

# REPORT OF THE ETHNOGRAPHIC FIELD SCHOOL IN BELIZE (JUNE 2018 SEASON)



CENTER FOR APPLIED ANTHROPOLOGY, NORTHERN KENTUCKY UNIVERSITY

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We also appreciate the assistance of Sarah Hume for editing drafts of this report, although any errors still contained within are our own.

## **Introduction**

This report documents the findings of the Ethnographic Field School in Belize organized by the Center for Applied Anthropology (CfAA) at Northern Kentucky University (NKU) in Orange Walk District, Belize, during June and July 2018. Ethnographic interviews were conducted within the communities of San Estevan, San Lazaro, and Yo Creek in cooperation with the Sugar Industry Research and Development Institute (SIRDI), Belize Sugar Cane Farmers Association (BSCFA), Progressive Sugar Cane Producers Association (PSCPA), and the three communities within which interviews took place. This field season's research focused on the following topics: community development (i.e., education expenses, child labor, traditional medicine, and health concerns) and sugar cane farming (i.e., sugar cane organization perceptions, association involvement, sugar cane price drop, and sugar cane knowledge transmission). This report presents the preliminary findings of the 2018 field season and recommends what research questions should be pursued in the next field season.

## **Background**

While the educational aim of the ethnographic field school is to train students in basic ethnographic methods, the applied purpose of the field school is to collect and analyze data that can then be used by SIRDI, BSCFA, PSCPA, and community members in the development of programs for betterment of the sugarcane farming communities in northern Belize. As posted on the field school's web site (CfAA 2019):

This course immerses students in Belizean culture and trains them in contemporary anthropological field methods. Students will gain valuable research skills (e.g., ethnographic interviewing and qualitative data analysis) to apply anthropology in their future careers (e.g., applied anthropology or other social/behavioral discipline), an appreciation for Belizean cultural diversity, and further their personal growth. While in Belize, students will be primarily engaged in guided applied ethnographic fieldwork. Students will learn about the local culture by doing participant-observation and conducting ethnographic interviews in a community-based research project. Students will learn research ethics, unobtrusive observation, participant observation, field note writing and coding, ethnographic and life history interviewing, ethnolinguistic data collection, community mapping, rapid assessment procedures, qualitative data analysis, and other ethnographic methods in addition to basic ethnographic writing. After successful completion of this course, students will have:

- developed a basic understanding of Belizean culture,
- developed a basic understanding of Belizean culture,
- formulated an understanding of ethical and validity issues in ethnographic research,
- practiced skills in research design and ethnographic methods of data collection,
- applied basic ethnographic research methods in a non-western culture,
- engaged in a community-based research project, and
- analyzed ethnographic data resulting in an ethnographic monograph.

Since the literature review was written for last season's report (Hume et al. 2018), there have been five notable scholarly publications related to this field school's research. Two articles which examined diabetes in Belize: 1) the struggles to keep healthy and acquire care for diabetes

(Moran-Thomas 2019) and 2) traditional Mayan medicines' efficacy on type 2 diabetes (Ferrierab, Saleemc, and Carter 2018). There have been also two articles published on community-based programs: 1) the potential roles women might play in community-based conservation programs (Kaeser and Willcox 2018) and 2) the role communities may play in the scholarship of their history (McGill 2018). Finally, one article examines how marginal lands may have beneficial consequences for poorer people in Orange Walk (Wells, Stuart, Furley, and Ryan 2018).

## **Methods**

As in previous field seasons, upon arrival in the villages of San Estevan, San Lazaro, and Yo Creek, Antonio Novelo (Jungle River Tours) introduced the field school members to village council representatives and assisted Douglas Hume in explaining our collaborative research project to gain local approval for our presence in the community. Each village council gave their permission and was supportive of our efforts. We presented printed copies of last year's report to the councils of San Antonio, San Estevan, San Lazaro, and Yo Creek (Hume et al. 2018).

Participants of the field school (Karin Floyd-Glutz, Autumn Gilbert, Rachael Haupt, Fantasia Mejia, Laura Oprisch, Adriane Pontecorvo, and Andrea Shiverdecker) conducted house-to-house interviews in a census sampling methodology. The Cooperative Center for Study Abroad hired Antonio Novelo (Jungle River Tours) as the field school's land agent. He served as both as cultural liaison and research assistant during field research. Mr. Novelo explained our general purpose and introduce students to community members. Students would then present the informed consent statement in both English (Appendix I) and Spanish (Appendix II) and upon agreement to take part, have the informant sign a copy (on file) and offer an unsigned copy for the informant's records.

Interviews were conducted on the informant's property (e.g., porch, house, et cetera) with a pair of students, one serving as the primary interviewer and the other as observer. The standard method used for this research was the ethnographic interview (Spradley 2016), which is informant centered (Levy and Hollan 1998) rather than interviewer centered. Interviews were from five minutes to an hour in length, depending upon the informant's time constraints and willingness to be interviewed by the students. Ideally the interview would flow naturally from topic to topic and would end when the interviewer or the informant perceived a natural stopping point or when the informant no longer seemed comfortable or interested in continuing the interview (Levy and Hollan 1998).

Each informant was asked about educational expenses, sugar cane organizations impacts, child labor, sugar cane price drop, health concerns, and kidney disease treatments (see Appendix III). If informants were currently sugar cane farmers, questions about sugar cane farming knowledge were asked and a successive pile sort conducted (see Appendix IV). Students digitally recorded interviews and took field notes during and directly after each interview.

Upon return from the field, data from each interview were aggregated and analyzed. After analysis, the digital audio recordings were securely erased. Douglas Hume then conducted both statistical and network analyses as well as wrote this field report.

## **Community Development**

### Demographics

A total of 291 informants were interviewed; 121 in San Estevan, 73 in San Lazaro, and 93 in Yo Creek. Of the 291 informants, 56 reported that they were sugar cane farmers. The average age of the informants was 42 years with a minimum age of 18 and maximum age of 89 years old. Twenty-eight percent of the informants were male and the remaining 62% were female.

### Education Expenses

During the prior field season, informants were asked about what types of educational expenses they had (Hume et al. 2018). This field season, interviews focused on collecting estimated costs for each of the categories that were collected during the previous field season. Of 291 total informants, 134 reported that they had children. For those that had children, they had an average of 1.7 children (see Appendix V: Number of Children). The following are the findings for each education expense category:

