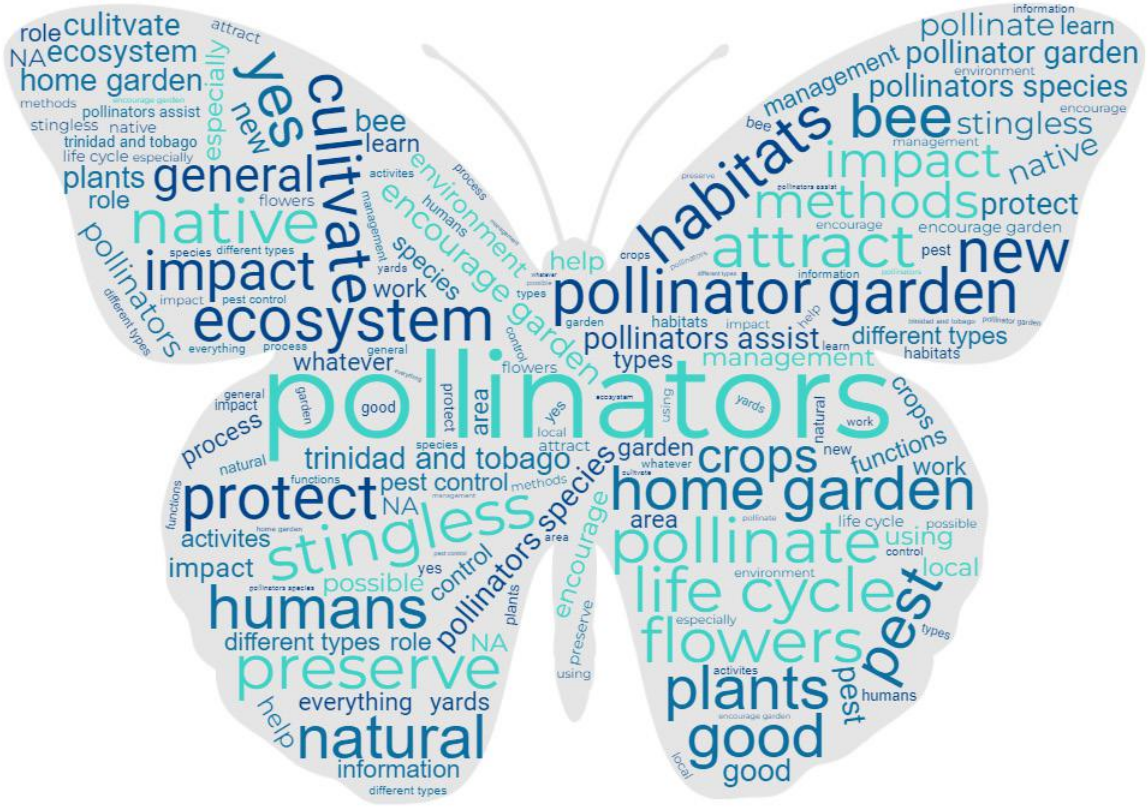
Question 20.
Want to learn more about pollinators?

Yes please! Where do I sign up?	79.43%
No thanks, I'm good	20.57%



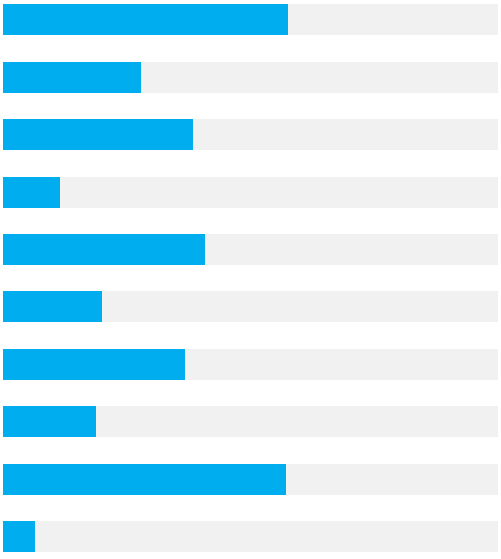
Survey Collated Results

Question 21.
If so, what would you like to learn about pollinators?



Question 22.
What is your preferred media to receive information about pollinators and pollination?

E-mail and digital newsletters	57.85%
Instagram	27.13%
Facebook	38.12%
Twitter	11.21%
Webinars and online training events	40.13%
Physical workshops	19.96%
Via our website	36.10%
Printed brochures and other materials	18.83%
Video/YouTube	57.62%
Other (please specify)	5.83%



Note: In some instances respondents were required to select more than one response. Refer to actual questionnaire for details.

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Inside cover

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MINISTRY OF PLANNING AND DEVELOPMENT

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