

WORKSHOP HANDBOOK

Attending the CTP Accelerator Workshop (CTPAW):

What You Need to Know

Costa Rica, March 2025



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Introduction

The Soil Food Web School (SFWS) Team thanks you for considering attending one of our in-person Workshops. Our school was established in 2019 under the leadership of renowned regenerative scientist Dr. Elaine Ingham. Dr. Elaine's pioneering work in soil biology helps people worldwide benefit from using an eco-friendly approach to growing and farming instead of relying on environmentally harmful chemicals and methods.

Workshop Overview

This workshop is part of a new learning pathway that is equivalent to, but different from, the regular pathway that all CTP/GTP students are on. All the learning outcomes in Stages 1 and 2 are met in the workshop (excluding completion of the Certified Lab-Tech Program, please see below for further information), which is ideal for students who learn best in an in-person environment.

In this workshop, students are able to graduate Stages 1 & 2 by virtue of the fact that they will have an in-depth and immersive learning experience that includes the production of 5 compost piles by the group, over a 10-day period. You'll learn from compost piles that are designed to succeed and others that are designed to fail, so that you can understand the principles and mechanics at play. You will also conduct nematode extractions and protozoan infusions, and you'll make a compost extract and a compost tea at the workshop (satisfying Stage 2 Outcomes). In addition to this, you'll be using your microscopy skills to assess the compost and liquid amendments, at key stages. This applied microscopy is an invaluable experience.

All learning outcomes from Stages 1 and 2 are covered in this intensive and informative learning experience which is sufficient for graduation of Stages 1 & 2 except for completion of the Certified Lab-Tech Program (CLP). Students who are joining the workshop but who have yet to complete all the FCs and/or the CLP, may do so after the

workshop, at which time they will graduate Stages 1 & 2 of the CTP/GTP. Please read the [Enrolment Agreement](#) for further information before you register.

CTP/GTP Completion

Students who wish to graduate from the entire CTP/GTP program, must build a successful Compost pile before entering Stage 3 of the CTP/GTP. This means that the student must take the following steps:

1. Build a pile at home that meets time, turn and temperature requirements.
 - a. Compost recipe must be approved by the student's mentor before the student builds the pile.
 - b. Monitoring log must be reviewed and approved by the student's mentor.
2. This same pile must reach the minimum biological numbers as set out in the CTP/GTP Course Manual.
3. A remote assessment must be conducted with the student's mentor to verify minimum biological numbers as set out in the CTP/GTP Course Manual, prior to enrolment in Stage 3.

Location

[La Asunción](#) is a district of the Belén canton, in the Heredia province of Costa Rica. Belén, Heredia, Costa Rica, is located 11 km (6.8 miles) north of [San José](#) and is part of the [Greater Metropolitan Area](#).

Host Facility

Address

El Cacaotal CR, 600 este de la entrada principal de Pedregal, la Asunción de Belén, Heredia Heredia La Asunción de Belén, 40701, Costa Rica

The address above is for Armonía's Organic Cafe, [El Cacaotal CR](#). The workshop location is within 25 meters of the cafe.

Google Map

📍 Armonía Agricultura Orgánica

Phone

[+50622930244](tel:+50622930244)

Information About the Host Facility

The 2024 Heredia workshop takes place at [Armonía Organica](http://www.armonia.cr/) (<http://www.armonia.cr/>), which has outdoor workspaces (both covered and uncovered) and indoor classrooms where we will practice microscopy.

Armonía's mission is to become an example project of organic product management to demonstrate the awareness of ecological responsibility and supply locally-grown food.

Local Weather

The weather in Heredia is very warm year-round; the temperatures are moderated by the amount of cloud cover common to the area. Rainfall is spread throughout the year, but the period from May to October has the most precipitation. The March 2025 workshop is during the dry season, but conditions may vary; please come prepared to work in rainy or sunny conditions.

Climate data for Heredia												
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Average high °C (°F)	24.3 (75.7)	25.1 (77.2)	26.4 (79.5)	26.7 (80.1)	25.8 (78.4)	25.1 (77.2)	24.8 (76.6)	24.8 (76.6)	24.9 (76.8)	24.7 (76.5)	24.4 (75.9)	24 (75)
Average low °C (°F)	14.6 (58.3)	14.6 (58.3)	14.6 (58.3)	15 (59)	15.7 (60.3)	15.5 (59.9)	15.7 (60.3)	15.4 (59.7)	15 (59)	15.1 (59.2)	15.5 (59.9)	15.4 (59.7)
Average rainfall mm (inches)	20.4 (0.80)	21.7 (0.85)	47.8 (1.88)	110.1 (4.33)	333.1 (13.11)	327.8 (12.91)	199.5 (7.85)	241.6 (9.51)	410.8 (16.17)	424.6 (16.72)	182.4 (7.18)	54.5 (2.15)

Source: National Meteorologic Institute of Costa Rica^[14]

Student Responsibilities

Workshop participants are responsible for arranging for and purchasing their travel and medical insurance, travel to Heredia, local accommodations and transportation, and food. Also review the Health & Safety section for information about clothing, protective equipment, and health-related requirements.