- **Book Expenses** – Forty-five of 134 parents reported that they do not spend any money for books, either the school or government supplies them. Nine of 134 parents did not know how much was spent on books per year. Informants reported an expense of a minimum of \$30 BZD and maximum of \$3,500 BZD with an average of \$316.987 BZD per child per year. Variation is mostly due to the age of the student and the textbooks being bought. Some parents buy used books while others buy new ones. Also, the age of the student determines how expensive and extensive the number of books are needed. Students in secondary and college require more numerous and expensive schoolbooks than those in primary school.
- **Uniforms/Clothes Expenses** – Twelve of 134 parents did not know how much was spent on uniforms/clothes per year. Informants reported a per year per child expense minimum of \$30 and maximum of \$500 with an average of \$161.314 BZD. Variation is mostly due to some parents making their own clothes and other buying pre-made uniforms.
- **School Supplies** – Sixteen of 134 parents did not know how much was spent on school supplies per year. Informants reported a per year per child expense minimum of \$15 and maximum of \$1,800 with an average of \$205.299 BZD. Variation is mostly due to higher expenses for students in technical schools or college.
- **Food/Water Expenses** – Seventeen of 134 parents did not know how much was spent on food/water per year. Informants reported a per year per child expense minimum of \$0 and maximum of \$2,940 with an average \$825.495 BZD. Variation is mostly due to those that some parents only pay water expenses and students bring or go home for lunch,
- **Fees** – Five of 134 parents did not know how much was spent on fees per year. Informants reported a per year per child expense minimum of \$0 and maximum of \$10,000 with an average of \$407.566 BZD. Without one \$10,000 response, there is a minimum of \$0 and maximum of \$3,200 with an average of \$332.035 BZD. Variation is mostly due to primary school having far fewer fees and secondary school being much higher.
- **Fundraisers** – Thirty-one of 134 parents did not know how much was spent on fundraisers per year. Informants reported a per year per child expense minimum of \$0



and maximum of \$300 with an average of \$57.666 BZD. Variation is mostly due to several of the fund raisers involve donation of a chicken or that informants were not able to estimate costs.

- Transportation - Fourteen of 134 parents did not know how much was spent on transportation per year. Eighty-six of 134 parents (64%) reported that they had no transportation expenses because their child either walked or biked to school. For those that do pay, there is a minimum of minimum \$135 and maximum of \$9,000 with an average of \$1,178.757 BZD. Variation is mostly due to bus transportation being inexpensive while those students that must own a car to attend secondary school or college having higher expenses.
- Other – Informants reported that they also had expenses for field trips, donations, printers, computers, summer school, cleaning, internet, school fence, festivals, graduation, sports games, sickness, and projects. Costs for the other category were not collected.
- Total Yearly Education Expenses – Four informants reported no expenses or that they did not know the educational expenses for their child. For those that did report education expenses for their child, the minimum yearly total cost for education was \$30 and the maximum \$18,920, with an average of \$2174.875 BZD. Generally, primary school children yearly expenses are in the hundreds of dollars, secondary school is in the low thousands, and college is tens of thousands of BZD per year.

In the next field season, community members will be asked about the types of support (e.g., governmental, non-governmental, social, and family) they receive to aid in their children's education expenses.

### Child Labor

During the prior field season, informants were asked about what types of work children did (Hume et al. 2018). This field season, interviews focused on collecting the appropriate age for each of the types of child labor that were collected during the previous field season (see Appendix VI: Child Labor) as well as the reasons for child labor (see Appendix VII: Reasons for Child Labor). Minimum appropriate ages for starting different types of work varied from 5 to 12 year of age while the maximum was 18 to 25 years of age and average varied between 11 to 15.3 years of age (see Appendix VI: Child Labor). Overall, the mean appropriate age for starting work was 13.52 years of age. The appropriate mean ages for younger children include garbage picking up (10.7 years), house chores and cleaning (11.0 years), general goods selling (door to door) (12.0 years), vegetable growing (12.4 years), and yard work (chopping and mowing 12.8 years and raking and cleaning 12.7 years). Those jobs that have the highest mean appropriate age are construction (16.3) and cane cutting (15.2 years). For types of work that involved sugar cane farming (i.e., cutting, field fertilizer and pesticide spraying, field weeding, field work [bringing lunch, carrying cane, delivering water, etc.], and planting), the minimum appropriate age was 6, the maximum 25, the mean 14.9, and the mode 18 years of age.

The most common reasons for child labor mostly fell into the category of family poverty which created a need for supplemental income to help support the educational needs of that family. This was especially true once students reached high school (45.20% of the responses, see Appendix VII: Reasons for Child Labor). The next most common responses included that children need to learn how to work/help the family (12.80%), make money to fund own

education (12.80%), and the child's own general desire for money (11.20%) (see Appendix VII: Reasons for Child Labor).

In the next field season, community members will be asked whether they believe that child labor should continue within their community, what the boundaries of child labor should be, and what alternatives or support they would need for any changes.

### Traditional Medicine

In previous field seasons, several informants spoke about traditional medicines that they used for kidney disease and other ailments. After a discussion with Hugo Carillo (U Chan Muul Yaax K'aax [Maya Community Museum in San Lazaro]) about the preservation of local traditional medicine knowledge preservation during the second week of the field school, we began asking informants about the traditional medicine remedies that they use. In our discussion with information, we collected many ingredients used in traditional medicine (see Appendix VIII: Traditional Medicine Components), but our collection of each use of the components resulted in unclear data. In the next field season, community members will be asked about the uses of each of these components as well as their knowledge of additional components and their uses.

### Health Concerns

In the previous field season informants were asked about their perceptions of kidney disease (Hume et al. 2018). While kidney disease is a concern of the community, it was apparent from conversations with informants that there were other health concerns. This field season we asked informants what their or their families health concerns were (see Appendix IX: Health Concerns). We believe that many informants reported that they had no health concerns (127 informants) because they did not want to share personal information with the student researchers. However, those that did respond, most frequently listed diabetes (32), mosquito borne illnesses (21), kidney disease (16), distance from health professionals (14), hypertension (14), costs of health care/medications (14), and allergies (10) (see Appendix IX: Health Concerns for additional responses). In the next field season, community members will be asked to list their community health concerns rather than their own, in hopes that when asked an impersonal question we will be able to collect more information about health concerns.

### Sugar Cane Organization Perceptions

In prior field seasons, community members were asked about the roles of the sugar cane farming organizations, but by only asking open-ended questions, informants had difficulty listing specific information (Hume et al. 2018). This field season, a list of specific organizations was provided to the informants and the researchers asked the informants for their thoughts on those particular organizations. The following are the most common responses for each organization:

- American Sugar Refineries/Belize Sugar Industries:
  - has a monopoly on milling sugar cane in Belize;
  - has improved wait times to drop off cane at the mill (4-5 hours versus 24 hours);
  - assists farmers with improving production, but there is a bias towards large farms, rather than all farmers;
  - employs community members; and

- payments to farmers are too low and the farmers do not have an ability to negotiate prices.
- Progressive Sugar Cane Producers Association:
  - is the same political party as the government, so members receive additional benefits and association support from the government;
  - gives agrichemicals to members and sells at discount rates;
  - creates many jobs;
  - provides workshops on child labor, chemicals, etc;
  - members grow high sugar content cane, so they earn higher returns; and
  - creation reduced the consolidated power of the BSCFA, so they have less negotiating power with ASR/BSI and government.
- Belize Sugar Cane Farmers Association:
  - advocates for farmers with government and ASR/BSI;
  - donates to community development programs;
  - only helps farmers and their families, not community;
  - supports farmers' children with educational funding;
  - gives/sells farmers agrichemicals;
  - provides training, loans/credit, and grants to farmers;
  - not as supportive to farmers or community after split; and
  - some farmers are not satisfied with their leadership.
- Sugar Industry Research & Development Institute:
  - offers workshops on many topics related to farming cane;
  - arrange financial loans and teach accounting practices;
  - has farming equipment that it loans and rents;
  - is seen by some farmers as a positive organization, while others view it as corrupt and taking advantage of small farmers; and
  - primarily helps farmers and their community but not laborers.

In the next field season, additional questions about the role of sugar cane farming organizations will be posed to community members, the emphasis of which will be discussed with the organizations prior to the exact line of questions being developed.

