

REPORT OF THE ETHNOGRAPHIC FIELD SCHOOL IN BELIZE (JUNE 2016 SEASON)



CENTER FOR APPLIED ANTHROPOLOGY, NORTHERN KENTUCKY UNIVERSITY

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Douglas William Hume¹, Kourtney Zigelmier², Allison Cate³, Anna Cloud³, Tessa Forwalt³, Emily Fox³, Laura Murrell³, Samir Pich³, Cailey Radcliffe³, Emily Stephen³, Samuel Velasquez³, and Sage Boyers⁴

¹ Primary investigator, ethnographic field school director, report author, data analysis

² Ethnographic field school student participant and data analysis

³ Ethnographic field school student participant

⁴ Data analysis

Primary Investigator Contact Information

Douglas Hume Ph.D., Director

Center for Applied Anthropology

Northern Kentucky University

1 Nunn Drive, Landrum 228

Highland Heights, Kentucky 41099, USA

humed1@nku.edu

001-859-572-5702

<http://nku.edu/cfaa>

Acknowledgements

We acknowledge the partnerships with the following agencies and individuals that made this field school and research possible:

Jerry Barnaby, Executive Director
Cooperative Center for Study Abroad
Western Kentucky University
Tate Page Hall, Room 104
1906 College Heights Blvd
Bowling Green, KY 42101 USA
info@ccsa.cc / 001-270-745-2231

Nigel Encalada, Director
Institute for Social and Cultural Research
National Institute of Culture and History
Corner Constitution Drive
Belmopan City, Belize, Central America
iscr@nichbelize.org 011-0822-3307

François Le Roy Ph.D., Director
Office of Education Abroad
Northern Kentucky University
1 Nunn Drive, University Center 330
Highland Heights, KY 41099, USA
studyabroad@nku.edu / 001-859-572-6908

Marcos Osorio, Director
Sugar Industry Research and Development Institute
Mile 66-1/2 Phillip Goldson Highway
Buena Vista Village, Corozal District, Belize, Central America
siridi.belize@gmail.com 011-501-677-4734 Nicole Roth (On-site Administrator)
Sociology, Anthropology & Philosophy
Northern Kentucky University
1 Nunn Drive, Landrum 216
Highland Heights, KY 41099, USA
nrth@ksbcf.org / 001-859-572-5259

Antonio Novelo
Jungle River Tours
20 Lover's Lane
Orange Walk Town Belize, Central America
lamanaimayatour@btl.net / 011-501-670-3035

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

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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 2016. 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 Can 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 costs, child labor, sugar cane organization roles, sugar cane price fluctuations, Zika virus, and kidney disease) and sugar cane farming (i.e., protective gear; fertilizer, herbicide, and pesticide attributes; humans and nature; and sugar cane varieties). This report presents the preliminary findings of the 2016 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 2018):

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,
- 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. 2016), there have been six notable scholarly publications related to this field school's research. Two reports have been published on farming in southern Belize, one on the impact of hunting on farm production (Rice 2017) and another on the impact of alley cropping maize (Kongsager 2017). There have

been three publications specifically on sugar cane farming in northern Belize: 1) the impact of falling sugar cane prices on urban populations and their development (Morris, Angel, and Hernández 2017); 2) how the sugar cane industry influences social organization (Cooper 2017); and 3) the potential use of bagasse in energy production (Gongora and Villafranco 2017). The final recent publication related to this research is on the community responses to Zika interventions (Gray and Mishtal 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. 2016).

Participants of the field school (Allison Cate, Anna Cloud, Tessa Forwalt, Emily Fox, Laura Murrell, Samir Pech, Cailey Radcliffe, Emily Stephen, Samuel Velasquez, and Kourtney Zigelmier) 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, etcetera) 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 their occupation and highest educational level as well as their perception on education costs, child labor, sugar cane organizations, sugar cane price fluctuation, Zika virus, and kidney disease (see Appendix III). Additional questions were asked if informants reported that they suffered from kidney disease (see Appendix III). If informants were currently sugar cane farmers, questions about sugar cane farming knowledge were asked and a spatial task conducted (see Appendix IV). Students digitally recorded interviews and took field notes during and directly after each interview.

Upon return from the field, Kourtney Zigelmier and Sage Boyers analyzed data from each interview (field notes and digital audio recordings) and consolidated the data into the spreadsheets. After data were consolidated, the digital audio recordings were securely erased. Douglas Hume then revised the spreadsheets, conducted both statistical and network analyses, and wrote this field report.

Community Development

Demographics

In total, 350 informants were interviewed; 108 in San Estevan, 100 in San Lazaro, and 140 in Yo Creek as well as two informants at D*Victoria Hotel. Of the 350 informants, 65 reported that they were sugar cane farmers. The average age of the informants was 38.8 years with a minimum age of 18 and maximum age of 82 years old. Sixty-seven percent of the informants were male and the remaining 43% were female. The most common primary occupation reported was domestic (97) followed by unemployed (25), cane famer (24), student (22), and cane cutter (13) (see Appendix V). The highest education levels reported were standard 6 (59), primary (33), standard 5 (31), and 6th Form (26) (see Appendix VI). Some informants (28) indicated that their secondary or retired occupations were directly related to sugar cane farming.

Education Costs

During the prior field season, the highest concern that the community suggested that we should ask about was the education costs of children (Hume et al. 2016: 16). This field season, interviews on the educational costs began with an open-ended question, “What are the education costs of children?”, followed by a conversation between interviewer and informant on topics related to education costs. Many informants estimated yearly, monthly, and weekly tuition, fees, and other costs, which is difficult to summarize due to the different terms and periods used. The terms relating to expense types were categorized and the number of times they were mentioned tallied. The most common education expense cited was books (69) followed by uniforms (62), school supplies (48), food (29), and school fees (27) (see Appendix VII). In the next field season (summer 2019), informants will be asked to connect categories of costs with estimated yearly costs.

Child Labor

The second highest community concern during the previous field season was the impact of child labor (Hume et al. 2016: 15). Interviews on child labor this field season began with an open-ended prompt, “Please tell me about child labor”. The most often mentioned category of responses involved that children, when they do work, are involved with cane farming (73) (see Appendix VIII). Informants also mentioned how that when children work, they most often work with their parents (44). Many informants mentioned that children should focus their time on studying (44) and that working children had either dropped out of school (30) or were working to raise money to pay for their education (29). There were also several informants that spoke about children workers as being from poor families (17) and working to help support their family (13). There was also mention of rules of child labor from fair trade agreements (14). In the next field season, informants will be asked additional questions about child labor focused on the reasons why children work, where they work, and the appropriate ages for different kinds of work.

Sugar Cane Organization Roles

The third highest community concern during the previous field season was the role of sugar cane organizations within the community (Hume et al. 2016: 15). Interviews on the roles of sugar cane organizations was prompted with an open-ended question, “What are the roles of the sugar

cane organizations (i.e., SIRD and BSCFA)?”. Many informants reported that they did not know what the role of the organizations were, these informants were mostly non-sugar cane farmers. Of those that had knowledge of the role of the organizations in the community, the most commonly stated response was that the organizations do not help the community (22). Others indicated that the organizations provide education (21), inexpensive fertilizer (19), help to farmers (15), scholarships (14), control pricing (13), and help to the community (13), as well as negotiate fair trade agreements (14) and fix roads (11) (see Appendix IX). In the next field season, informants will be asked to list the specific impacts that the different sugar cane organizations on the community.

Sugar Cane Price Fluctuation

In the previous field season, farmers were asked what they would do if the price of sugar cane dropped (Hume et al. 2016: 14). The discussion with informants about sugar cane price fluctuation began with the question “How did the sugar cane price drop effect you?”. Items with ten or more responses include that the sugar cane prices had no effect on them (84), their wages were affected (59), they had less money for supplies (38), it effected everyone (31), the price for goods increased (17), and there were fewer jobs available (12) (see Appendix X). When informants were asked “How did you respond to the sugar cane price drop?”, they responded that they took out loans (30), found another job (27), just accepted it (22), did nothing (21), worked more (13), cut back on spending (11), and planted other agricultural item (10) (see Appendix X). With the current drop in sugar cane prices, informants in the coming field season will be asked how they have responded to the current price drop and what plans they have for the future.