Travel and Medical Insurance

Every student is responsible for acquiring and providing proof of travel and medical insurance for the workshop. On the first day of the workshop, we will ask you to provide proof of the travel insurance by showing a screenshot of your coverage to the Safety Officer.

Flights

San Jose Airport is the closest airport to the workshop location in Heredia. Students must book their own flights and accommodation. Here are some local options to stay for the duration of the workshop.

Accommodations

There are various accommodation options near the workshop site.

Accommodations near Armonía		
Hotel La Riviera	AC Hotel Heredia Belen by Marriott	Apartotel ORO
(+506) 2293-0909	(+506) 4036-7200	(+506) 2239 0403
https://larivierahotel.com/en/	https://www.marriott.com/en-us/hotels/sjoaa-ac-hotel-heredia-belen/overview/	https://apartoteloro.com/en_GB/
~\$80-100 per night*	\$164+ taxes per night*	~\$31 per night*
Includes Breakfast	Includes Breakfast	Has kitchen

Ask for "special corporate rate" for Soil Food Web School Workshop	Indicate in reservation Tarifa de Colegio Tecnico Profesional CIT reservationscr@marriott.com	Send WhatsApp for reservation (+506) 8678-4333 Code Curso Armonia
City Express San José Costa Rica	DoubleTree by Hilton	AirBnB is also a good choice for local accommodations. *Prices not guaranteed; contact each hotel for their latest rates.
WhatsApp: +52 1 55 5249 8080	(+506) 2209 1000	
https://www.cityexpress.com/en/express/hotels-costa-rica/costa-rica/ulloa/san-jose	https://www.hilton.com/en/hotels/sjo-dtdt-doubletree-cariari-san-jose-costa-rica/	
\$104.69 + taxes per night*	\$132 + taxes per night*	
Breakfast and Airport Shuttle included	On-site restaurant	
Contact via WhatsApp for reservations		

Food

During the workshop (Monday-Friday), lunch will be provided onsite for all attendees; please plan to stay onsite for this meal as we want to ensure that sessions before and after lunch start and end on time.

Attendees are expected to provide their own breakfasts and dinners; San Antonio de Belen has a variety of options to choose from (walking distance and to-go through Uber Eats.)

Things to Bring

Before you pack, review this handbook's Health & Safety section, which includes more details on appropriate clothing and protective equipment.

- Practical clothing, like close-toed shoes, long-sleeved shirts, and long pants/jeans to protect yourself from cuts, scrapes, and abrasions.

- A hat appropriate for sunny or rainy conditions.
- Raincoat and/or rain gear
- Sunscreen
- Personal health and care kit
- Mosquito repellent
- Personal computer or device to use SMapp and access course content, including:
 - Compost Recipe Workbook and Log
 - Compost Extract Worksheet and Log
 - Protozoan Infusion Worksheet and Log

Tentative Workshop Schedule

The following tentative schedules for Weeks 1 and 2 represent possible times, activities, and presenters. Please be aware that the schedule is INDICATIVE only. As we will be building 5 compost piles simultaneously and because we cannot accurately predict pile temperatures, we will need to make changes to the schedule almost every day.

-Daily coffee/snack breaks at 10-10:15 am and 3-3:15 p.m.

-Starting on Day 3, each day we will monitor piles from 8-8:30 a.m. and 4-5 p.m., turning if necessary.

Date	Day	Hour	Activity
Day 1	Monday	8-8:20 a.m.	Classroom: Participant Introduction
		8:20-8:45 a.m.	Classroom: Introduction to staff & workshop outline
		8:45-10 a.m.	Classroom: Feedstock Categories, Functions, and Contributions
		10:15 a.m.-noon	Classroom: Compost Recipe, Tools & Equipment, and Build Preparation
		noon-1 p.m.	Lunch
		1-1:30 p.m.	Classroom: Safety review and attendee day 1 document review