### Sugar Cane Price Drop

In the two previous field seasons, both farmers and community members were asked what they would do if the price of sugar cane dropped (Hume et al. 2016 and Hume et al. 2018). This field season farmers were asked about their current response (see Appendix X: Current Response) and their future plans (see Appendix XI: Future Plans). Currently, most informants reported there have been no changes, other than less revenue coming in, due to the sugar cane price drop (68.24%). The other most common responses are to manage their money better, either by cutting expenses/not buy as many things (4.71%) or budget better (3.92%). Few informants responded that the sugar cane price drop has changed their farming behavior, either by diversifying crops (2.75%), stop farming sugar cane (2.75%), decreasing amount of fertilizer used (1.96%), not reinvesting in fields (1.96%), or other less common changes (see Appendix X: Current Response). It appears that the drop in sugar cane price has not required community members to change much of their economic behavior.

Most informants reported that they had no plans or were not sure about their future plans as the price of sugar continues to drop (56.02%). Many informants stated that they would be forced to

stop farming cane (31.20%) and either find a new line of work (10 informants), start ranching (13 informants), or growing different crops (26 informants). The next most common responses were to decrease spending (5.64%), continue farming but increase earnings (2.63%), involve more family member in working (2.26%), and move to where there are more opportunities (2.26%).

In the next field season, community member will again be asked about the effects of sugar cane price reductions as well as their plans for the future.

## **Sugar Cane Farming**

Fifty-six of the 350 informants self-identified as sugar cane farmers and were asked additional questions about their farming knowledge. The minimum age of farmers interviewed was 25 and the maximum age was 75, with an average of 54.48 years. There were 42 (76.36%) male and 13 (23.64%) female farmers within our interview sample. The farmers were members of either the Belize Sugar Cane Producers Association (39 informants) or the Progressive Sugar Cane Producers Association (17 informants). There were no members of the Corozal Sugar Cane Producers Association in our informant sample.

### Sugar Cane Association Meeting Attendance

At the request of both the Belize Sugar Cane Farmers Association and the Progressive Sugar Cane Producers Association, farmers were asked why they thought farmers do not attend association meetings. The majority of farmers reported that people do not attend meetings because the meetings occur during work time or when farmers have farm obligations (13 informants). Several of the farmers reported that they did not know why farmers did not attend meetings (10 informants). There were several other responses that were stated by four or less informants (see Appendix XII: Association Meeting Attendance), but no singular pattern emerged from their answers. In the next field season, farmers will be asked if they agree with the reasons that were collected this field season and asked for additional reasons why farmers do not attend association meetings.

### Sugar Cane Farming Knowledge Transmission

In prior field seasons, sugar cane farming knowledge concerning sugar cane varieties, fertilizers, pesticides, and herbicides was collected (Hume et al. 2015, Hume et al. 2016, and Hume et al. 2018). For each type of knowledge, there was much variation among farmers about the attributes of each type of sugar cane, fertilizer, pesticide, and herbicide (see Hume et al. 2016 for clearest representation of variation). Last field season the network analysis of the type of sugar cane found that the depth and breadth of a farmer's knowledge of sugar cane varieties could only partially be explained by the number of years the farmer had been farming.

This field season investigated how knowledge is shared among farmers. In other words, we sought to discover what social networks (i.e., kinship, friendship, and farming collaboratives) contribute to the intracultural variation of sugar cane variety knowledge among farmers. These findings will inform how an expert might be situationally defined as knowing either depth or breadth of cultural knowledge that then impacts short term resiliency (knowledge about current crop varieties) and long-term resiliency (knowledge about a current, future, and past crop variety varieties).

This field season involved the collection network data on the individuals and organizations that farmers use for fertilizer, herbicide, pesticide, and sugar cane variety information. Farmers were asked who they asked for or received information from for each of the four categories of farming knowledge. Data were then analyzed using Ucinet (Borgatti, Everett, and Freeman 2002) and Netdraw (Borgatti 2002). Demographic variables such as age, sex, and home village appear to have no effect on which sources of information farmers use.

The sociograms/network diagrams (Appendices XIII through XVII) were constructed with the following parameters:

1. node and label size are by degree prestige/indegree centrality (node size is determined by the number of inbound arcs/connections where the larger node size is an indication of more connections);
2. node color indicates farming association membership (green is PSCPA, blue is BSCFA, clear is none); and
3. layout is based on none repulsion and equal edge length bias adjusted for readability.

The following are explanations of the network diagrams (Appendices XIII through XVII) listing where farmers gain information about sugar cane farming in order of each source of information's appearance. Informants reported that they gain information about fertilizer from, in order of occurrence, the Belize Sugar Cane Farmers Association (BSCFA), Sugar Industry Research and Development Institute (SIRDI), Progressive Sugar Cane Producers Association (PSCPA), store/supplier, other farmers, Sugar Board, village chairman, Department of Agriculture, and/or Belize Sugar Industries/American Sugar Refineries (BSI/ASR) (see Appendix XIII: Fertilizer [Degree Prestige/indegree Centrality]). Informants reported that they gain information about herbicide from, in order of occurrence, BSCFA, SIRDI, PSCPA, store/supplier, other farmers, Sugar Board, village chairman, Department of Agriculture, and/or the Environmental Association (see Appendix XIV: Herbicide [Degree Prestige/indegree Centrality]). Informants reported that they gain information about pesticide from, in order of occurrence, BSCFA, SIRDI, PSCPA, store/supplier, other farmers, Sugar Board, village chairman, and/or the Environmental Association (see Appendix XV: Pesticide [Degree Prestige/indegree Centrality]). Informants reported that they gain information about sugar cane from, in order of occurrence, BSCFA, other farmers, PSCPA, SIRDI, village chairman, BSI/ASR, and or the Sugar Board (see Appendix XVI: Sugar Cane: [Degree Prestige/indegree Centrality]). The full model, using the combined network of information sharing of fertilizers, herbicides, pesticides, and sugar cane varieties, shows that all but two farmers gain information from all associations and agencies (see Appendix XVII: Full Model [Degree Prestige/indegree Centrality]).

The findings from these network analyses are as follows:

1. Progressive Sugar Cane Producers Association members seek information from the association, but are not as connected to other sources of information as the Belize Sugar Cane Farmers Association members;
2. pesticide and, to a lesser extent, herbicide representatives are important sources of information for some farmers (farmers reported that these groups hold workshops in the villages);
3. most farmers reported only one source of information for each type of information, but this may be due to the way that questions were asked during the interviews;

4. several farmers reported that they did not collect information from anyone for each type of information and two informants stated that they did not get information from any source;
5. gender and age appear to have no effect on where farmers collect information; and
6. the complexity of this problem requires further data collection and analysis.

In the next field season, farmers will again be asked who they gain information from about fertilizers, herbicides, pesticides, and sugar cane varieties allowing farmers to respond that they receive information from more than one source and that there may be additional sources of information.

### **Additional Topics**

In previous field seasons, community members have been asked about what topics they believe we should ask about in future years (Hume et al. 2015, Hume et al. 2016, and Hume et al. 2018). When asked about future topics of research this field season, the informants' response rate was lower than previous years. Most commonly, informants reported that they would like more information on roads (14), government assistance (10), youth programs (6), community trash (5), streetlights (5), and water pollution (5). Questions about general community government assistance will be included with the questions about assistance in education expenses during the next field season.