Zika Virus

The Zika virus became a national concern just before the previous field season, so we asked general questions about the disease. When informants were asked “What do you think about the Zika virus?”, the informants had a mixed response regarding how concerned they were and their responses to the threat of contracting Zika. The most common responses included: keep yard clean (84), does not know anything about it (62), has heard of it (61), prevention with pesticides (39), concerned (36), not dangerous here (31), avoid mosquitoes (26), be careful with water (25), it is dangerous (24), effects pregnant women (23), hurts children (20), afraid (15), clean empty containers (13), and be careful (10) (see Appendix XI). In the subsequent field season, rather than focusing only on Zika, community members will be asked to speak about their general health concerns to document which are of the most concern to serve as a guide for future research.

Kidney Disease

There has been national interest in kidney disease in Belize, resulting in a recent national survey of chronic kidney disease (Statistical Institute of Belize 2017). When informants were asked “What are the symptoms of kidney disease?”, they responded most commonly with back pain (62), kidney stones (20), general pain (20), urination pain (17), edema in the feet (14), and fever (13) (see Appendix XII). The remaining questions were only asked of those informants that self-identified as suffering from kidney disease. When informants were asked “What are the kinds/types of kidney disease?”, they responded overwhelmingly kidney stones (32) followed by infection (5), sugar caused/coke/sweet blood (5), diabetes (4), dissolving/cirrhosis (3), renal

failure (3), cancer (2), parasite/ameba/worms (2), dengue (1), and hepatitis (1) (see Appendix XIII). When informants were asked “What are the treatments for kidney disease?”, they responded dialysis (36), herbal/Mayan medication (25), prescription/antibiotic medication (24), increase water intake (19), increase coconut water intake (16), and visit the doctor (12) (see Appendix XIV). When informants were asked “What types of people are at risk for kidney disease?”, they responded diabetes (38), drinking alcohol (38), not drinking enough water (38), nothing, anyone can get it (30), the elderly (16), and drinking too much sugar/soda (16) (see Appendix XV). When informants were asked “What are the causes of kidney disease?”, they responded drinking alcohol (47), not drinking enough water (36), sugary drinks/soda (26), and bad diet/eating unhealthy food (14) (see appendix XVI). Due to the attention of the Statistical Institute to chronic kidney disease, the next field season’s questions on kidney disease will focus on the treatments of kidney disease.

Sugar Cane Farmer Interview

Demographics

Sixty-five of the 350 informants self-identified as sugar cane farmers and were asked additional questions about their farming knowledge (see Appendix IV). The minimum age of farmers interviewed was 18 and the maximum age was 78, with an average of 44.1 years. There were 59 (90.7%) male and 6 (9.3%) female farmers within our interview sample.

Protective Gear

Farmers were asked about the three most common reasons for why protective gear is not worn when applying agrichemicals that were collected in the previous field season (Hume et al. 2016: 15). Of the 65 farmers, most agreed the people do not know how dangerous agrichemicals are, so they do not wear protective gear (59 agreed, 3 disagreed, and 3 did not answer/know). Most farmers also agreed that protective gear is uncomfortable (hot, too restrictive), which results in people not using it (48 agreed, 5 disagreed, and 12 did not answer/know). Finally, farmers agreed and disagreed nearly equally that the reason for why people do not wear protective gear is that it is too expensive (29 agreed, 26 disagreed, and 12 did not answer/know). The reason for the disparity in answers, according to our informants, is that the gear is often given to farmers by farming associations or SIRDI, but then the upkeep and replacement is the financial responsibility of the farmers.

Fertilizer Attributes

In the previous field season, data on fertilizer types suggested that fertilizer impacted the growth of sugar cane in five ways: (1) faster, (2) greener, (3) sweeter, (4) taller, and (5) thicker (Hume et al. 2016: 12). When farmers were asked what fertilizer helps cane grow faster, they responded: urea/salt (47), nitrogen (23), phosphorus (15), and potassium (14). When farmers were asked what fertilizer helps cane grow greener, they responded: urea/salt (34), nitrogen (11), potassium (9), and phosphorus (4). When farmers were asked what fertilizer helps cane grow sweeter, they responded: potassium (24), phosphorus (14), urea/salt (9), and nitrogen (8). When farmers were asked what fertilizer helps cane grow taller, they responded: urea/salt (30), potassium (15), nitrogen (14), and phosphorus (11). When farmers were asked what fertilizer helps cane grow thicker, they responded: phosphorus (22), potassium (21), nitrogen (16), urea/salt (14). One topic that farmers often discussed was that they did not decide themselves what type of fertilizer

to use on their fields, but that they used whatever was given to them by the sugar cane organizations. In the coming field seasons, informants will be asked to discuss the decision making involved in which fertilizer they use.

Herbicide Attributes

In the previous field season, five key attributes of herbicides were identified. These attributes focused on what plants the herbicide impacted: (1) sugar cane, (2) grass, (3) shrubs, (4) vines, and (5) wide-leaf plants (Hume et al. 2016: 11). In response to the question “What herbicide kills sugar cane, farmers responded most commonly: Helosate/Wipeout/Glyphosate/Roundup (23) and Paraquat/Gramasone (10) (see Appendix XVII). When asked “What herbicide kills grass?”, farmers responded most commonly: Helosate/Wipeout/Glyphosate/Roundup (56) and Diuron/Durex (52) (see Appendix XVII). When asked, “What herbicide kills shrubs?”, farmers responded most commonly: Helosate/Wipeout/Glyphosate/Roundup (45) and 24D/Flash (41) (see Appendix XVII). In response to, “What herbicide kills vines?”, farmers responded most commonly: 24D/Flash (54), Helosate/Wipeout/Glyphosate/Roundup (38), and Paraquat/Gramasone (20) (see Appendix XVII). When asked, “What herbicide kills wide-leaf plants?”, farmers responded most commonly: 24D/Flash (46), Helosate/Wipeout/Glyphosate/Roundup (29), and Paraquat/Gramasone (24) (see Appendix XVII). As with fertilizer, herbicide choices were reported to be due to recommendations made by the sugar cane organizations. In the coming field season informants will be asked to discuss how these recommendations are made.

Pesticide Attributes

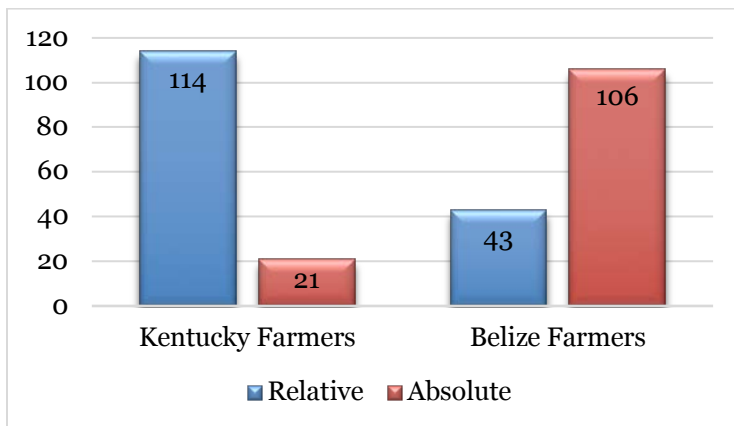
In the previous field season, data on pesticide types suggested three key attributes of pesticides, it effective against: (1) froghoppers, (2) froghopper eggs, and (3) worms (Hume et al. 2016: 10). Informants reported the most effective pesticides against froghoppers were: Jade o8GR (34), Malathion (30), and Tamaron (24) (see Appendix XVIII). Pesticides reported to be most effective against froghopper eggs was Jade o8GR (29) (see Appendix XVIII). Pesticides reported to be most effective against worms were: Tamaron (13), Malathion (12), and Karate (10) (see Appendix XVIII). In addition, informants were asked what was most effective against froghoppers, to which farmers responded most commonly with: Jade (42), Malathion (34), Bug bags (30), Hongos (22), Regent (22), and Confidor (19) (see Appendix XIX). Informants also reported that they used whatever SIRDI or associations provide (19). As with fertilizers and herbicides, in the next field season farmers will be asked about the decision-making process for which pesticides they choose to use.

Humans and Nature

As part of research into how farmers think of nature, informants were asked to respond to a free-list of things grown, open-ended questions about causality, and a spatial task using farm animals. The most commonly listed items that farmers reported that they grew (three or more instances, in alphabetical order) were: avocado, banana, bean, cattle, chicken, coconut, corn, cucumber, habañero, mango, okra, orange, plantain, pumpkin, sugar cane, and tomato. In the next field season, informants will be asked to pile-sort the items to better understand how farmers organize these crops into categories.