		1:30-2:45 p.m.	Field & Classroom: Recipe discussion and creation
		2:45-4 p.m.	Classroom: Material hydration
		3:30-4:30p.m.	Classroom: How to build a compost pile
		4:30-5 p.m.	Field: Hydrate & prepare composting materials for next day
Day 2	Tuesday	8-11 a.m.	Field: Safety Demo Build compost pile
		11 a.m.-noon	Classroom: How to build a compost pile
		noon-1 p.m.	Lunch
		1-3 p.m.	Field: Soil sample collection procedure and field assessment (walk and demo)
		3:15-4 p.m.	Classroom: Review compost monitoring procedure
		4-5 p.m.	Field: Monitor piles
Day 3	Wednesday	8-9 a.m.	Field: Monitor compost piles, each mentor does a demo of taking temps and moisture readings
		9-11 a.m.	Classroom: 3 T's- Time, Turn, Temp
		11am-12pm	Classroom: -Microscopy of soil sample (team 3,4,5) -Session 1 & 2 of CLP (team 1,2)
		Noon-1 p.m.	Lunch
		1-2 p.m.	Classroom: -Microscopy of soil sample (team 3,4,5) -Session 1 & 2 of CLP (team 1,2)
		2-4 p.m.	Classroom: -Microscopy of compost sample for extract (team 3,4,5) -Session 1 & 2 of CLP (team 1,2)
		4-5 p.m.	Field: Monitor piles, turn if necessary
Day 4	Thursday	8-8:30 a.m.	Field: Monitor piles, turn if necessary
		8:30-10 a.m.	Discuss soil sample & compost assessments data. Client proposal.
		10:15 a.m.-noon	Vermicomposting

		noon-1 p.m.	Lunch
		1-1:45 p.m.	Classroom: Compost Extract Demo. Build a brewer.
		1:45-4 p.m.	Moisture tests, all piles demonstrations to compare
		4-5 p.m.	Field: Monitor piles, turn if necessary
Day 5	Friday	8-10 a.m.	Field: Monitor piles, first turn demo
		10:15 a.m.	Field: Build brewer, extract compost, microscopy of compost extract.
		noon-1 p.m.	Lunch
		1-3 p.m.	Field: Build brewer, extract compost, microscopy of compost extract.
		3-4:30 p.m.	Classroom: Troubleshooting Compost Piles
		4:30-5 p.m.	Field: Monitor piles, first turn demo

Date	Day	Hour	Activity
Day 6	Monday	8-10 a.m.	Monitor piles, turn if necessary
		10:15 a.m.-noon	Classroom & Field: Make Compost teas and Q&A Teas
		noon-1 p.m	Lunch
		1-2 p.m.	Classroom & Field: Make Compost teas and Q&A Teas
		2-3 p.m.	Classroom: Cooling and Maturation Phase Management Practices
		3:15-4 p.m.	Classroom: Cooling and Maturation Phase Management Practices
		4-5 p.m.	Monitor piles, turn if necessary
Day 7	Tuesday	8-10 a.m.	Monitor piles; turn if necessary. Classroom: Microscopy of compost teas
		10:15-11 a.m.	Classroom: Nematode Extraction demonstration
		11 a.m.-noon	Classroom: Microscopy of compost teas

		noon-1 p.m	Lunch
		1-2 p.m.	Classroom: Microscopy of compost teas
		2-4 p.m.	Advanced Techniques in Thermal Composting
		4-5 p.m.	Field: Monitor piles, turn if necessary
Day 8	Wednesday	8-9 a.m.	Field: Monitor compost piles; turn if necessary
		9-10 a.m.	Classroom: Microscopy of Compost tea
		10:15-11 a.m.	Classroom: Large Scale Composting
		11 a.m.-noon	Classroom: Microscopy of Compost tea
		noon-1 p.m	Lunch
		1-2:30 p.m.	Field: Gather materials for protozoan infusion
		2:30-4 p.m.	Field: Apply compost tea
		4-5 p.m.	Field: Monitor piles, turn if necessary
Day 9	Thursday	8-10 a.m.	Monitor piles, turn if necessary. Blood meal demo. Start protozoan infusion
		10:15-noon	Classroom: Check nematode extraction
		noon-1 p.m	Lunch
		1-3 p.m.	Extract humic acid from compost
		3:15-4 p.m.	How to Design a Stage 3 Proposal
		4-5 p.m.	Monitor piles, turn if necessary
Day 10	Friday	8-9 a.m.	Monitor piles, turn if necessary
		9-10 a.m.	Microscopy of protozoan infusion
		10:15-noon	Compost recipe review
		noon-1 p.m	Lunch & Certificate Ceremony
		1-4:30 p.m.	Clean up and final Q&A

Provided Materials and Equipment

The Soil Food Web School will provide the following for workshop participants.