### **Conclusion**

This report documents the findings from the summer 2018 season of the Ethnographic Field School in Belize. This field season successfully met the goals of collecting ethnographic data on topics suggested by community members and prior research: community development (i.e., education expenses, child labor, traditional medicine, and health concerns) and sugar cane farming (i.e., sugar cane organization perceptions, association involvement, sugar cane price drop, and sugar cane knowledge transmission). Educational expenses vary between families due to the number of children and the level of school each child attends. Now that we have general picture of the education expenses of children, we will now focus on the opportunities for support that exist within the community for educational expenses. Child labor continues to be a complex topic to discuss within the communities we conduct interviews. While we have an understanding of the expectations of when children may begin work, we do not yet understand the community's perception of whether there are alternatives to child labor. Our understanding of traditional medicine in the region is only beginning, the collection of precise data on plants and their uses will begin more formally in the next field season. The data collected on health concerns is incomplete due to informants not wanting to share personal information. In the next field season, we will focus our interview questions on community health rather than individual health concerns. Data collection on farming associations and knowledge transmission made much headway during the 2018 field season. In the coming season we will focus our attention again on the types of support that the association and other sugar cane farming organizations give to the farmers as well as the perceived improvements that could be made to their involvement with the communities as a whole. In addition, the network of information sharing within the sugar cane farming industry will continue to be explored.

In conclusion, this field season (June through July 2018) successfully collected and analyzed ethnographic data from three communities in the Orange Walk District, Belize. The collected

data helped answer questions from prior research and has resulted in further questions for future field seasons. Our aim is to continue to allow data to drive future research as well as involving the communities, associations, and agencies with which we partner to guide research towards answering questions that are important for community development that will benefit all community members, regardless of whether or not they farm sugar cane or are involved with any of the agencies or associations.

# Appendix I: Informed Consent Statement – English



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## INFORMED CONSENT TO PARTICIPANT IN A RESEARCH PROJECT

TITLE OF PROJECT: Ethnographic Field School

NAME OF PRINCIPAL INVESTIGATOR: Dr. Douglas Hume, Northern Kentucky University

CONTACT NAME AND PHONE NUMBER FOR QUESTIONS/PROBLEMS: Douglas Hume, Ph.D., Associate Professor of Anthropology, Northern Kentucky University, humed1@nku.edu or 859-572-5702.

PURPOSE OF RESEARCH: This research project records the way of life of sugar cane farmers in Northern Belize with the intent to share the results on the Internet, journals and conference proceedings as well as in a report to the Belize Sugar Cane Farmer's Association, Institute of Social and Cultural Research, and the Sugar Industry Research and Development Institute.

PROCEDURES/METHODS TO BE USED: The interview includes questions about your household economic behavior and sugar cane farming methods. The interview is estimated to last between five minutes to one-half hour. The audio recording of the interview will be securely stored and destroyed after it is transcribed. Data collected in this study will then be anonymous, as we are not collecting names or other identifying information. You will not be paid for being in this study.

RISKS INHERENT IN THE PROCEDURES: There are no known risks.

BENEFITS: It is hoped that the results of this research will influence how the Belize Sugar Cane Farmer's Association and the Sugar Industry Research and Development Institute develop educational programs about farming, health, and economics for sugar cane farming families in Northern Belize.

CONFIDENTIALITY: The only identifying information that we will keep on record is this signed document, which may be inspected by the Institute of Social and Cultural Research and other human protection bodies. This document will not be connected with you interview data.

LIABILITY: Neither the researchers, their agents, or you (the participant) are liable for any damages or penalties from participating in this research.

PARTICIPATION: Your participation in this research is voluntary. If you decide to participate in the study, you may withdraw your consent and stop participating at any time without penalty or loss of benefits to which you are otherwise entitled.

Your signature acknowledges that you have read the information stated and willingly sign this consent form. Your signature also acknowledges that you have received, on the date signed, a copy of this document.

\_\_\_\_\_  
Participant name (printed)

\_\_\_\_\_  
Participant signature

\_\_\_\_\_  
Date

\_\_\_\_\_  
Witness to signature (project staff)

\_\_\_\_\_  
Date



## Appendix II: Informed Consent Statement – Spanish



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and Philosophy  
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### FORMULARIO DE CONSENTIMIENTO INFORMADO PARA PARTICIPAR EN UN PROYECTO DE INVESTIGACIÓN

TITULO DEL PROYECTO: Ethnographic Field School

INVESTIGADOR PRINCIPAL: Dr. Douglas Hume, Northern Kentucky University

CONTACTO EN CASO DE PREGUNTAS/PROBLEMAS: Douglas Hume, Ph.D., Profesor Adjunto de Antropología,  
Northern Kentucky University, correo electrónico: [humed1@nku.edu](mailto:humed1@nku.edu); teléfono: 859-572-5702.

OBJETIVO DE LA INVESTIGACIÓN: Este proyecto de investigación registra el modo de vida de los cañeros en el norte de Belice con el propósito de difundir los resultados por Internet, en revistas académicas y actas de congresos, así como en un reporte a la Asociación de Cañeros de Belice, el Instituto para la Investigación Social y Cultural, y el Instituto de Desarrollo e Investigación de la Industria Azucarera.

PROCEDIMIENTOS/MÉTODOS DEL ESTUDIO: La entrevista incluye preguntas sobre la economía doméstica y los métodos empleados en el cultivo de la caña de azúcar. La entrevista durará entre cinco minutos y media hora y será grabada. La grabación se almacenará en un lugar seguro y se destruirá luego de su transcripción. La información recopilada en esta investigación es anónima, ya que no registramos nombres ni otros datos personales. No se recibirá ningún tipo de compensación económica por participar en esta investigación.

RIESGOS INHERENTES EN LOS PROCEDIMIENTOS: No hay riesgos conocidos.

BENEFICIOS: Se espera que los resultados de esta investigación tengan un impacto en cómo la Asociación de Cañeros de Belice y el Instituto de Desarrollo e Investigación de la Industria Azucarera desarrollan sus programas educativos sobre agricultura, salud y economía para las familias cañeras en el norte de Belice.

CONFIDENCIALIDAD: En cuanto a información identificatoria, sólo guardamos esta hoja con su firma, la cual puede ser inspeccionada por el Instituto para la Investigación Social y Cultural y otros organismos de protección de derechos humanos y civiles. En ningún momento este documento podrá ser emparejado con la información que Ud. comparta en la entrevista.

RESPONSABILIDAD LEGAL: Ni los investigadores, ni sus agentes ni Ud. (el/a participante) serán responsables por daños o sanciones como resultado de su participación en esta investigación.

PARTICIPACIÓN: La participación en este proyecto es voluntaria. Si decide participar en esta investigación, tiene derecho a anular este formulario y dejar de participar en cualquier momento sin sanciones o pérdida de beneficios a los que tenga derecho.

Su firma confirma que Ud. ha leído la información contenida en el mismo y que firma este formulario de consentimiento por su propia voluntad. Su firma también confirma que Ud. ha recibido una copia de este documento en la fecha indicada.