When informants were asked “What forces have an influence on production success?”, they most commonly reported: nature (8), technology (4), economy (2), and the sugar cane factory/mill (2). When informants were asked “What is meant by growth, why do plants grow?”, they most commonly reported: nature (10), people (10), technology (4), and god (2). When informants were asked “Who effects your environment (fields) the most?”, they most commonly reported: nature (12), people (5), economy (2), pollution (2), and the sugar cane factory/mill (2). When informants were asked “When farming, what/who makes things happen?”, they most commonly reported: people (10), god (5), and nature (5). When informants were asked “What can humans do about changes in weather?”, they most commonly reported: humans have no control (9), reduce air pollution (5), reforestation (3), recycling (3), and water (irrigation/not wasting water) (2). When informants were asked “Can humans/human activity effect nature/weather/wind/currents?”, they responded: yes (15), no (3), and maybe (1). In the next field season, farmers will be asked their agreement with propositional statements of their relationship nature.

Informants were asked to complete a spatial task designed to determine whether they preferred an absolute (relative to informant) or relative (relative to cardinal direction or landscape) spatial orientation (after Levinson 2003). Informants were given five small plastic animals and asked to memorize their position. The informant was then asked a question not related to the task. Once they answered the unrelated question, the informant was rotated 90 degrees and asked to place the animals in the order that the previously were given to them. This task was then repeated five times during the interview. After each placement, it was noted whether the animals were placed relative to the informant (absolute) or not (relative). Below are the aggregate results (sum of individual tasks) of the data collected in Belize with those collected with Kentucky farmers using the same methodology.



While farmers at both locations used both relative and absolute frames of reference, there was preference for a relative frame of reference (relative to informant) among Kentucky farmers and an absolute frame of reference (relative to cardinal direction) among the northern Belize farmers. These findings suggest that Belizean farmers may be more aware of how external forces impact their environment (sociocentric) than a focus on how the environment affect them individually (egocentric). In other words, Belizean farmers have a view of the environment where they are not the focus, but rather the community (both human and biotic) are more important lens through which the world is viewed.

Sugar Cane Varieties

In the previous field season, data on sugar cane types suggested several key attributes of sugar cane: easy/hard to cut, grows well in highlands/lowlands/rocky soil/sandy soil, heavy/light high/low sugar content, matures faster/later, pest resistant/vulnerable, soft/hard, tall/short, and thick/thin (Hume et al. 2016: 7). Informants were asked how each sugar cane variety related to each of the attributes above and the data aggregated (see Appendix XX). The aggregated data were then analyzed using network analysis (after Hanneman and Riddle 2005 using NetDraw [Borgatti 2002]). The sugar cane attribute network analysis (see Appendix XXI) is a 2-mode network graph (sugar cane type by attribute) where the node size is set to its eigenvector value (number of ties to other nodes proportional to the scores of its neighbors). The lines represent positive aggregate data for each sugar cane variety by its attribute. The blue nodes are sugar cane varieties and the red nodes are attributes. From this analysis, the importance of several attributes at the center of the diagram (sandy, lowlands, highlands, rocky, maturation, height, and weight) are more important than other attributes in organizing the sugar cane types than other attributes. However, there is not a clear result that would indicate informants agree on the relationships between attributes and sugar cane types.

The informant by sugar cane network analysis (see Appendix XXII) is a 2-mode network graph of informant responses to attribute questions about sugarcane varieties. The lines represent the responses of individual informants (red dots) rating the attribute negatively (absence of relationship) to each cane variety. The node size is set to its eigenvector value. What is interesting here is the similar responses to the common types of cane grown – the cane on the right is less commonly grown. Another representation of the same relationship was made using Gephi (Bastian, Heymann, Jacomy 2009) (see Appendix XXIII), which reinforces that informants have more knowledge about the most commonly grown sugar cane varieties (sugar cane types at the center of the diagram).

In exploring the relationship between farmers and their knowledge of sugar cane varieties, network diagrams of degree centrality (out degree, from informants to cane) show that certain farmers have knowledge of the attributes for only some types of sugar cane while others have knowledge of the attributes of a wide-variety of sugar cane types (see Appendices XXIV and XXV). From the perspective of prestige centrality (in degree, from cane to information), one can see that informants know more about the current common varieties of sugar cane than the less common varieties (see Appendices XXVI and XXVII).

The analyses above show that there are farmers that have a wide knowledge and others that have a focused knowledge of sugar cane types and their attributes. In other words, there is a difference among farmers in their depth and breadth of knowledge, which may be due to the amount of time they have been farming (i.e., they have first-hand knowledge of a variety of cane varieties due to their having farmed the older and new types), the area(s) they have farmed (i.e., working in different climates and soil types with different varieties of cane), or their connections with others (i.e., speaking with other farmers and workshops by SIRDI). In an applied sense, the goal of sugar cane farmers is to have a high-quality crop yield (e.g., amount of cane grown and sugar content of cane) where short term resiliency requires knowledge about current crop varieties and long-term resiliency requires knowledge past, present, and future varieties.

In the next field season, data will be collected to explore how sugar cane variety knowledge is both shared and transmitted among the sugar cane farming community. First, responses to

agreement on propositional statements of the currently most common sugar cane varieties (BBZ, B79, and B52 [*blanca*]) will be collected to determine the degree to which the information is shared among farmers. Second, farmers will be asked to explain their egocentric network (who and where they receive information) for sugar cane, fertilizer, pesticide, and herbicide information.

Conclusion

This report documents the findings from the summer 2016 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 perspectives; effects of sugar cane price fluctuations; knowledge of Zika, kidney disease. Educational costs of children are varied and still of concern to parents. Child labor is a complex topic which balances competing needs of education and economics. Parents recognize the long-term importance of education and want their children to complete their education, however the economic needs of the family may require children to work to augment the family income. The community has a disparity in understanding of the roles of sugar cane organizations in the community. While it is mostly known by sugar cane farmers, the rest of the community is not aware of organization's community development efforts. The impact of sugar cane price reductions is still not perceived as a threat to the community and people have not prepared for the economic hardships that may result from sugar cane prices dropping. The Zika virus was not a central concern of our informants, perhaps due to the general concern already present with other mosquito borne diseases (i.e., malaria and dengue fever). Kidney disease is also not a major concern of informants, unless they or a family member suffer from the disease (i.e., kidney stones and kidney failure).

Interviews with farmers resulted in collecting additional information on sugar cane farming knowledge in northern Belize. Farmers attributed the underuse of wearing protective gear while applying agrichemicals primarily due to people not understanding how dangerous these chemicals are to their health. The results of the collection of attributes of fertilizers, herbicides, pesticides, and sugar cane varieties suggests that there is a large amount of variation in knowledge due to the length of time farming and the channels through which farmers learn information. Sugar cane farmers have a sociocentric view of nature and how the different aspects (e.g., humans, nature, and spirituality) of their environment interact.

The findings of this research will be used to direct data collection in the next field season. All community members will be asked: 1) about the average yearly spending per child in the categories of expenses collected this field season; 2) to free list the impacts of each sugar cane organization on their community; 3) to list the reasons why children work, the types of child labor, and the appropriate ages what children may work; 4) how they have responded to the sugar cane price drop and their plans for the future; 5). about their general health concerns and treatment of kidney disease, and 6) to suggest future research topics. Informants that self-identify as sugar cane farmers will be asked: 1) to judge the attribute similarity of the most common varieties of sugar cane (BBZ, B52, and B79); 2) provide their information networks for fertilizer, herbicide, pesticide, and sugar cane knowledge, 3) respond to their agreement with the role of nature, humans, and divine influences on the environment, and 4) pile-sort the things that they grow on their farms. The goals of the next field season will continue to include the training of students in basic ethnographic methods as well as to collect and analyze data that can then be used by organizations (SIRDI, BSCFA, and PSCPA) and community members in the

development of programs for betterment of the sugarcane farming communities in northern Belize.