Equipment

1. Pallets (2 per compost pile)
2. Wire cloth (5 mesh)
3. Cattle fencing (preferably with a 4-inch X 4-inch opening, if not 2-inch X 4-inch)
4. Wire cutters
5. Wire ties, or ~3 bungee cords per pile
6. Composting thermometer with a ~24-inch wand
7. Pitch forks (~2 per compost pile)
8. Shovel, square end
9. Buckets, 5-gallon (10 per pile total)
10. Water hose
11. Water hose nozzle with shower and mist settings
12. Tarp (two per pile)
13. Garden gloves (1 pair per attendee)
14. Safety goggles (1 pair per attendee)
15. First aid kit

Compost Materials

1. High nitrogen sources: raw animal manures, plant legumes, beer mash, and broken grains like cracked corn.

2. Green material (not high nitrogen): fresh-cut grass, hay bales, anything cut and stored properly when green.
3. Woody material: wood chips, leaves collected after falling from the tree, and straw.

Health & Safety

General Safety Protocols

Please read this Health & Safety Section carefully and ask questions BEFORE beginning the workshop.

The nature of the workshop requires participants to engage in instructor-led interactions and potentially dangerous, hands-on activities such as making/turning compost. **An introductory Health and Safety Walkthrough will help you identify, prevent, and manage any possible harmful situations and how to address them.** You are encouraged to ask questions and get guidance on any safety concerns.

Review the following information, suggestions, and requirements:

- Whenever you work with compost, there is potential for exposure to hazardous materials. Review the Appendix: Biological Amendment Safety before the workshop.
- The workshop will be conducted in a controlled yet potentially dangerous environment due to the use of sharp tools such as pitchforks and shovels. You are required to follow instructions on how to use, carry, and store these tools safely.
- At all times during the workshop, use your judgment to assess and warn attendees of any potential risks you observe. Inform the trainers and Safety Officer immediately if help is needed.
- Wear practical clothing, like close-toed shoes, long-sleeved shirts, and long pants/jeans to protect yourself from cuts, scrapes, and abrasions.
- Wear a hat appropriate for sunny or rainy conditions.
- Wearing Personal Protective Equipment (PPE) is compulsory during fieldwork. PPE includes but is not limited to gloves, and goggles.

- Do not use your mobile phone or any electronic device that can distract you during the workshop.

Personal Protective Equipment (PPE)

When working with or near the compost, you must wear PPE. You may experience discomfort or shortness of breath related to masks or other PPE. If this happens, inform the Safety Officer or assigned instructor, and please take a break at a safe distance from the compost production area.

Goggles

You will be provided goggles to protect your eyes from airborne dust and bigger particles.

- Goggles must be worn when making/turning compost, moving or transporting compost starting materials, making compost extract or tea, moving/storing tools, and any other time the Safety Officer or instructor requires them.
- When cleaning your goggles, move to a safe space before removing them. Put them back on before you return to the work area.
- If the goggles interfere with your vision, please inform your instructor.

Gloves & Mask

We will provide disposable gloves to protect your hands from injury during physical work.

- Make sure they are a proper fit for the size of your hands.
- Wear them to prevent injury/blistering while using tools.
- When not in use, please keep them in your pocket so that you can access them easily when needed.
- If you are allergic to the gloves, please remove them immediately and inform our safety officer or your assigned instructor for the workshop.

- You will be provided with disposable surgical masks. Wear them during class and while working in close range with other participants.

Footwear

Always select appropriate footwear to work in the field. Generally, any rubber-soled, closed-toe shoe that covers the entire foot and provides good traction will suffice.

Clothes

Pack comfortable and breathable clothing such as long sleeve cotton tops for composting-related work. Include a hat you can wear while making compost and for walking in the field or doing field applications.

Personal Health and Care Kit

Bring personal medication (over-the-counter or prescribed) for any medical condition, food allergies, or unexpected animal or insect bites. Also, bring insect repellent and sunscreen.

Health Hazards Related to Working with Compost Piles

- Review the Appendix: Biological Amendment Safety for information about potential health hazards related to composting.
- Microbial reproduction can result in high temperatures in the compost pile. Always approach the pile with caution. Use a thermometer to gauge the temperature BEFORE you physically contact the compost. If temperatures exceed 47 degrees Celsius (118 F), your skin can receive 1st-degree burns. You must always wear gloves when working with hot compost.
- Spontaneous combustion is extremely rare, but it is still a risk. If a compost pile is going anaerobic and getting hot, ignition of the gasses produced by the pile is a possibility. Please inform your instructor if you think a compost pile might be going anaerobic; pungent smells will indicate this.

- Heat exhaustion is a real danger. Please make sure that you are hydrating your body well. The National Academy of Medicine suggests that a healthy person needs to drink 9 to 13 cups of water each day, depending on your size. They also suggest that you might need to drink more if you are physically active or exposed to very warm climates...such as in Costa Rica building compost piles! (Harvard School of Public Health, 2019)

Safe Use of Tools

We will use several tools during the workshop; they can potentially be dangerous if not handled and stored properly.