\_\_\_\_\_  
Nombre del/a participante

\_\_\_\_\_  
Firma del/a participante

\_\_\_\_\_  
Fecha

\_\_\_\_\_  
Testigo (un miembro del equipo de investigación)

\_\_\_\_\_  
Fecha

## **Appendix III: Ethnographic Interview Schedule (Procedure), Part I**

### All Informants

- Note approximate age and sex
- Educational expenses
  - Number of school children
  - Average yearly spending per child
    - Books
    - Uniforms/clothes
    - School supplies (such as paper, pencils, etc)
    - Food/water
    - School fees/registration
    - Fund raisers
    - Transportation/bus
    - Other (name and amount)
- Sugar cane organizations impacts
  - Free list - BSCFA (Belize Sugar Cane Farmers Association)
  - Free list - PSCPA (Progressive Sugar Cane Producers Association)
  - Free list - SIRDI (Sugar Industry Research & Development Institute)
  - Free list - BSI/ASR (Belize Sugar Industries/American Sugar Refining)
- Child labor
  - Free list - reasons why children work
  - Free list - types of child labor
  - Appropriate ages for free listed types
- Sugar cane price drop
  - Free list - response
  - Free list - future
- Health concerns - free list
- Kidney disease treatments
  - Mayan/herbal medication
  - Coconut water
  - Pineapple/olive oil
- Farmer - if so, go to part two

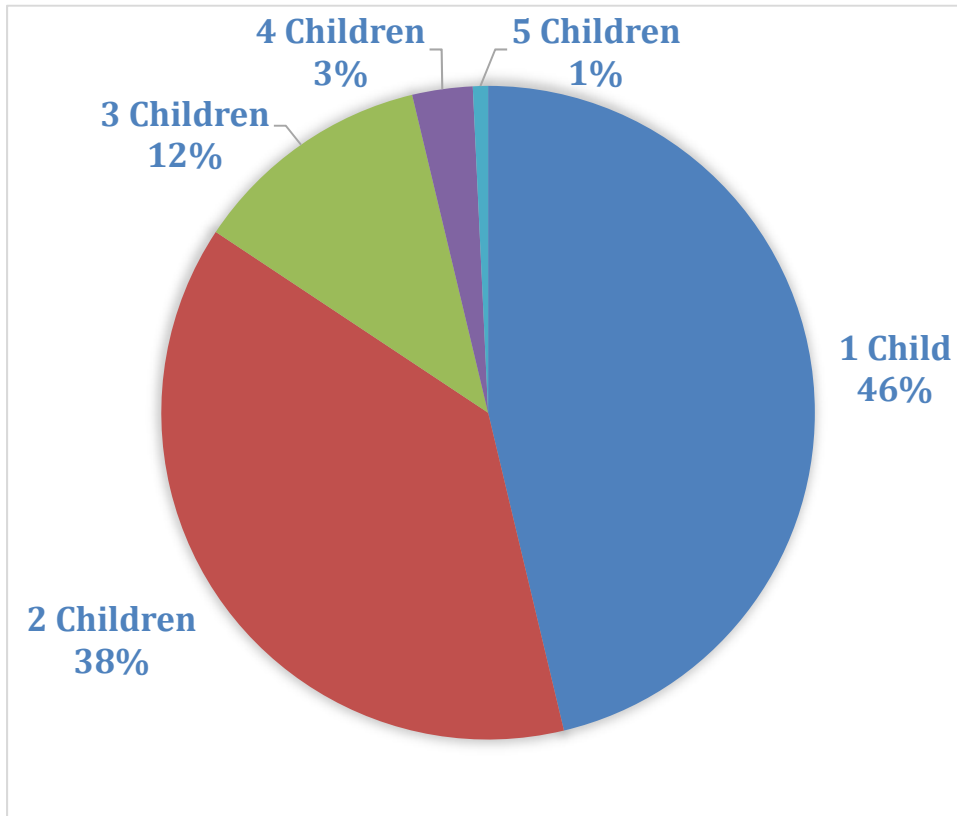
## **Appendix IV: Ethnographic Interview Schedule (Procedure), Part II**

### **Farmers Only**

- Organizations
  - Membership
  - Attendance
- Sugar cane cultural model (BBZ, B52 [*blanca*], or B79)
  - \_\_\_\_\_ is easiest to cut.
  - \_\_\_\_\_ grows best in the highlands.
  - \_\_\_\_\_ grows best in the lowlands.
  - \_\_\_\_\_ grows best in rocky soil.
  - \_\_\_\_\_ grows best in sandy soil.
  - \_\_\_\_\_ grows the heaviest.
  - \_\_\_\_\_ matures the quickest.
  - \_\_\_\_\_ is the most pest resistant.
  - \_\_\_\_\_ is the most smut resistant.
  - \_\_\_\_\_ grows the softest.
  - \_\_\_\_\_ grows the tallest.
  - \_\_\_\_\_ grows the thickest.
  - \_\_\_\_\_ has the highest sucrose content.
- Ego-centric information networks (names)
  - Fertilizer
  - Herbicide
  - Pesticide
  - Sugar cane
- Agency cultural model (agree/disagree)
  - Nature controls wind.
  - Humans control rain.
  - Nature controls farm success.
  - Everything controls planting sugar cane fields.
  - Nature controls fair trade economics.
  - Attitude controls animal conservation.
  - Nature does not control pesticide pollution.
  - Everything controls seasons.
  - Attitude controls garbage burning pollution.
  - God controls herbicide pollution.
  - Nature controls water conservation.
  - God does not control hurricanes.
  - Humans do not control plastic conservation.
  - God controls watering sugar cane fields.
  - Everything controls farm success.
  - Humans control garbage pollution.
  - Attitude controls farm success.
  - Nature does not control fumigating sugar cane fields.

- Humans control fertilizing sugar cane fields.
- Everything controls forest conservation.
- God does not control farm success.
- Humans do not control farm success.
- God does not control economic loans.
- Humans controls economic aid.
- Attitude controls contraband economics.
- Everything controls wildfire pollution.
- Attitude does not control heat.
- Everything controls supply-demand economics.
- Attitude controls weeding sugar cane fields.
- God does not control metal conservation.
- Things grown on farms (successive pile-sort)

**Appendix V: Number of Children**



<b>Number of Children</b>	<b>Informant Count</b>	<b>Informant Percentage</b>
1	62	46%
2	51	38%
3	16	12%
4	4	2%
5	1	1%

## Appendix VI: Child Labor

Type of work	Count	Min	Max	Mean	StDev	Mode
Cane cutting	121	6	25	15.2	3.014	18
Cane field fertilizer and pesticide spraying	16	7	20	14.8	3.410	18
Cane field weeding	17	10	18	13.7	2.114	15
Cane field work (bringing lunch, carrying cane, delivering water, etc.)	24	7	18	14.0	3.063	14
Cane planting	8	7	18	14.3	4.206	18
Chicken raising and cleaning	9	9	18	14.6	2.645	14
Construction	19	12	18	16.3	1.801	18
Garbage picking up	17	7	18	10.7	3.597	8
General goods selling (door-to-door)	13	7	18	12.0	3.303	10
General goods selling (roadside stand)	13	6	18	13.1	3.578	10
House chores and cleaning	14	5	20	11.0	4.375	5
Shop working	47	12	20	15.3	1.848	16
Vegetable growing	9	5	18	12.4	4.824	18
Yard chopping and mowing	31	5	18	12.8	3.030	14
Yard raking and cleaning	27	7	18	12.7	2.955	10