Appendix I: Informed Consent Statement – English



College of Arts and Sciences
Department of Sociology, Anthropology,
and Philosophy
Landrum Academic Center 217C
Nunn Drive
Highland Heights, Kentucky 41099
tel 859.572.5259 | fax 859.572.6086
www.nku.edu

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



College of Arts and Sciences
Department of Sociology, Anthropology,
and Philosophy
Landrum Academic Center 217C
Nunn Drive
Highland Heights, Kentucky 41099
tel 859.572.5259 | fax 859.572.6086
www.nku.edu

FORMULARIO DE CONSENTIMIENTO INFORMADO PARA PARTICIPAR EN UN PROYECTO DE INVESTIGACIÓN

TÍTULO 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; 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

1. Note - Approximate age and sex
2. Ask - Occupation, highest educational level
3. Community development
 - A. What are the education costs of children?
 - B. Please tell me about child labor.
 - C. What are the roles of the sugar cane organizations (i.e., SIRDI and BSCFA)?
4. Sugar cane price fluctuation
 - A. How did the sugar cane price drop effect you?
 - B. How did you respond to the sugar cane price drop?
5. Zika Virus
 1. What do you think about the Zika virus?
6. Free-listing
 - . What are the symptoms of kidney disease?
 - A. What are the kinds/types of kidney disease?
 - B. What are the treatments for kidney disease?
 - C. What types of people are at risk for kidney disease?
 - D. How can you prevent kidney disease?
 - E. What are the causes of kidney disease?
 - F. What agrichemicals do you use?
 - G. How do you use/apply agrichemicals?

Kidney Disease Sufferers Only

1. Free-listing
 - A. What were your first symptoms?
 - B. What are your current symptoms of kidney disease?
 - C. What kinds/types of kidney disease have you been diagnosed with?
 - D. What treatments have you received for your kidney disease?
 - E. Are you on dialysis? How long have you been on it?
 - F. Who else in your family (immediate or extended) has been diagnosed with kidney disease?
 - G. Has anyone talked to you about how you can prevent kidney disease?
 - H. Have you been told what the cause of your kidney disease is?

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

Farmers Only

1. Spatial Task - Place three animals on table all facing right. Ask informant to memorize position. Wait at least one minute before proceeding to next step.
2. Fertilizer Effects - Urea/salt, Nitrogen, Phosphorus, and Potassium
 - A. Cane grows faster
 - B. Cane grows greener
 - C. Cane grows sweeter
 - D. Cane grows taller
 - E. Cane grows thicker
3. Spatial Task - Face the informant 90 degrees from prior position. Give informant animals, ask them to place them in the previous order, and note relative/absolute placement. Place three animals on table all facing left. Ask informant to memorize position. Wait at least one minute before proceeding to next step.
4. Herbicide Effects - 24D/Flash, Diuron/Durex, Ametryne 500G/L, Paraquat/Gramasone, Bullgrass, Helosate/Wipeout/Glyphosate/Roundup, Gessapex, Amigan, and Ramazyn
 - A. Kills cane
 - B. Kills grass
 - C. Kills shrubs
 - D. Kills vines
 - E. Kills wide leaf plants
5. Spatial Task - Face the informant 90 degrees from prior position. Give informant animals, ask them to place them in the previous order, and note relative/absolute placement. Place three animals on table all facing left. Ask informant to memorize position. Wait at least one minute before proceeding to next step.
6. Insecticide/Pesticide Effects - Malathion, Jade 08GR, Regent, Primex, Tamaron, Engeo 24, 7 SC, Landex, Lorsban, Karate, Sevin, Hongos, Aktera, Atana
 - A. Effective against froghoppers
 - B. Effective against froghopper eggs
 - C. Effective against worms
7. Spatial Task - Face the informant 90 degrees from prior position. Give informant animals, ask them to place them in the previous order, and note relative/absolute placement. Place three animals on table all facing right. Ask informant to memorize position. Wait at least one minute before proceeding to next step.
8. What methods do you use to get rid of froghoppers?
 - A. Unspecified insecticides (whatever the association or SIRDI provides)
 - B. Aktera (insecticide)
 - C. Bug bags
 - D. Confidor (insecticide)
 - E. Glue covered posts driven into the ground
 - F. Hongos (insecticide)
 - G. Jade (insecticide)
 - H. Karate (insecticide)
 - I. Malathion (insecticide)
 - J. Regent (insecticide)
 - K. Tamaron (insecticide)

9. Spatial Task - Face the informant 90 degrees from prior position. Give informant animals, ask them to place them in the previous order, and note relative/absolute placement. Place three animals on table all facing right. Ask informant to memorize position. Wait at least one minute before proceeding to next step.
10. Protective gear
 - A. People do not know how dangerous the chemicals are
 - B. The protective gear is uncomfortable (hot, too restrictive)
 - C. The protective gear is too expensive
 - D. I do not know
11. Spatial Task - Face the informant 90 degrees from prior position. Give informant animals, ask them to place them in the previous order, and note relative/absolute placement.
12. Sugar cane varieties - B79-474, BBZ, Blanca, CP-26, CP-2086, Piña, Bamboo, Brazil, 290, Chalecudo, Purple, Ragna, Chaparo, Q80, B59, BBZ-8240, BBZ-8290, and PR
 - A. Easy/hard to cut
 - B. Grows well in highlands
 - C. Grows well in lowlands
 - D. Grows well in rocky soil
 - E. Grows well in sandy soil
 - F. Heavy/light
 - G. High/low sugar content
 - H. Matures faster/later
 - I. Pest resistant/vulnerable
 - J. Soft/hard
 - K. Tall/short
 - L. Thick/thin
13. Open Ended Questions
 - A. What is your typical work/work-day?
 - B. Describe your work/job (related to primary food production).
 - C. What is the rhythm of work in this area? (do not say season)
 - D. What are some of the essential knowledge, skills, experience you need to be a successful food producer?
 - E. What are the key decisions one must make to be successful in you work/job?
 - F. What information do you need to make decisions?
 - G. How do you choose what crops to grow, what to hunt, what to go after?
 - H. What are considered 'productive activities'?
 - I. Which fields are productive?
 - J. What effects productivity?
 - K. What forces have an influence on production success?
 - L. What is meant by growth, why do plants grow?
 - M. What are some of the constraints/problems you face as a food producer?
 - N. Who effects your environment (fields) the most?
 - O. When farming, what/who makes things happen (human, animal, plants, ancestors, spirits, Government/NGO agency)?
 - P. What is the worst/best thing humans can do in farming/etc.?
 - Q. What do you like/not like about what you are doing (satisfaction)?
 - R. Are there things you have to do that are destructive, but you'd prefer not to do?
 - S. What is the effect of weather, government, wars, people, on your farming?
 - T. What are your livelihood alternatives?

- U. What changes have occurred in your work related to the environment? Why are there these changes/variations? Has the weather changed? If so, how?
 - V. What can humans do about changes in weather?
 - W. Can humans/human activity effect nature/weather/wind/currents?
 - X. Species X changes in presence of Y? (e.g., What animals on your farm affect other animals?)
14. Free Listing
- A. All of the things that they grow on their farm.

Appendix V: Occupations

Count	Current Occupation*
97	Domestic
25	Unemployed
24	Cane farmer
22	Student
13	Cane cutter
12	No response
10	Teacher
8	Business owner
6	Construction worker
6	Shop owner
5	Farmer
5	Retired
4	Baker
4	Laborer
4	Shop employee
3	BSI employee
3	Cane truck driver
3	Domestic, shop owner
3	Maid
3	Retired teacher
3	Tour guide
2	Cane farmer, vegetable farmer
2	Carpenter
2	Housekeeper
2	Housewife
2	Retired cane farmer
2	Vegetable farmer

*Only items listed by two or more informants are listed.

Appendix VI: Education

Count	Highest Level of Education*
59	Standard 6
33	Primary
31	Standard 5
26	6th Form
23	No response
21	High school
20	4th Form
13	2nd Form
12	College
12	Standard 3
10	Some college
9	None
9	Standard 4
8	3rd Form
8	Associate's degree
6	5th Form
5	1st Form
5	Bachelor's degree
5	Vocational school
4	Secondary
3	Bachelor's degree
2	Master's degree
2	Primary 6
2	Standard 1
2	Standard 2
2	Trade school

*Only items listed by two or more informants are listed.

Appendix VII: Educational Expenses

Count	Educational Expenses*
69	Books
62	Uniforms
48	School Supplies
29	Food
27	School fees
21	Transportation
18	Raffles
16	Fees
15	Tuition
14	Donations

*Only top ten categories listed.

