Quiz questions for university module: Quiz 1

1) Is this training a substitute for a Good Agricultural Practices workshop?
   A) Yes, it is a substitute.
   B) It counts for half of a Good Agricultural Practices workshop
   C) No, it is not a substitute.
   D) I'm not sure if this substitutes.

Answer: This training does emphasize important food safety issues related to fresh produce production and distribution, but does not provide as much information as a Good Agricultural Practices workshop does. This training was developed to inform farm workers on the basic food safety risks and risk prevention techniques to consider when working with fresh produce.

2) What are three types of hazards that fresh produce are exposed to?
   A) Environmental, Manufacturing, and Employee
   B) Biological, chemical, and physical
   C) Plant, animal, and soil
   D) None of the above

Answer: The three different types of hazards that fresh produce and fresh produce workers may be exposed to are biological, chemical, and physical hazards. Biological hazards include bacteria, viruses, and parasites. Chemical hazards include pesticides and naturally occurring toxins in the fresh produce. Physical hazards include objects that can cause physical harm (broken glass, hard plastic, stones).

3) The hazards presented in this training are found in which stage of production?
   A) Growing
   B) Harvesting
   C) Post-Harvest
   D) All of the above

Answer: This training emphasizes food safety hazards that can arise during growing, harvesting, and post harvest steps of fresh produce production. The training shows what hazards are associated in each step of produce production, and what prevention strategies can be used to reduce food safety risks in fresh produce.

4) What percent of reported foodborne illnesses were attributed to produce related items?

A) About 25%

B) About 50%

C) About 75%

D) About 100%

Answer: Almost 50% of foodborne illnesses are attributed to produce related items. The Centers for Disease Control and Prevention estimated that from 1998 to 2008, 46% of foodborne illnesses were caused to produce related items. These include fruits, vegetables, and nuts. A high percentage of illness has been caused by leafy greens and lettuce. Other produce items that have also caused foodborne illness include cantaloupe, tomatoes, and peppers.

5) About what is the typical size of a microorganism?

A) 0.1 millimeters

B) 1 nanometer

C) 1 millimeter

D) 1 micrometer

Answer: The typical size of a microorganism is around 0.1 millimeters. This is smaller than the eye can perceive, and can only be viewed under a microscope. These microorganisms can reside in the soil, water, or on the fresh produce itself.

6) Which of the following is a harmful bacteria if ingested by humans?

A) *Toxoplasma gondii*

B) *Listeria monocytogenes*

C) *Strptococcus thermophilus*

D) All of the above are harmful bacteria

Answer: A bacteria that can cause harm to humans if ingested is *Listeria monocytogenes*. Young, elderly, pregnant, and immune-compromised individuals are more at risk of illness if ingesting *L. monocytogenes*. *Toxoplasma gondii* can cause harm, but it is considered a parasite. *Streptococcus thermophilus* is a beneficial bacterium that is used in the production of yogurt that will not cause harm if ingested.

7) Which of the following is a common virus found on produce items?

A) Influenza virus

B) Tobacco Mosaic virus

C) Norovirus

D) West Nile virus

Answer: Norovirus is commonly found on produce items. It is the leading cause of illness from fresh produce. The mortality rate is lower for norovirus than other foodborne illnesses.

8) What is the main goal of this training?

A) To teach new employees how to have a green thumb
B) To inform workers about new policies
C) To boost understanding about why safe practices are necessary
D) None of the above

Answer: This training was developed to make sure farm workers are aware of food safety hazards associated with fresh produce, and why safe practices are necessary when working in direct contact with them.

9) Where can microorganisms reside?

A) In the soil and organic matter
B) In water
C) In human hosts
D) In all of the above

Answer: Microorganisms can reside in soil and oganic matter, in water, and in human hosts. To reduce microbial food safety risks, we have to follow GAPs and Good Manufacturing Practices when working directly with fresh produce.

Quiz questions for university module: QUIZ 2

1) The final food safety plan that brings together all of the other food safety aspects is called the _____ plan.
   A) GMPs
   B) SOPs
   C) HACCP
   D) SSOPs

Answer: The final food safety plan is the HACCP plan. It brings together Good Agricultural Practices, Good Manufacturing Practices, Standard Operating Procedures and Sanitation Standard Operating Procedures. The complete HACCP plan helps minimize the risk of produce contamination from occurring at all stages of preharvest and postharvest production.

2) Which of the following is NOT a biological hazard in pre-harvest produce food safety?
   A) Improper soil and manure usage
   B) Pesticides applied to the field
   C) Water contamination
   D) Wild and domestic animals

Answer: Pesticides would not be considered a biological hazard. They would be considered a chemical hazard. Improper soil and manure could contain high levels of harmful microorganisms. Pathogens can also be found in surface water or well water that hasn't been tested. Wild animals can act as a vector for pathogens through cross-contamination.