Wire Cutters

- Wire cutters will be used to cut the wire/fencing to build the compost cages.
- Wear your goggles when cutting through the wire to prevent sharp pieces from injuring your eyes.
- Cutting through the wire may require you to exert significant pressure with your hands on the handle. If you feel pain or can't cut through the metal, don't force it: ask for help so that your instructor can assist you. Wear your gloves while performing this activity.
- Once cut, the steel wire has a sharp edge. You must wear gloves when coming in contact with the steel wire because it is very easy to cut and scratch yourself with these materials.

Pitchforks and Shovels

We use pitchforks and shovels when creating and turning compost piles. These tools are incredibly sharp and can cause severe injury.

- These are heavy tools with sharp edges/points at one end. They are used to move significant loads, typically with quick movements. This makes them potentially LETHAL.
- Never place a shovel or pitchfork on your shoulder. It is very tempting to do this, especially when walking from one location to another.
- The correct way to carry a pitchfork or shovel is vertical, with both hands on the shaft and the sharp edge/points towards and near the ground. They can be held with one hand but must always remain vertical.
- Do not run when carrying a pitchfork or shovel.
- Avoid leaving a pitchfork or shovel flat on the ground, but always put the sharp edges/points facing down if necessary. Store pitchforks and shovels upright against a wall with the edge/points in firm contact with the ground.

Safe Movement in the Compost Production Area

One of the key goals to accomplish through this training is to help you gain hands-on experience in building compost piles from scratch. Building piles requires the participants to do a lot of physical activity in close proximity, so we must be mindful of the safety measures to ensure everyone's safety while working in the compost production area.

Building the Cages

- Always wear protective gloves and be mindful of all the sharp edges.
- You will use thick metal fencing-like material to create the initial container. This may require wire cutters to adjust the size of the openings on the grid.
- You may use thin aluminum wire to tie in the cage and the finer metal mesh to prevent material from falling out. This wire could be harmful and cause minor injuries to your hands and arms. Be careful when tying ends together.

- If you need to move/adjust the location of the cages, be aware of your surroundings first.

Turning the Piles

- While in the working area, you will work with pitchforks and shovels to build or turn the piles.
- Place yourself opposite your working partner and keep a clear field of view of their movements. Coordinate to move material into or from the pile alternately with your working partner.
- Do not swing either tool over your shoulders; with the tool in this position, you might harm someone with the sharp edge of the device.
- Always look before you turn when holding a pitchfork or shovel.
- While not actively using the tools, place them in front of you, with the sharp edge/tines firmly on the floor. Never hold these tools horizontally unless you are using them to move material/compost.

Lifting and Carrying Materials

According to The U.S. Bureau of Labor Statistics, the leading type of workplace injury or illness in 2015 was sprains, strains, or tears. Lifting heavy objects was the most significant factor in these incidents; heavier loads place more stress on bodies. (BLS, 2015)

The following information is based on ergonomics guidelines developed by West Virginia University (n.d.) and TOYO (2022). Please review them before you arrive and implement these practices during the workshop.

Things to Avoid

- Never try to lift more than 40 pounds unassisted.
- Never carry heavy loads on one shoulder, under an arm, or in one hand.

Things to Assess Before Lifting a Load

- If the load is too heavy to lift comfortably, break it into several loads. Consider using a wheelbarrow or asking someone to help instead.
- Confirm the path to the load's destination is clear and safe.
- Confirm that you can grip the load firmly. If not, transfer the load to a container with handles or ask someone to help.

How to Lift Safely

1. Wear sturdy, protective gloves that fit well and provide sufficient grip.
2. Stand close to the load.
3. Bend your knees.
4. Tuck your elbows and arms into your body.
5. Tighten your stomach muscles and straighten your back.
6. Get a firm grip on the load.
7. Raise your head and look straight ahead.
8. Lift smoothly by straightening your legs. (If you cannot lift the load without discomfort, stop now and ask someone to help you.)
9. Do not twist your torso while lifting.
10. Keep the load close to your body.
11. Lift the weight into the "power zone" of your body, generally mid-thigh to mid-chest.

How to Carry a Load Safely

- Be aware of your surroundings.
- Keep your hips, shoulders, toes, and knees pointed in the same direction.

- Keep the load close to your body and your elbows tucked into your sides.
- Move your feet to turn; do not twist your body.
- Walk slowly and carefully to the destination.