Appendix VIII: Child Labor

Count	Child Labor*
73	cane farming
44	with parents
34	should only study
30	dropped out of school
29	money for school
17	poor family
14	fair trade agreement
13	help with family
13	teaches hard work
12	extra money
11	only on weekends
10	not in the community
10	only when not in school
9	subsistence
8	earn money
8	money for family
8	not good
7	against child labor
7	it happens
7	not 'my' children
7	not forced
7	not under 18
7	obligation
7	to stay off the streets

*Only non-monetary costs and terms mentioned by two or more informants are listed.

Appendix IX: Sugar Cane Organizations

Count	Sugar Cane Organization Roles*
22	do not help
21	provide education
19	provide inexpensive fertilizer
15	help farmers
14	fair trade organization
14	provide scholarships
13	control pricing
13	help community
11	fix roads
9	provide loans
8	donate to schools
7	cut cane
7	prevent child labor
7	provide cheap supplies
6	control transportation
5	provide quotas
4	inspect farms
4	provide jobs
3	doesn't care
3	help the elderly
3	planting their own cane sugar
3	provides income
2	checks if cane is clean
2	control portions
2	donate
2	funeral grants
2	help students
2	help with sugar production
2	medical expenses
2	provide regulations

*Only items listed by two or more informants are listed.

Appendix X: Sugar Cane Price

Count	Effect of Sugar Cane Price Drop*
84	No effect
59	Wages effected
38	Less money for supplies
31	Effects everyone
17	Increased price for goods
12	Less jobs available
9	Hurt business
6	Effected schooling
6	Less stock
5	Effects whole country
5	Effects economy
4	Increased fuel price
3	Effected investments
2	Effected culture

Count	Response to Sugar Cane Price Drop*
30	Take out loans
27	Find another job
22	Accepted it
21	Cannot do anything about it
13	Work more
11	Cut back on spending
10	Plant something else
9	Budget better
8	Changed careers
7	Adjust prices
4	Work on fields themselves
3	Now buys brown sugar
2	Cut back on sugar consumption
2	Might move to the United States

*Only items listed by two or more informants are listed.

Appendix XI: Zika Virus

Count	Zika Responses*
84	Keep yard clean
62	Does not know anything about it
61	Has heard of it
39	Prevention with pesticides
36	Concerned
31	Not dangerous here
26	Avoid mosquitoes
25	Be careful with water
24	It is dangerous
23	Effects pregnant women
20	Hurts children
15	Afraid
13	Clean empty containers
10	Be careful
9	It's bad
9	Not concerned
9	Worried
7	Government should help
6	Educate others
6	It's very serious
5	Not scared
5	Use mosquito nets
4	No thoughts
3	Be aware
3	God will take care of them
3	Government is not ready
3	It's contagious
3	It's horrible
2	Get checkups
2	Hope for the best
2	Need more preventive measures

*Only items listed by two or more informants are listed.

Appendix XII: Kidney Disease Symptoms

Count	Kidney Disease Symptoms*
62	pain - back
20	kidney - stones
20	pain - general
17	urination - pain
14	edema - feet
13	fever
9	vomiting
8	edema - general
7	dehydration/thirst
7	diabetes
7	urination - dark
6	kidney - infection
6	urination - difficultly
5	fatigue/weakness
5	headache
5	pain - abdominal
5	skin rash
5	urination - blood
4	pain - side
3	high blood sugar
3	urination - frequency increased
2	breathing problems
2	edema - abdominal
2	edema - legs
2	weight loss

*Only items listed by two or more informants are listed.

Appendix XIII: Kinds/Types of Kidney Disease

Count	Kinds/types of Kidney Disease*
32	kidney stones
5	infection
5	sugar caused/coke/sweet blood
4	diabetes
3	dissolving/cirrhosis
3	renal failure
2	cancer
2	parasite/ameba/worms
1	dengue
1	hepatitis

*All responses are listed.

Appendix XIV: Kidney Disease Treatments

Count	Kidney Disease Treatments*
36	dialysis
25	medication - herbal/Mayan
24	medication - prescription/antibiotics
19	fluid intake - increase water
16	fluid intake - coconut water (sometimes synonymous with herbal, green coconuts)
12	visit - doctor
9	fluid intake - juices
7	operation - kidney transplant
7	visit - hospital
6	operation - general
3	fluid intake - no soft drinks
2	medication - pain
2	medicine - pineapple/olive oil (Mennonite recipe)
2	operation - removal of kidney stone(s)

*Only items listed by two or more informants are listed.

Appendix XV: Kidney Disease Risks

Count	Kidney Disease Risk*
38	Diabetes
38	Drinking alcohol
38	Not drinking enough water
30	None - anyone can get it
16	Age - elderly (50+)
16	Drinking too much sugar (soda)
8	Eating unhealthily (fried/candy/pork/greasy)
7	Smoking
6	Working too much/hard/outdoors
5	Bad water - drinking chlorine (piped water)
5	Family history
4	Age - middle age (25-40)
4	Bad water - well/some brands
4	Using Drugs
4	Women
3	Mestizos
3	Obese
2	Age - children
2	Age - teenagers (around 12)
2	Cancer
2	Chemicals - in water
2	Holding urination
2	Males

*Only items listed by two or more informants are listed.

Appendix XVI: Kidney Disease Causes

Count	Causes of Kidney Disease*
47	drinking alcohol
36	not drinking enough water
26	sugary drinks - soda
14	bad diet-eating unhealthy food
9	contaminated/dirty water (source not specified)
6	sugar in general
5	dehydration
5	diabetes
4	piped water (chemicals)
3	drinking chlorine (pip water)
3	heredity
3	smoking
3	use of medication
2	diabetes
2	drinking pipe water
2	eating red meat
2	kidney stones
2	lack of exercise
2	mosquitoes
2	overwork
2	using drugs

*Only items listed by two or more informants are listed.

Appendix XVII: Herbicides

Count	Herbicides that Kill Sugar Cane
23	Helosate/Wipeout/Glyphosate/Roundup
10	Paraquat/Gramasone
7	24D/Flash
7	Diuron/Durex
3	Ametryne 500G/L
3	Amigan
3	Bullgrass
2	Gessapex
2	Ramazyn

Count	Herbicides that Kill Grass
56	Helosate/Wipeout/Glyphosate/Roundup
52	Diuron/Durex
26	Paraquat/Gramasone
25	Gessapex
24	24D/Flash
22	Ametryne 500G/L
19	Amigan
12	Bullgrass
9	Ramazyn

Count	Herbicides that Kill Shrubs
45	Helosate/Wipeout/Glyphosate/Roundup
41	24D/Flash
26	Paraquat/Gramasone
24	Bullgrass
22	Diuron/Durex
14	Ametryne 500G/L
10	Amigan
9	Gessapex
7	Ramazyn

Count	Herbicides that Kill Vines
54	24D/Flash
38	Helosate/Wipeout/Glyphosate/Roundup
20	Paraquat/Gramasone
15	Diuron/Durex
13	Bullgrass
12	Ametryne 500G/L
7	Amigan
6	Ramazyn
5	Gessapex

Count	Herbicides that Kill Wide-leaf Plants
46	24D/Flash
29	Helosate/Wipeout/Glyphosate/Roundup
24	Paraquat/Gramasone
19	Bullgrass
14	Diuron/Durex
7	Ametryne 500G/L
7	Amigan
3	Gessapex
3	Ramazyn

Appendix XVIII: Pesticides

Count	Pesticides Effective Against Froghoppers
34	Jade o8GR
30	Malathion
24	Tamaron
18	Regent
12	Karate
11	Hongos
11	Sevin
10	Aktera
8	Lorsban
7	Engeo 24, 7 SC
6	Primex
4	Atana
3	Landex

Count	Pesticides Effective Against Froghopper Eggs
29	Jade o8GR
9	Regent
7	Hongos
6	Malathion
4	Tamaron
3	Engeo 24, 7 SC
2	Aktera
2	Primex
1	Atana
1	Karate
0	Landex
0	Lorsban
0	Sevin

Count	Pesticides Effective Against Worms
13	Tamaron
12	Malathion
10	Karate
8	Jade o8GR
7	Hongos
7	Lorsban
7	Regent
5	Aktera
5	Engeo 24, 7 SC
5	Sevin
4	Atana
4	Landex
4	Primex