## Appendix VII: Reasons for Child Labor

Count	Percentage	Reasons
113	45.20%	Family poverty, need to help support the family/family cannot afford education, especially high school
32	12.80%	Children need to learn how to work/help the family
32	12.80%	Make money to fund own education
28	11.20%	Child's general desire for money
17	6.80%	Children no longer go to school/Drop out
9	3.60%	Children need/want structure/something to do
8	3.20%	It is tradition
7	2.80%	Children work on weekends/holidays to help the family
4	1.60%	No parents, children need to work to support themselves

## **Appendix VIII: Traditional Medicine Components**

- Aloe
- Ant plant
- Aposate tea
- Avesoya (sp)
- Avocado pit
- Brown Sugar
- Caster oil
- Cedar bark
- Cerosite leaf/vine
- Chai leaf
- Chamomille tea
- Chanca Piedra
- Chaya leaf
- Chiccanon
- Chichipince (firebush)
- Cinnamon
- Coal
- Corn hair
- Cranberry
- Eschanan leaves
- Garlic
- Gillyweb bark
- Green coconut water
- Green corn husks
- Grueso leaf
- Guava leaves
- Hombre grande stick
- Honey
- Jackass bitter (tres puntas) leaf
- Lemongrass
- Lime
- Lime grass
- Magay leaf
- Mango leaves
- Marijuana
- Mint leaves
- Moringa (tree of life) flowers
- Moringa (tree of life) leaves
- Moringa (tree of life) seeds
- Napal/nopal
- Noni fruit
- Odra leaves
- Okra
- Olive oil



- Onion
- Orange juice
- Oregano
- Papaya seeds
- Peppermint
- Pineapple
- Rice
- Rude/ruda tree leaves
- Sabila/sabula
- Schenan
- Scorpion stingers
- Siempre viva leaf
- Soda
- Sorosi
- Soursop
- Spinach
- Trumpet tree leaves
- Wababano
- Young coconut water

## Appendix IX: Health Concerns

Count	Concern
127	No health concerns
32	Diabetes
21	Mosquito borne illnesses (dengue, zika, malaria)
16	Kidney disease (8 of which are specifically kidney stones)
14	Distance from health professionals
14	Hypertension
12	Cost of health care/medications
10	Allergies
6	Air pollution (burning trash, mill)
6	Chemicals in house/farm
6	Cold/flu
6	High cholesterol
4	Arthritis
4	Cancer
4	Stroke
4	Water pollution (cane burning ash, fish kills in river)
3	Asthma
3	Blood clots
3	Climate change (i.e., heat)
3	Heart disease
3	Obesity
3	Pain
3	Substance abuse (i.e., alcohol and drugs)
2	Bronchitis
2	Diarrhea
2	Gallbladder stones
2	Pneumonia
2	Prostate
1 Each	Alzheimer's disease, anemia, back problems, chicken pox, circulation issues, colitis, gout, hernia, intestinal parasites, liver disease, osteoporosis, and pink eye

## Appendix X: Current Response

Count	Percentage	Response
174	68.24%	No response, just not as much money...
12	4.71%	Cut expenses/Not buy as many things
10	3.92%	Budget better
7	2.75%	Diversify crops
7	2.75%	Stopped farming sugar cane
6	2.35%	Take out loan
6	2.35%	Buy less sugar
5	1.96%	Cannot fertilize fields well
5	1.96%	Is not reinvesting in fields
3	1.18%	Has another job
2	0.78%	Had to cut back on food
2	0.78%	Use hand tools in field, not machines
2	0.78%	Working more, due to lower cutter wages
2	0.78%	Investing in field to increase crop yields
1 Each	4.71%	Cannot fix house, use less herbicide, child quit school to work, stopped hiring field help, children helping, stopped paying into retirement/social, had to cut farming expenses, renting house to earn money, family helps rather than workers, plant more cane, put in garden, or pay workers less

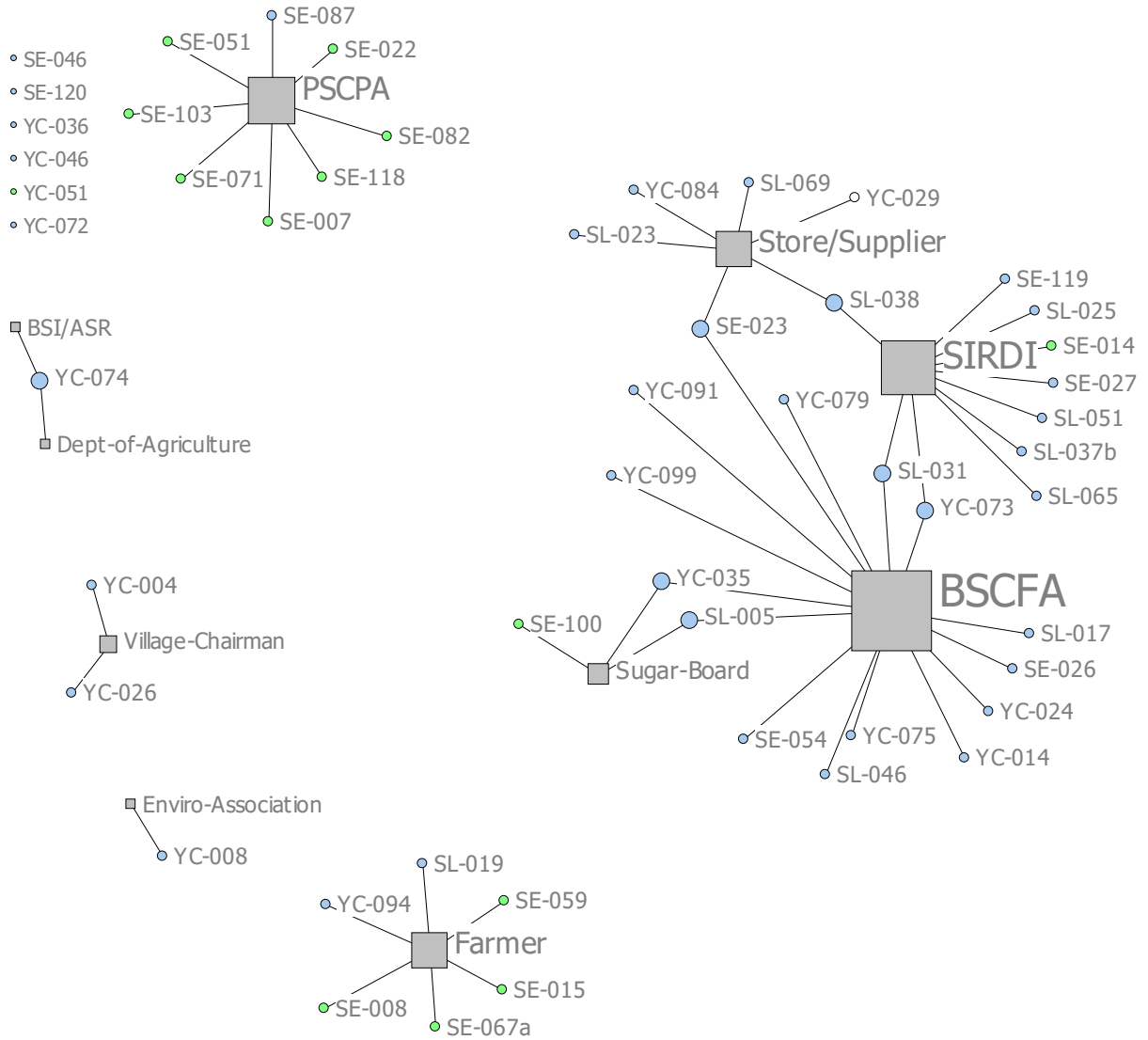
## Appendix XI: Future Plans

Count	Percentage	Plan
149	56.02%	No plan, not sure...
83	31.20%	Stop farming cane (10 find a new line or work, 13 start ranching, 26 growing different crops)
15	5.64%	Decrease Spending (7 buy less/budget better, 8 consume less sugar/use alternatives)
7	2.63%	Continue farming, but increase earnings (4 work more on farm, 3 farm more efficiently, 1 start a garden)
6	2.26%	More family members start working (4 children, 2 spouses)
6	2.26%	Move to where there are more opportunities (5 move to US, 1 move to other country)