3) When do we have to begin thinking about pre-harvest safety?
   A) When the seed is planted
   B) When the seed is watered for the first time
   C) When a sprout can be seen above ground
   D) When the field site is selected

Answer: We have to consider pre-harvest food safety even before planting our fresh produce. Initially, field site selection should be examined to make sure the location is a safe place to grow produce. The field site should be free from heavy metals (lead), and should not contain high levels of pathogenic microorganisms.

4) How many days prior to harvest must raw manure be applied according to the National Organic Standards?

A) At least 90 days
B) At least 120 days
C) At least 180 days
D) At least 365 days

Answer: Raw manure must be applied at least 120 days prior to harvesting produce.

5) What is one type of toxin found naturally in apples that can cause illness if ingested?
   A) Pesticide
   B) Herbicide
   C) Botulism toxin
   D) Mycotoxin

Answer: Mycotoxins are natural toxins that can be found in apples. Both pesticides and herbicides are chemicals that are manmade and have been engineered to reduce pests from fresh produce. Mycotoxins are a chemical hazard and can result in illness if ingested.

6) What should be done to reduce chances of physical hazards from occurring?
   A) When you see physical hazards, step over them and continue working
   B) Monitor the field frequently, and safely remove physical hazards when they appear
   C) Find a way to mark where the physical hazards are, and pick them up at the end of your shift
   D) Physical hazards should be left for other workers to pick up

Answer: To reduce physical hazard presence in the field, it is important to have them safely removed immediately. They should not be left in the field, because they can cause harm to another individual later or yourself if you travel back and forget about it. It is every workers responsibility to take action and remove the physical hazards once they are observed.

7) What is the best way to start implementing an effective food safety plan?
   A) Start with a HACCP plan
   B) Start with SOPs
   C) Start with GAPs
   D) All of the above are good ways to help implement an effective food safety plan

Answer: All of the above are beneficial when implementing a food safety plan. GAPs are the foundation of a food safety plan. Once implementing GAPs, SOPs and SSOPs should be developed to combat additional hazards that may occur during postharvest processing. The entire HACCP plan can be developed once the GAPs, GMPs, SOPs and SSOPs are created for the food safety plan.

8) What harmful substances could be found in water?

A) Fecal coliforms
B) Nitrates
C) Microorganisms from humans
D) All of the above

Answer: Water is of big concern when considering produce food safety. Fecal coliforms, nitrates, and microorganisms from humans can all be found in water. Water samples should be taken to confirm that water used is potable, and safe for human health.

9) What is important to know before using compost?
A) The nutrient content
B) The source
C) The field's needs
D) All of the above

Answer: The nutrient content, the source, and the field's needs are all important characteristics when considering compost.

10) Which of the following is a GAP topic?
A) Water
B) Soil
C) Worker Health & Hygiene
D) All of the above

Answer: Water, soil, and worker health and hygiene are all important GAP topics when considering produce food safety. Water and soil come in direct contact with fresh produce in pre-harvest and have to be monitored throughout it's growth. Worker health and hygiene is also an important aspect. Worker poor personal hygiene could results in cross-contamination of the fresh produce.

Quiz questions for university module: QUIZ 3

1) What do we call the "Start-to-finish" approach in produce food safety?
   A) "Field-to-finger" approach
   B) "Farm-to-fork" approach
   C) "Seed-to-spoon" approach
   D) "Garden-to-gut" approach

Answer: The "start-to-finish" approach in produce food safety is called the "farm-to-fork" approach. We use this phrase to help explain where risks can occur throughout the production of fresh produce. The beginning of produce processing begins in the field, or "farm." GMPs are used in this section for risk management. When we harvest, we continue with production of produce until we package it for consumers. "Fork" represents that all additional chemical, physical, and biological risks must be considered until the produce reaches the consumer's table.

2) When does post-harvest processing start?
   A) When the produce is packaged
   B) When the produce is sent to the grocery store or farmers' market
   C) When the produce is removed from the plant/field
   D) When the body starts to digest them

Answer: Post-harvest starts immediately following removal from the plant or field. After harvesting, the produce will go through a series of steps prior to reaching the consumer. There are many food safety risks we have to consider between harvesting and transportation of fresh produce to consumers.

3) Which of the following is NOT a post-harvest produce food safety hazard?
   A) Usage of biosolids and compost
   B) Proper storage of produce
   C) Transportation/distribution of produce
   D) All of the above can be post-harvest produce hazards

Answer: Usage of biosolids and compost is not a post-harvest produce food safety hazard. Biosolids are applied to produce and used to help increase nutrients during produce production, making it a pre-harvest produce food safety hazard. After harvest, produce must be stored at the appropriate temperature and humidity and transported at the desired conditions.