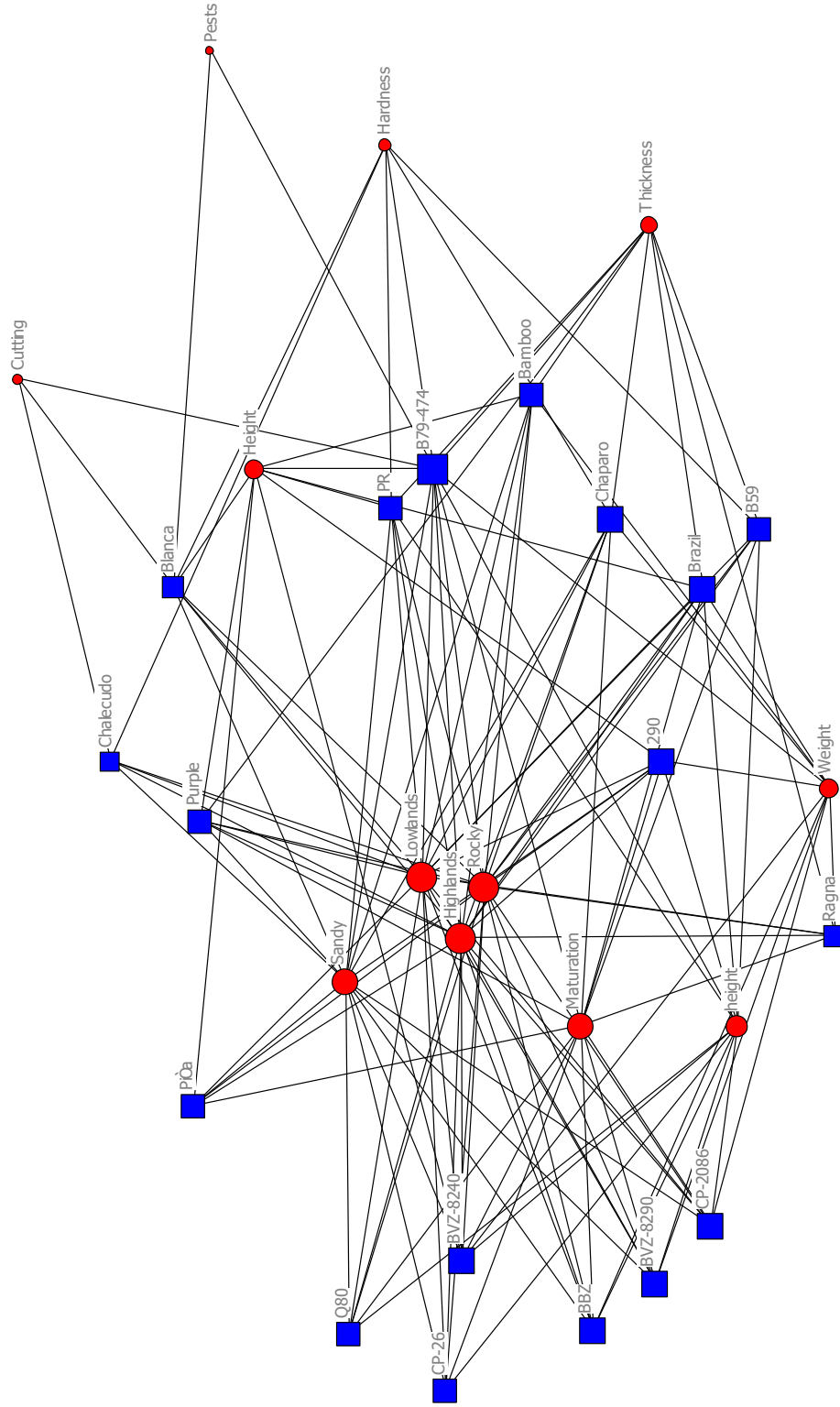
Appendix XIX: Froghopper Mitigation

Count	Froghopper Mitigation
42	Jade (insecticide)
34	Malathion (insecticide)
30	Bug bags
22	Hongos (insecticide)
22	Regent (insecticide)
19	Confidor (insecticide)
19	Unspecified insecticides (whatever the association or SIRDI PProvides)
17	Tamaron (insecticide)
14	Karate (insecticide)
13	Aktera (insecticide)
8	Glue covered posts driven into the ground

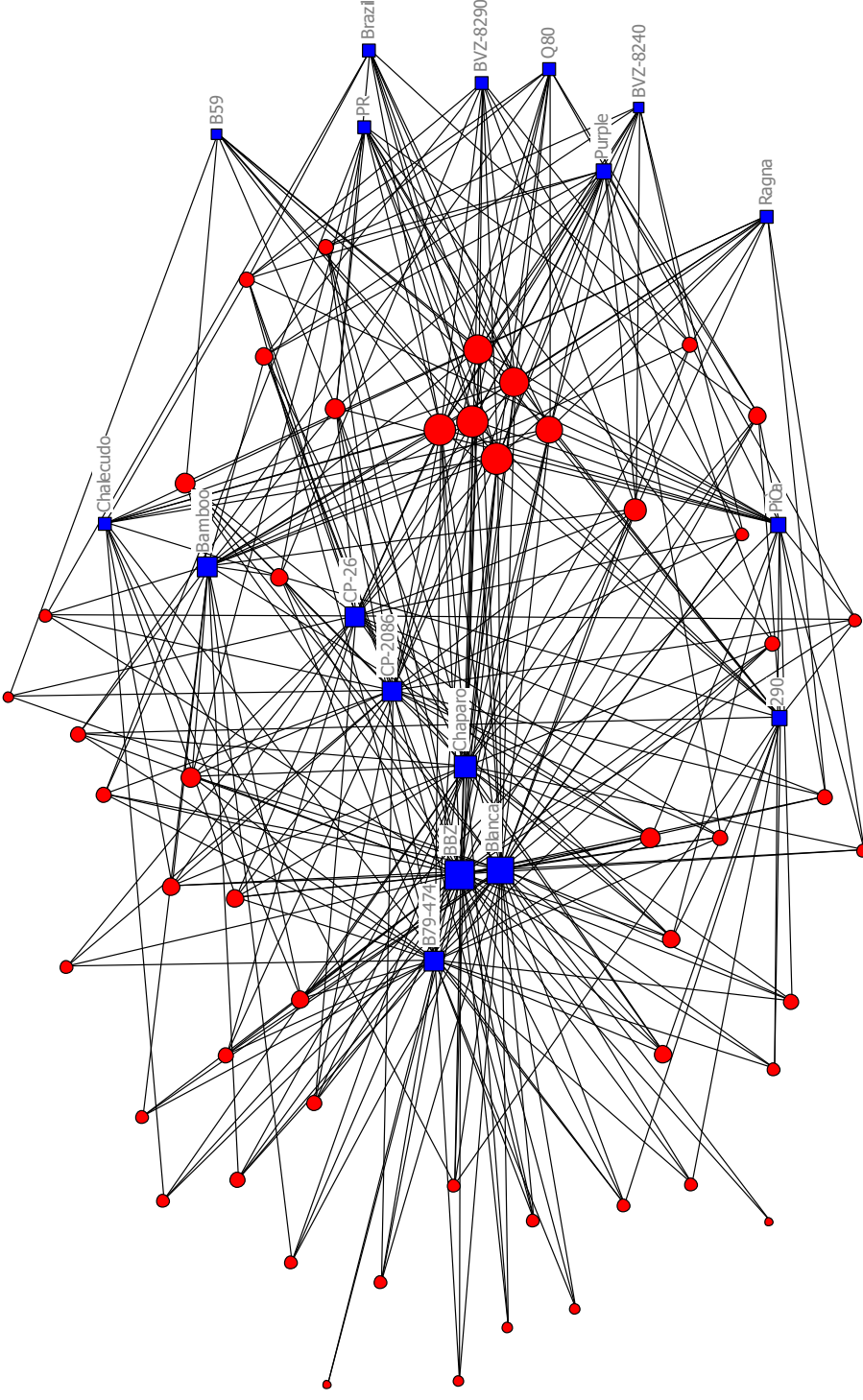
Appendix XX: Sugar Cane Varieties

Sugar Cane	Cutting	Highlands	Lowlands	Rocky	Sandy	Weight	Maturation	Pests	Hardness	Height	Thickness
Blanca	31	16	15	9	5	-14	-11	8	19	8	-13
CP-2086	-6	8	4	1	2	1	13	-8	-6	-1	-8
CP-26	-4	10	3	2	2	0	11	-8	-2	-1	-8
BBZ	-31	7	16	5	18	23	7	-27	-27	-10	-7
BBZ-8240	-6	3	2	3	2	4	2	-5	-4	1	-1
290	-1	4	3	5	5	3	9	-5	-5	5	0
BBZ-8290	-5	3	2	3	1	3	1	-8	-4	-1	0
Chalecudo	4	7	3	2	1	-2	-2	-4	5	0	0
Piña	-6	8	9	4	2	-2	5	-8	0	2	0
Q80	-2	3	3	2	1	-3	2	-4	0	0	0
B59	-2	4	1	1	0	0	1	-4	1	-1	1
Purple	-4	5	6	1	3	-2	1	-2	0	1	1
Ragna	-1	4	1	1	0	2	1	-5	-4	-3	1
PR	0	7	4	4	3	-1	-3	-4	1	4	2
Brazil	-1	5	1	2	0	1	1	-6	-1	1	4
Chaparo	-2	9	4	3	5	11	1	-4	7	-18	5
Bamboo	-6	8	6	6	1	6	0	-4	-1	3	10
B79-474	6	35	24	26	27	29	11	18	19	26	25