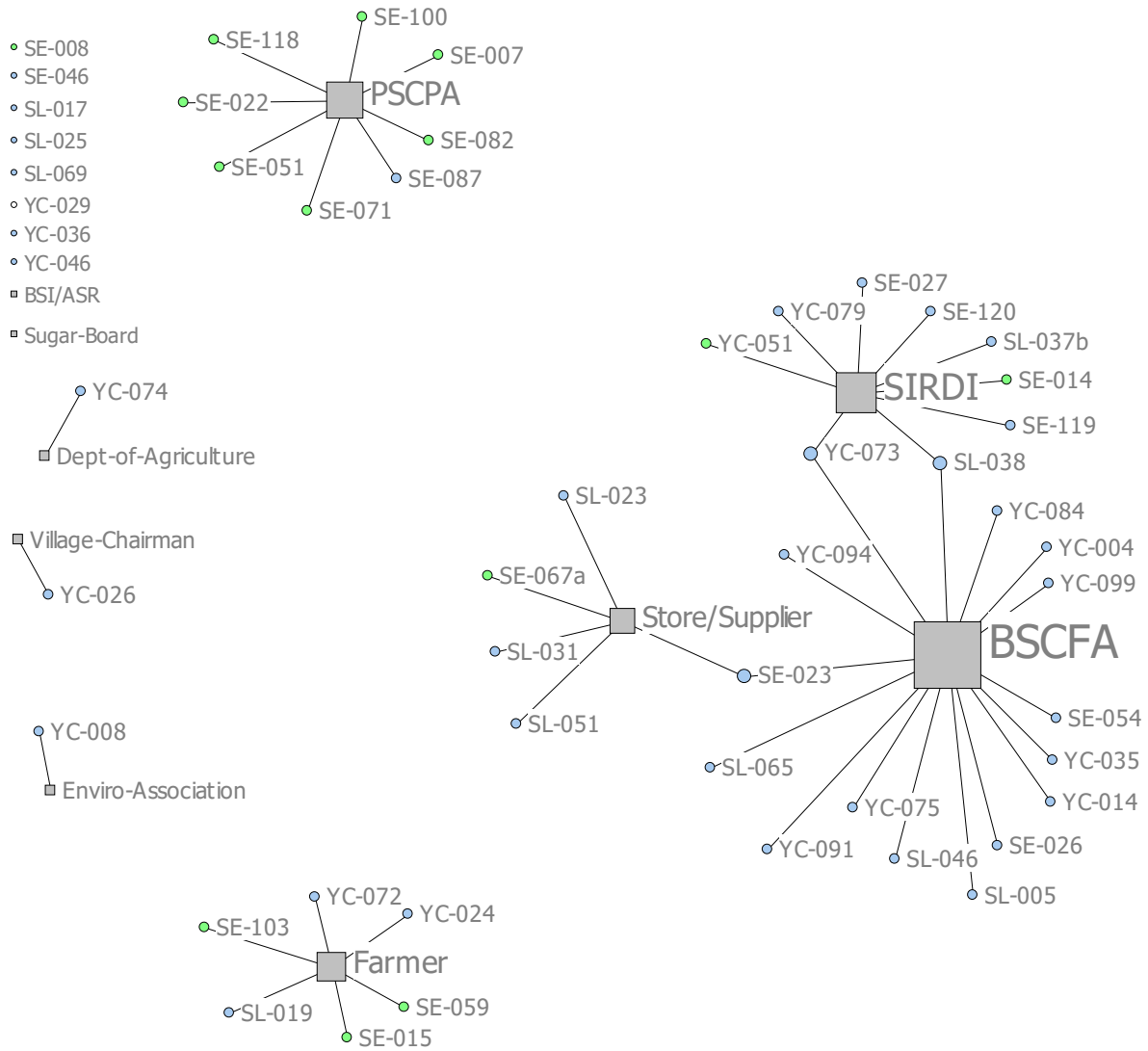
## Appendix XII: Association Meeting Attendance

Count	Reason for Non-attendance of Meetings
13	Meetings occur during work time/when farmers have farm obligations
10	Does not know
4	They are political meetings, no concrete results
4	Top down communication, they do not get feedback from farmers
3	Promises made at the meetings that do not happen, so people stop going
2	Do not understand what is going on in meetings/they are confusing
2	Health problems prevent traveling to meetings
2	Meeting is announced on the same day it occurs (no warning)
2	Other family member attends
2	People argue/fight during meetings
1 Each	Belizean time... everyone late, has not been invited, it is boring, meetings only to collect money, not enough snacks, only go if there are incentives (i.e., raffles or gifts), only popular people benefit, people do not have money to invest in what they suggest, or they do not learn anything during meeting

### Appendix XIII: Fertilizer (Degree Prestige/inDegree Centrality)

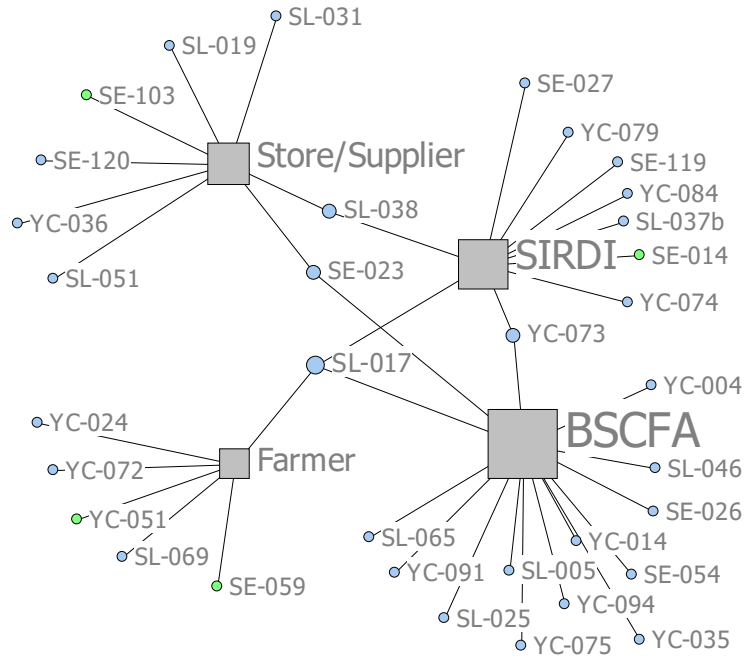
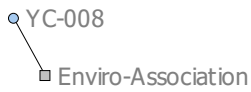
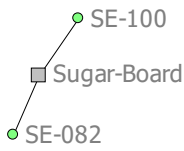
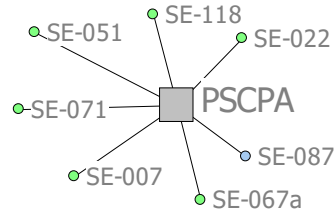