How to Set Down a Load Safely

1. Keep the load close to your body.
2. Keep your head raised.
3. Keep your stomach muscles tight.
4. Do not twist your body.
5. Bend only at the knees; do not bend at the hips.
6. Lower until the load rests securely on your chosen surface before you release your grip.
7. Extend your knees smoothly to return to a full standing position.

Using Wheelbarrows to Transport Materials

Moving materials around the compost production area using a wheelbarrow is convenient but can be dangerous if not done carefully. Follow the Safety Officer and Trainer's instructions and consider the following guidelines from KEMI (n.d.).

- Use a hand truck instead of a wheelbarrow for long or awkward loads.
- Load only the weight you can comfortably handle on a hill or when turning a corner.
- Make several trips for large loads. Don't try to carry it all at once.
- The weight in a wheelbarrow is just like any other heavy load—use safe lifting procedures to protect your body from injury.
- Balance the load over the wheel to allow for optimal control.

- Keep a tight grip on the handles.
- Move slowly and be aware of your surroundings.
- Navigate a smooth and direct route to avoid throwing the wheelbarrow off balance and tipping it over.
- Should you lose control of the wheelbarrow, immediately let go of it to avoid injuring yourself. Shout a warning if others are nearby.

Using Buckets to Transport Materials

During the workshop, multiple people will move many buckets of organic and plant materials simultaneously. Without care, you or your fellow attendees could get hurt during this process. Follow the Safety Officer and Instructors' instructions and consider the following:

- Load only the weight you can comfortably carry and lift over your shoulders.
- Follow safe lifting practices.
- Be aware of your surroundings when filling, moving, and emptying buckets.
- Don't move too quickly.
- Keep a tight grip on the handle.

Safety Protocols

Participants must:

1. Read the information in this Health & Safety section.
2. Adhere to all protocols and instructions from the Instructors and Safety Officers.
3. Immediately inform the Safety Officer if, for any reason, you suspect you are sick.

4. If you have any cold-like symptoms (runny nose, congestion, sore throat, cough, sneezing), you will be required to wear a mask when in public (at the workshop and with other attendees), and notify the event Safety Officer immediately.

Routine Prevention and Control Practices

Hand Washing & Sanitation

The Center for Disease Control and Prevention (CDC, 2022) recommends the following guidelines to prevent the spread of germs. Wash your hands with soap and water for at least 20 seconds or sanitize your hands with at least 80% alcohol:

- before and after touching your eyes, nose, or mouth.
- before and after touching your mask.
- before and after entering and leaving a public place.
- before and after touching an item or surface others may frequently touch, such as door handles, tables, gas pumps, shopping carts, or electronic cashier registers/screens.
- before, during, and after preparing food.
- before and after eating food.
- before and after caring for someone at home who is sick.
- before and after treating a cut or wound.
- after using the toilet.
- after blowing your nose, coughing, or sneezing.
- after touching an animal, animal feed, or animal waste.
- after handling pet food or pet treats.

- after touching garbage.

Additionally, wash and sanitize your hands after each work session with the compost piles.

Dengue Fever Alert

There has been an increase in [Dengue Fever incidents in Costa Rica](#). Please inform yourself about the risks and measures to take to prevent the disease. Based on the guidelines from the [Centers for Disease Control and Prevention \(CDC\)](#) on Dengue Fever, we recommend protecting yourself from mosquito bites by using mosquito repellent, wearing long-sleeved shirts and long pants, and staying in accommodations with air conditioning or screens on windows and doors.

COVID-19 and other respiratory viral infections

To ensure everyone stays healthy and safe during the event, we have put together some important guidelines for your travel and stay.

Before Your Trip

1. **Vaccinations:** It is your responsibility to ensure you are up-to-date with all recommended vaccinations, including COVID-19.
2. **Travel Insurance:** We require all workshop attendees to purchase travel insurance that covers health and medical emergencies. On the first day of the workshop, we will ask you to provide proof of the travel insurance by showing a screenshot of your coverage to the Safety Officer.

3. Health Check: Monitor your health closely in the days leading up to your departure. If you experience any symptoms of illness, please consult a healthcare professional.
4. If you have concerns about COVID-19, please travel with a rapid test brought from your home country.

While Traveling

1. Face Masks: [Wearing a high-quality mask or respirator](#) is most beneficial when you are in crowded or tight spaces with poor ventilation like airport jetways, airplanes and when the ventilation system is off, or when in close-contact situations like a train or bus.
 - a. We strongly encourage you to wear a face mask while traveling, and will be requiring our staff to wear one while they travel to the workshop.
2. Hand Hygiene: Use hand sanitizer frequently and wash your hands with soap and water whenever possible.
3. Social Distancing: Maintain a safe distance from others where possible, especially in crowded settings.