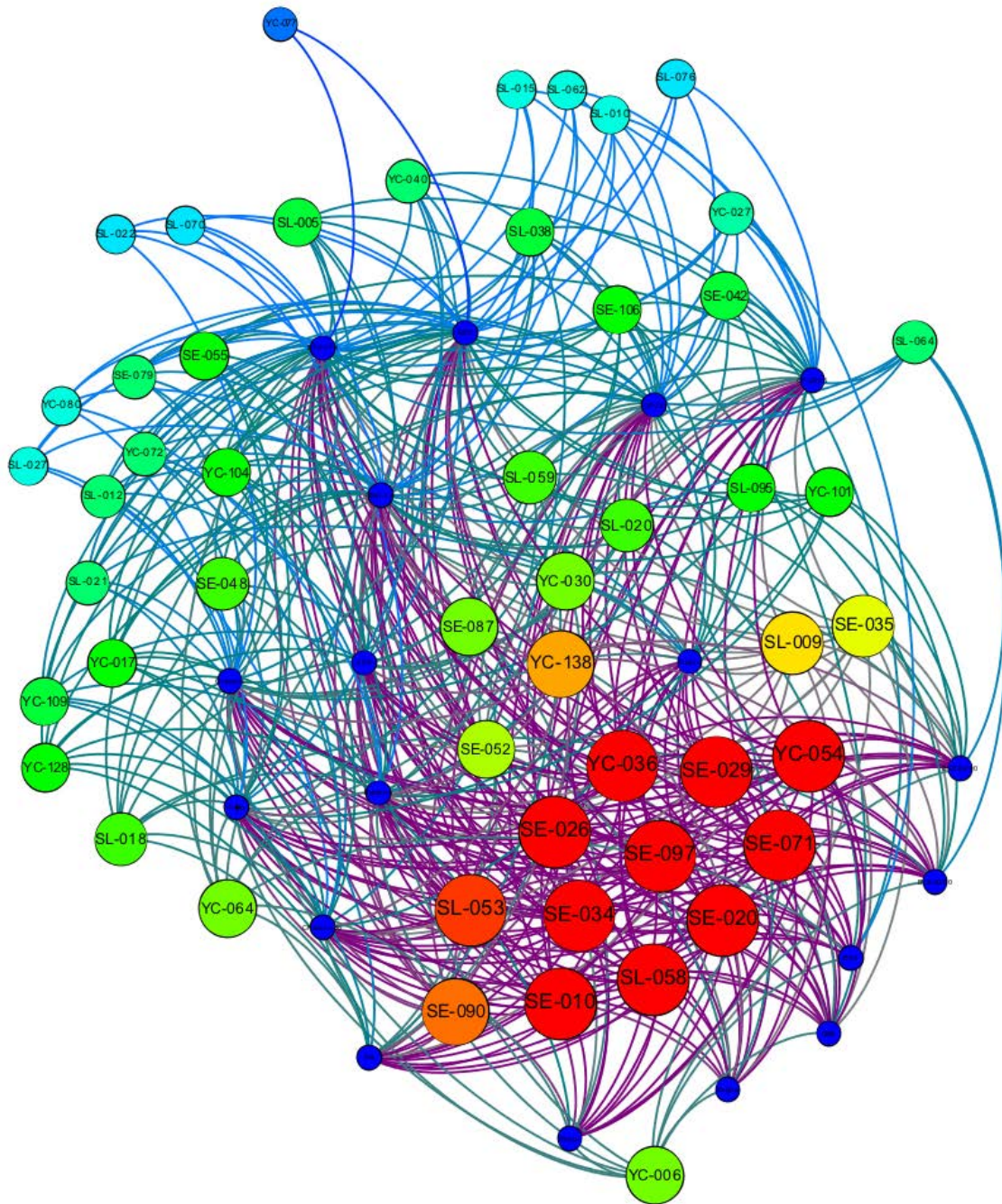
Appendix XXI: Sugar Cane Attribute Network



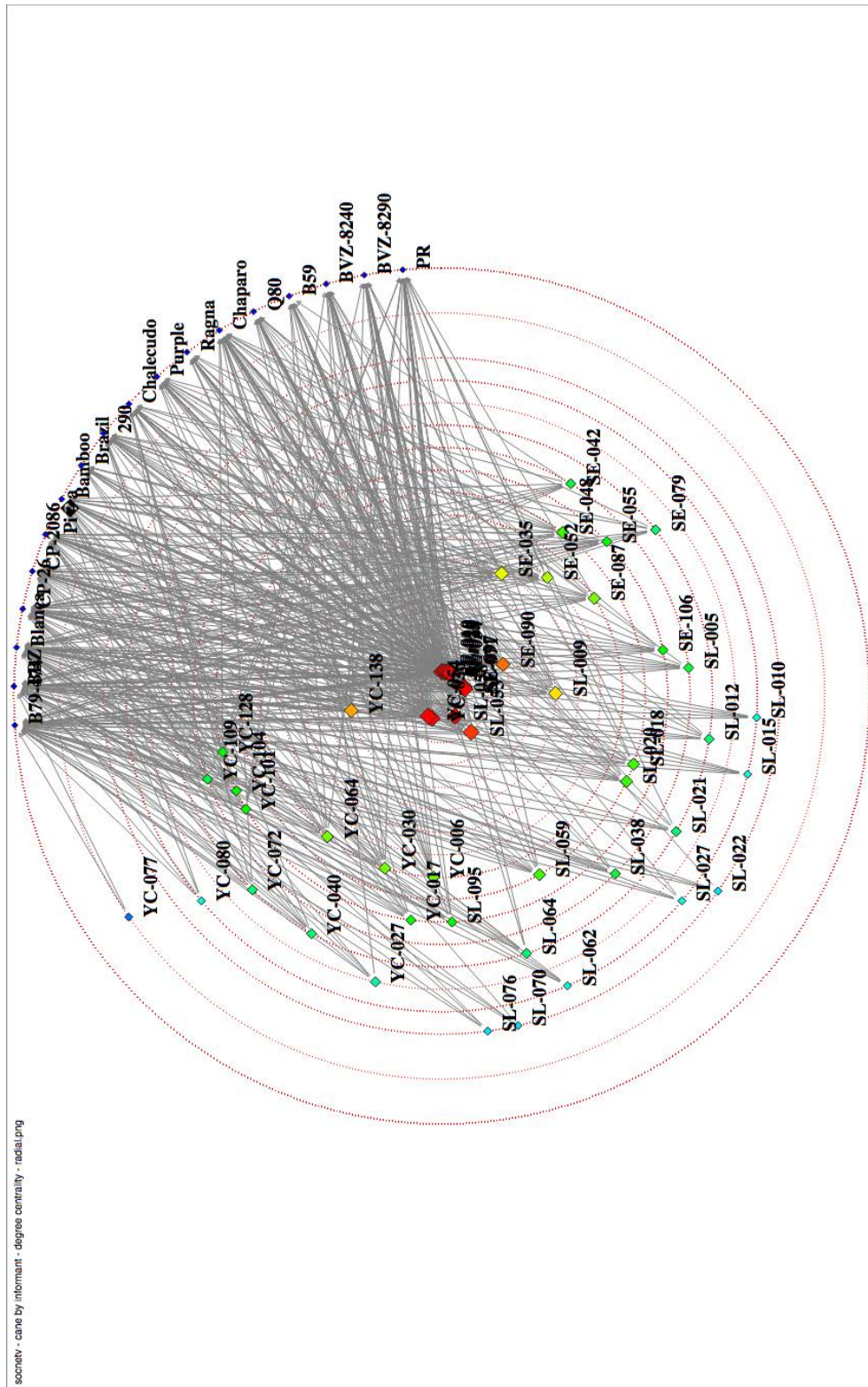
Appendix XXII: Informant/Sugar Cane Network I