4) What is the difference between “clean” and “sanitary”?
   A) Clean is a reduction of harmful microorganisms to levels that are no longer harmful; Sanitary is free of visible soil or other materials
   B) Clean is free of visible soil or other materials; Sanitary is a reduction of harmful microorganisms to levels that are no longer harmful
   C) Clean and Sanitary are the same thing
   D) None of the above describe the difference

Answer: By definition, clean is free of visible soil, where sanitary is a reduction of harmful microorganisms to levels that are no longer harmful.

5) Why is it important to keep harvesting bins off of the ground?
   A) The bins can pick up harmful microorganisms from the soil
   B) The bins may pick up fecal contamination from wildlife or birds
   C) The bins could get mixed up; Good and bad produce could get mixed together
   D) All of the above are reasons to keep harvesting bins off of the ground

Answer: Harvesting bins must always be kept off of the ground when harvesting fresh produce. Bins may become cross-contaminated from harmful microbes in the soil. The bins may also come in direct contact with fecal material, which will also cross-contaminate the bins. By keeping the harvesting bins off of the ground, there is less chance for microbial hazards through cross-contamination.

6) How should preparation surfaces be to reduce microbial growth?
   A) The surfaces should be porous and absorbent
   B) The surfaces should be smooth and absorbent
   C) The surfaces should be smooth and non-absorbent
   D) The surfaces should be porous and non-absorbent

Answer: It is important to use surfaces that are smooth and non-absorbent for preparation surfaces. Harmful microbes could soak into absorbent material, causing further contamination and biological hazards in future production of produce. If surfaces are porous, microbes can remain present in the grooves of the surface when not properly cleaned or sanitized.

7) What are specific things to look for when keeping the processing area sanitary?
   A) Check the walls and ceilings for cracks
   B) Check equipment for loose or missing pieces
   C) Make sure windows and doors are closed that lead into the processing facility

D) All of the above can affect the sanitary practices in post-harvest processing

Answer: It is important to look at many different factors when evaluating the sanitation in the processing area. When inspecting the processing area, ceilings and walls must be checked for cracks. They must be repaired to prevent entry from external pests. Equipment must also be checked regularly for loose or missing pieces. Pieces could have fallen into fresh produce, increasing physical hazard risk. Lastly, the facility should be secure. Closing doors and windows will prevent any additional pests and non-approved personnel from coming in direct contact with recently harvested produce.

8) How should wastewater be disposed?
   A) Apply it to the field. Any extra water helps.
   B) Take it to the nearest building and dump it down the sink
   C) Dump it near the field so it can still be used but is not directly on the produce
   D) Move it away from the field and the washing and packing areas to dump it

Answer: Wastewater should be disposed of away from the field and away from washing and packing areas. We cannot be certain if harmful chemicals, physical objects, or bacteria are present in this water. To prevent recontamination to our fresh produce, we have to make sure the produce does not come back in contact with wastewater.

9) When storing produce, what saying is used to maximize product usage and minimize wastes?
   A) "Good first, bad later"
   B) "First in, last out"
   C) "First in, first out"
   D) "Last in, last out"

Answer: We use the saying, "First in, first out," to maximize produce during postharvest production. When removing produce from storage for distribution, it is important to remove earlier harvested produce than more recently harvested produce. Since produce has a short shelf-life, older produce must be sent first to maximize yields and minimize wasted produce.

10) How should chemicals be applied in post-harvest produce food safety?
   A) Apply chemicals to the surfaces; the more concentrated, the better
   B) Just use enough chemical to cover the surface. Anything more is wasteful
   C) Look at the back of the chemical and mix them according to the instructions. Chemicals should be strong enough to be effective, but not too strong to harm
   D) Only use chemicals in pre-harvest produce food safety

Answer: Chemicals should always be applied according to the label. A chemical risk will result if too much chemical is used. However, if not enough chemical is used it will be

ineffective. There will be a reduced chemical risk and an effective chemical solution if applied according to the label.

Quiz questions for university module: QUIZ 4

1) What is the best way to wash your hands when handling produce?
   A) A quick rinse under water is good enough
   B) Hand sanitizer is the best way to get rid of microorganisms
   C) Rinsing with soap and water for the adequate amount of time is the best way to wash hands and remove the greatest number of microorganisms
   D) All of the above ways are great ways to reduce microorganisms on hands

Answer: The most effective way to wash your hands before and after handling produce is with soap and water. It is important to wet your hands, apply soap, and lather around your hands up to your wrists and in between fingers for 10-15 seconds. Once completed, remove the residual soap and dry hands with a single use disposable hand towel. A quick wash without soap will not remove all of the microbes, allowing for cross-contamination after leaving the restroom. Hand sanitizer will remove some microbes, but is still not the best method. Norovirus causes foodborne illness and can survive after hand sanitizer has been applied.