## Appendix XIV: Herbicide (Degree Prestige/inDegree Centrality)



## Appendix XV: Pesticide (Degree Prestige/inDegree Centrality)

- SE-008
- SE-015
- SE-046
- SL-023
- YC-029
- YC-046
- YC-099
- ▣ BSI/ASR
- ▣ Dept-of-Agriculture

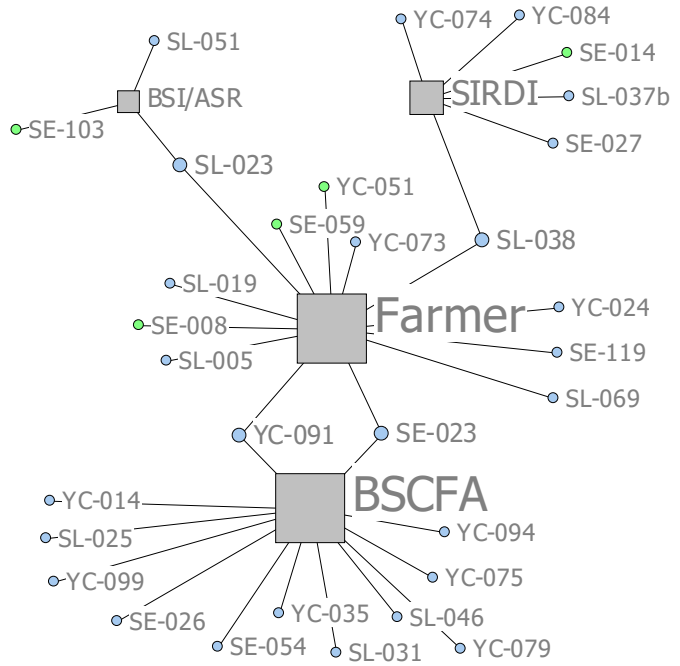
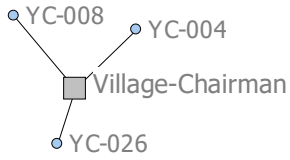
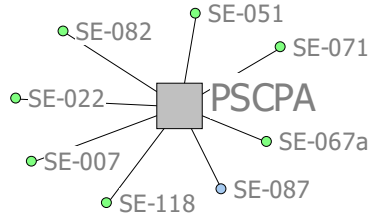
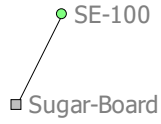




# Appendix XVI: Sugar Cane (Degree Prestige/inDegree Centrality)

- SE-015
- SE-046
- SE-120
- SL-017
- SL-065
- YC-029
- YC-036
- YC-046
- YC-072

- Store/Supplier
- Dept-of-Agriculture
- Enviro-Association





## Appendix XVIII: Additional Topics

Count	Item
14	Roads
10	Government Assistance
6	Youth programs (keep them busy/summer)
5	Community trash
5	Street lights
5	Water pollution
4	Garbage/cane burning
4	Unemployment
4	Youth drug use
3	Alcoholism, alcohol-related violence
3	Diabetes
3	Water system
2	Corruption (national, local government)
2	Domestic violence
2	Healthcare access
2	Youth gangs
1 Each	Effect of technology, elder care, human trafficking, public restrooms, soil fertility, cutter hydration, and youth alcohol use

## Sources Cited

- Borgatti, S.P. 2002. NetDraw: Graph Visualization Software. Harvard, MA: Analytic Technologies.
- Borgatti, S.P., Everett, M.G. and Freeman, L.C. 2002. Ucinet 6 for Windows: Software for Social Network Analysis. Harvard, MA: Analytic Technologies.
- CfAA. 2019. *Ethnographic Field School in Belize*. Center for Applied Anthropology, Northern Kentucky University. <https://inside.nku.edu/artsci/centers/cfaa/ethnographic-field-school.html>
- Duman-Scheel, Molly, Kathleen K. Eggleston, Nicole L. Achee, John P. Grieco, and Limb K. Hapairai. 2018. Mosquito Control Practices and Perceptions: An Analysis of Economic Stakeholders During the Zika Epidemic in Belize, Central America. PLoS ONE 13(7). <https://doi.org/10.1371/journal.pone.0201075>
- Ferrierab, J., A. Saleemc, and A. Carter. 2018. Traditional Medicines Used by Q'eqchi' Maya to Treat Diabetic Symptoms and Their Antiglycation Potential. *Journal of Ethnopharmacology* 224(5): 504-511.
- Hume, Douglas William, Colin Bindas, Stephanie Feltner, Gabriella Locke, Ian Takaoka, Nicholas Thaxton, Jade Michel Underland, and Gina Yoon. 2015. Report of the Ethnographic Field School in Belize (June 2014 Season). Center for Applied Anthropology at Northern Kentucky University.
- Hume, Douglas William, Clara Maxine Bone, Hannah Grace Howard, Charlee Hutchinson, Stefan Kienzle, Marguerite Kinne, Samantha Louise Krieger, Katie Nicole Ragland, Cassidy Ann Reeves, Linette Sabido, and Rachel Lee Tidwell. 2016. Report of the Ethnographic Field School in Belize (June 2015 Season). Center for Applied Anthropology at Northern Kentucky University.
- Hume, Douglas William, Kourtney Zigelmier, Allison Cate, Anna Cloud, Tessa Forwalt, Emily Fox, Laura Murrell, Samir Pich, Cailey Radcliffe, Emily Stephen, Samuel Velasquez, and Sage Boyers. 2018. Report of the Ethnographic Field School in Belize (June 2016 Season). Center for Applied Anthropology at Northern Kentucky University.
- Kaaser, Amanda, and Adam Willcox. 2018. Identifying Women's Attitudes and Barriers to Participating in a Proposed Community-based Conservation Group in Western Belize. *Ambio* 47(5):622-633.
- Levy, Robert, and Douglas Hollan. 1998. "Person-Centered Interviewing and Observation." In *Handbook of Methods in Cultural Anthropology*, edited by H. Russell Bernard, 333-64. Walnut Creek: Altamira Press.
- McGill, Alicia Ebbitt. 2018. Learning from Cultural Engagements in Community-based Heritage Scholarship. *International Journal of Heritage Studies* 24(10):1068-1083.
- Moran-Thomas, Amy. 2019. Struggles for Maintenance: Patient Activism and Dialysis Dilemmas Amidst a Global Diabetes Epidemic. *Global Public Health* 14(6/7):1044-1057.
- Spradley, James P. 2016. *The Ethnographic Interview*. Long Grove, Illinois: Waveland Press, Inc.
- Wells, Geoff J., Neil Stuart, Peter A. Furley, and Casey M. Ryan. 2018. Ecosystem Service Analysis in Marginal Agricultural Lands: A Case Study in Belize. *Ecosystem Services* 32(A):70-77.