During the Workshop

1. Personal Hygiene: Continue practicing good hand hygiene and respiratory etiquette (e.g., covering your mouth and nose with a tissue or elbow when coughing or sneezing).
2. Hydration and Nutrition: Stay hydrated and eat balanced meals to support your immune system.
3. Health Monitoring: Monitor your health daily. If you feel unwell or exhibit symptoms such as fever, cough, or difficulty breathing, please [wear a high-quality](#)

[mask or respirator](#) when in public (at the workshop and with other attendees), and notify the event Safety Officer immediately.

4. Local Health Guidelines: Follow all local health guidelines and regulations in Costa Rica.

General Tips

- Pack Essentials: Bring enough face masks, hand sanitizer, and any personal medications you may need.
- Stay Informed: Keep up-to-date with any travel advisories and health information related to COVID-19.

By following these guidelines, we can help ensure a safe and enjoyable experience for everyone.

References

- BLS. (2015). *Nonfatal Occupational Injuries and Illnesses Requiring Days Away From Work, 2015*. Bls.gov; Bls.gov. <https://www.bls.gov/news.release/osh2.nr0.htm>
- CDC. (2022, July 14). *Keeping Hands Clean | CDC*. www.cdc.gov. <https://www.cdc.gov/hygiene/personal-hygiene/hands.html>
- Harvard School of Public Health. (2019, September 24). *Water*. The Nutrition Source. <https://www.hsph.harvard.edu/nutritionsource/water/>
- KEMI. (n.d.). *Wheelbarrow Safety*. Worksafe Kentucky; KEMI. Retrieved May 25, 2023, from <https://worksafeky.com/wheelbarrow-safety/>
- West Virginia University. (n.d.). *Lifting and Material Handling Guidelines*. WVU Environmental Health and Safety; West Virginia University. Retrieved May 25, 2023, from <https://www.ehs.wvu.edu/general-safety/ergonomics/lifting-and-material-handling-guidelines>
- TOYO. (2022, May 16). *How To Use Lifting And Material Handling To Ensure Health And Safety*. Toyo-Hoists.com; TOYO. <https://www.toyo-hoists.com/how-to-use-lifting-and-material-handling-to-ensure-health-and-safety.html>

Appendix: Biological Amendment Safety

Background Information

At the Soil Food Web School, we teach a specific set of procedures for producing and properly handling compost, extracts, and teas. Numerous details are addressed in our Foundation Courses and during one-on-one mentoring sessions in our Advanced Programs. Many scientific principles behind Dr. Elaine's methods are based on previous research and observations (see literature cited).

A few research papers and review articles in the published academic literature suggest some potential for human pathogen survival and reproduction in compost and liquid amendment brewers. In most cases, these studies were designed to assess outcomes of intentional contamination. This is why we emphasize proper composting methods for materials of animal origin, such as manures (Rynk et al., 1992).

Environmental Factors

As with all microorganisms, the growth of potential human pathogens depends on environmental factors. For example, the discovery of quorum sensing has shifted the scientific understanding of disease biology. We encourage effective sanitation and aeration, along with the competition and predation of diverse microorganisms, to suppress the growth of anaerobic organisms in biological amendments. Dr. Elaine collected data indicating a reduction in *Escherichia coli* following aerobic compost tea brewing (Ingham, 2005). She concluded that **under proper conditions**, there is little risk of contamination, growth, and reproduction of the anaerobic organisms associated with human and animal illness.

Mitigation of Biological Risks

Because there is a wide range of variability in environmental and biological factors, cross-contamination is always possible. Again, the protocols in our educational programs are designed with student and practitioner safety as our top priority. It is important to recognize that careful preventative measures are needed throughout the composting and brewing process. For example, consistent handwashing and general sanitation are critical for food safety, and constant diligence is required to avoid cross-contamination.

The safest option for producers is to lab test mature compost to verify that human or animal pathogens are at safe levels. We recommend reading relevant scientific reviews indicating proper composting, brewing, and application procedures that reduce risks of disease (Rynk et al., 1992; Leifert et al., 2007; Yattoo et al., 2021).

Even benign microorganisms may cause health issues in immunocompromised individuals. These microorganisms, as well as human pathogens, may be ubiquitous in dirt, dust, and natural materials. Liquid applications may create bioaerosols (Rengasamy et al., 2004); it is critical to understand and reduce exposure during amendment application. As a result, we advocate that our students and practitioners understand and utilize personal protective equipment (PPE) and best practices in accordance with any local regulations. Please consult your doctor for additional recommendations and measures if you have a medical condition or are pregnant.

One general resource for understanding compost safety was developed by the Cornell Waste Management Institute (Brown, 2016).