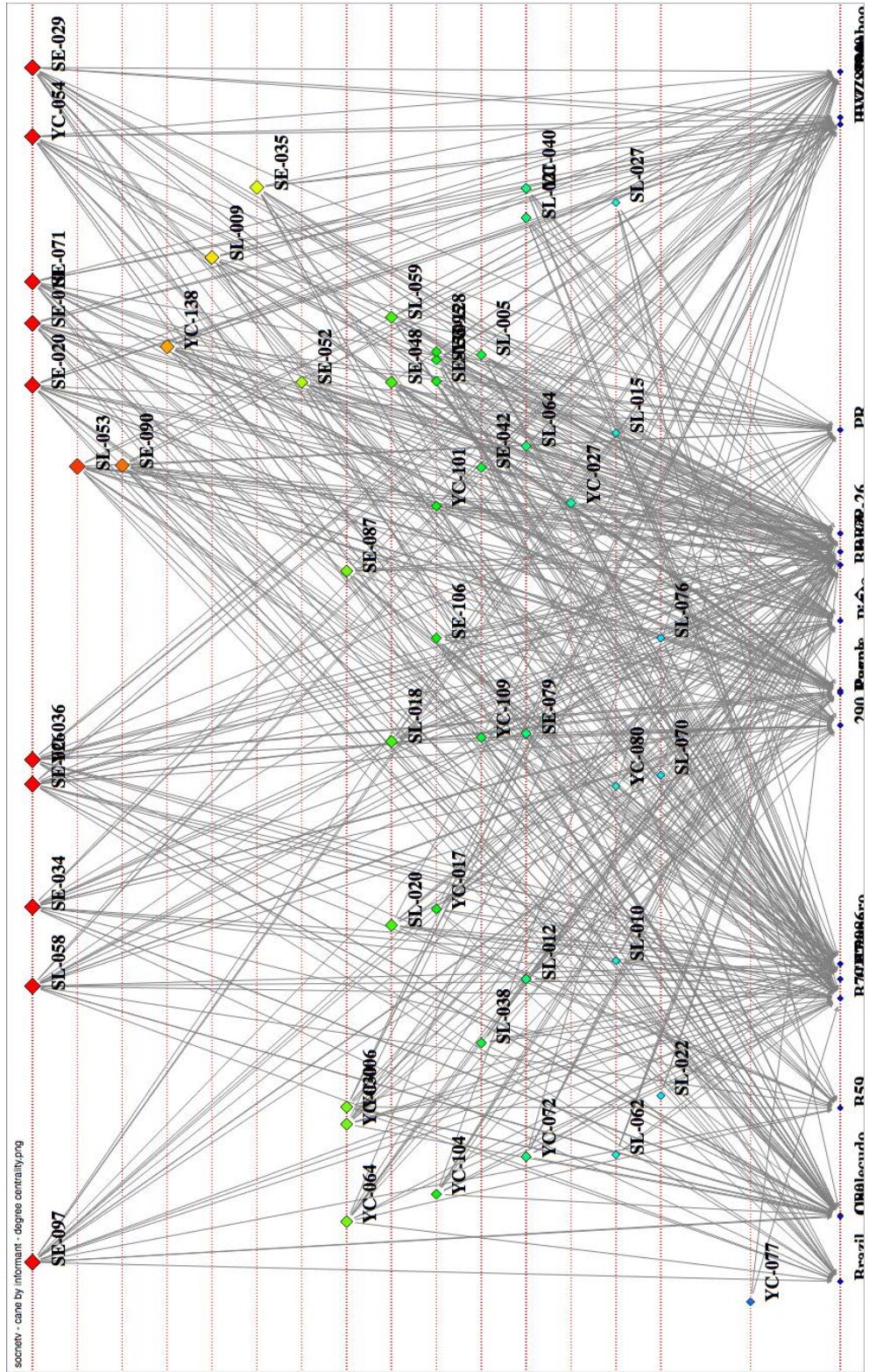
Appendix XXIII: Informant/Sugar Cane Network II



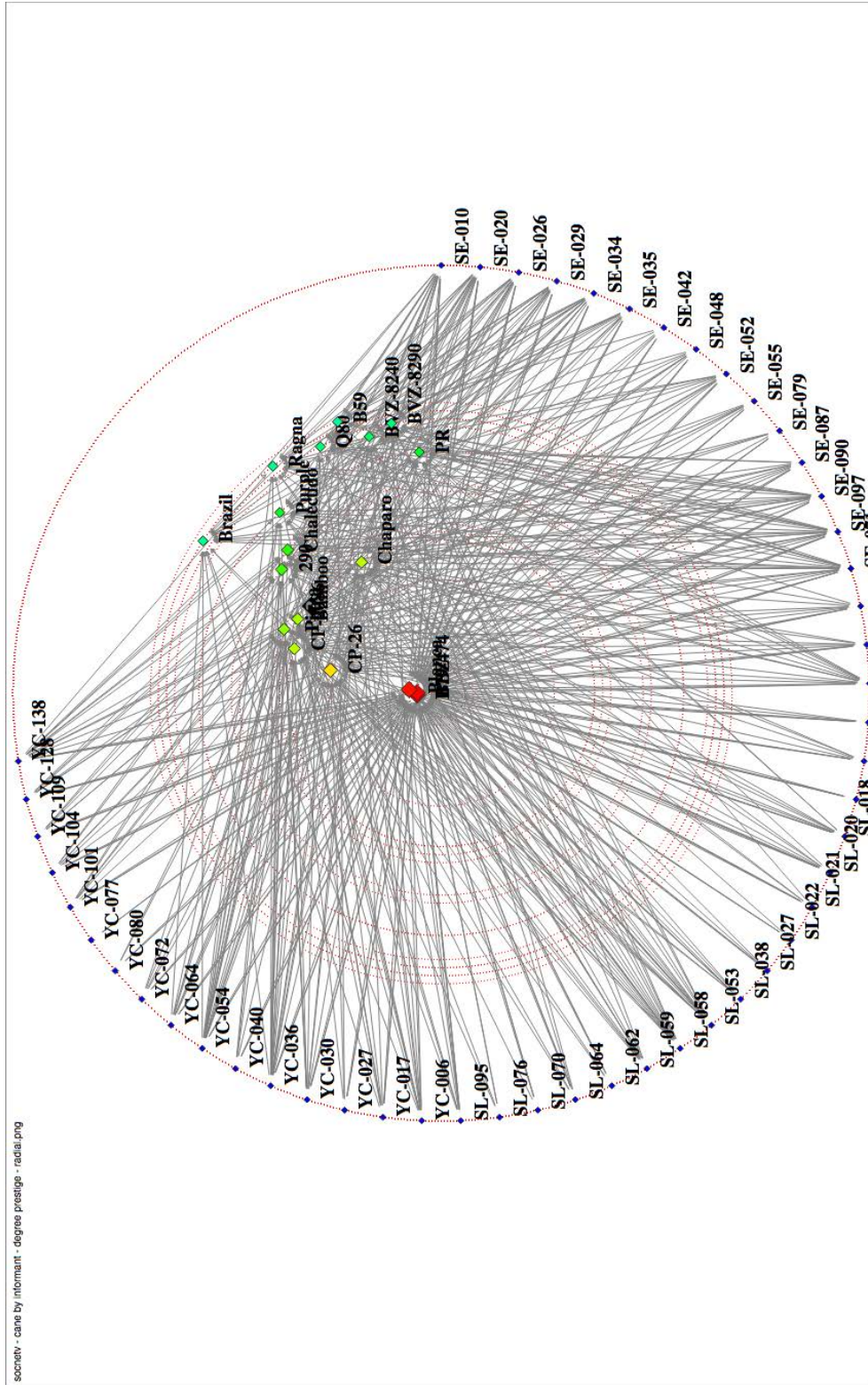
Appendix XXIV: Informant/Sugar Cane Network III



Appendix XXV: Informant/Sugar Cane Network IV



Appendix XXVI: Informant/Sugar Cane Network V



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