2) What is the cause of a significant amount of produce contamination?
   A) Animals
   B) Chemicals
   C) Poor employee training
   D) None of the above

Answer: Although all of these options can result in contamination, poor employee training has shown to impact produce contamination greatly. One large area of employee training that has shown to result in contamination is through poor personal hygiene. The Centers for Disease Control and Prevention estimate close to 50% of foodborne disease is leinked to poor hand washing practices. Increased personal hygiene practices will help further reduce cross-contamination to fresh produce items.

3) According to the Centers for Disease Control and Prevention (CDC), about what percent of foodborne disease are linked to poor hand washing?
   A) About 25%
   B) About 33%
   C) About 50%
   D) About 75%

Answer: Almost half of foodborne disease is caused due to poor handwashing practices. It is very important to always wash hands before and after handling fresh produce. Washing hands before handling produce will reduce the risk of cross-contaminating the produce. Washing hands after handling produce will reduce the risk of cross-contaminating other

objects from potential pathogens that could have been present on the produce or in the soil during harvest.

4) Hands should be washed:
   A) Prior to working with produce
   B) After working with produce
   C) Both A and B
   D) Hands do not have to washed as long as disposable gloves are worn

Answer: Hands should be washed both prior to and after working with produce. When harvesting, we cannot visibly see what microorganisms could be present on the surface of the produce. To protect ourselves and others who may be consuming this produce, we want to wash our hands whenever we will be coming in direct contact with produce to reduce chances of cross-contamination from occurring.

5) When washing hands, how long should they be lathered in soap?
   A) 3-5 seconds, or about enough time to introduce yourself to somebody
   B) 10-15 seconds, or about the time it takes to sing "happy birthday"
   C) About as long as it takes you to brush your teeth
   D) About as long as you can hold your breath for

Answer: Hands should be lathered in soap between 10-15 seconds before rinsing with warm water. 3-5 seconds is not enough time for the soap to reach all areas and be effective.

6) What is a fomite?
   A) A type of insect that grows in the field
   B) A gardening tool used to keep the garden maintained
   C) A non-living object that helps spread microorganisms from one place to another
   D) A type of sanitizer that is used in post-harvest processing to keep the processing facility clean

Answer: By definition, a fomite is, "a non-living object that has the ability to serve as a vector for the spread of harmful microorganisms from one place to another."

7) What should I do if I see someone not practicing food safety?
   A) Nothing, I am only responsible for my own actions.
   B) Give them a gentle reminder
   C) Report them to the boss
   D) Report them to the FDA

Answer: If you witness individuals around you not practicing food safety, it is important to gently remind them of it's importance. By reporting them to a boss, the worker may develop bad attitudes and further continue poor practices. Workers can further practice reducing poor practices when gently reminded of how appropriate practices are performed.

8) Why is it important to follow food regulations?
   A) So adequate standards are met that are set by the government
   B) To protect those that are immune-compromised
   C) To know local, state, and federal rules related to your specific produce
   D) All of the above reasons are important reasons to follow food regulations

Answer: Regulations must be followed for all of the above reasons. One reason regulations are set is to ensure a quality product to the consumer based off of specific standards. Regulations also serve to protect those that are immune-compromised (this includes the young, elderly, pregnant, and individuals with health issues).

9) Which of the following groups of individuals are more likely to become ill from contaminated produce items?
   A) Teenagers
   B) Middle-aged people
   C) The elderly
   D) All are equally like at becoming ill from contaminated produce items

The elderly are more likely to become ill when consuming contaminated produce items. Teenagers and middle-aged people have developed a fully functioning immune system, which allows their body to fight foodborne illness more effectively. The immune system in the elderly starts to deteriorate over time, making them more susceptible to illness, disease, or death when ingesting foodborne pathogens.

10) What regulation was just modified in 2013 that has given the Food and Drug Administration (FDA) more power than they previously had over produce processors and producers?
   A) The Produce Safety Modernization Act (PSMA)
   B) The Fruit and Vegetable Regulatory Act (FVRA)
   C) The Produce Protection Plan (PPP)
   D) The Food Safety Modernization Act (FSMA)

Answer: The Food Safety Modernization Act was signed by president Obama in January 2011. This regulation has been revised since and will be implemented to help reduce foodborne illness in fresh produce.