Recommendations

Students should be aware and mindful of the risks inherent to activities related to the production and handling of compost, including physical risks not covered in this bulletin. In addition, individuals with specific health concerns should consult their physician. Few

specific regulations are currently associated with applying compost, extracts, and teas. Several US agencies have guidelines that are likely to impact producers that market foods ready for direct human consumption.

We recommend anyone utilizing compost, extracts, and teas in consulting work or food production operations be familiar with the Formal Recommendation By The National Organic Standards Board to The National Organic Program (NOP). Safety recommendations in this document resulted from efforts by the Compost Task Force and Compost Tea Task Force, examining all available evidence regarding the safety and efficacy of compost, extracts, and teas. Summary from their report:

1. Potable water must be used to make compost tea and for any dilution before application.
2. Equipment used to prepare compost tea must be sanitized before use with a sanitizing agent (e.g., hydrogen peroxide).
3. Compost tea should be made with compliant compost or vermicompost, using the NOSB Guidelines set forth on April 18, 2002, for thermal compost and vermicompost, or compost as defined in section 205.203 (c) (2) of the NOP rule. For compost tea, this applies to 100% plant feedstock materials in addition to manure feedstocks because non-manure compost feedstocks may harbor high levels of fecal bacteria (Epstein, 1997).
4. Compost tea made without compost tea additives (e.g., compost extract) can be applied without restriction.
5. Compost tea made with compost tea additives can be applied without restriction if the compost tea production system (same compost batch, additives, and equipment) has been pre-tested to produce compost tea that meets the EPA-recommended recreational water quality guidelines for a bacterial indicator of fecal contamination (US EPA, 2000). These indicators and the passing criteria are *Escherichia coli* (126 CFU/100ml) or enterococci (33 CFU/100ml). At least

two compost tea batches must be tested using accepted methodology (APHA-AWWA-WEF, 1999; US EPA, 2000), with the average population of indicator bacteria across compost tea batches used as the measurement of passing. Each new batch of compost would require that the system quality assurance pre-test be conducted again as indicated. After passing, tea from the system can be used without restriction.

6. If compost tea made with compost tea additives has not been pre-tested for indicator bacteria, its use on food crops is restricted to the 90/120-day pre-harvest interval. Crops not intended for human consumption, ornamental plants, and grain crops intended for human consumption are exempt from bacterial testing and 90/120-day pre-harvest interval restrictions. In addition, there is a chapter about current suggested compost facility protocols in *The Composting Handbook* (Rynk, 2022).

Conclusions

We are an educational organization; lab-testing amendments for pathogens is outside the scope of our mission. We train students to assess amendments using the microscope. Still, it is important to note that we are teaching how to identify organisms such as spirilla and spirochetes that indicate low-oxygen conditions in the compost environment. Human pathogens are not always identifiable with our methods; however, the presence of anaerobic organisms is a warning that human pathogens may also be present.

We monitor emerging scientific literature and will respond to new safety protocols as needed. We recommend anyone consulting or producing food stay current on regulations and recommendations from the US Department of Agriculture and US Food and Drug Administration (Official Guidance, 1998) or relevant national regulatory agencies in any countries they do business.

Literature Cited

- Brown, N.J. (2016, January 1). Composting Safety and Health. Cornell University Library. Retrieved January 30, 2023, from <https://hdl.handle.net/1813/44632>
- Clesceri, L. S., Greenberg, A. E., & Eaton, A. D. (Eds.). (1999). Standard methods for the examination of water and wastewater. American Public Health Association.
- Epstein, E (1997). The science of composting. CRC press.
- Giacomini, DG (2012) Formal recommendation by the National Organic Standard Board (NOSB) to the National Organic Program (NOP). US Department of Agriculture.
- Ingham, ER** (1998). Anaerobic bacteria and compost tea. *Biocycle*, 39 (6): 86-86.
- Ingham, ER** (1999). Making a high quality compost tea – Part II. *Biocycle*, 40 (4): 94.
- Ingham, E.** (2005). The Compost Tea Brewing Manual: Latest Methods and Research. Soil Foodweb Inc.
- Leifert, C, Ball, K, Volakakis, N, Cooper, JM (2008). Control of enteric pathogens in ready-to-eat vegetable crops in organic and 'low input' production systems: a HACCP-based approach. *Journal of Applied Microbiology*, 105(4): 931-950.
- Rengasamy, A, Zhuang, Z, BerryAnn, R (2004). Respiratory protection against bioaerosols: literature review and research needs. *American Journal of Infection Control*, 32(6): 345-354.
- Rynk, R. (2022). The Composting Handbook: A how-to and why manual for farm, municipal, institutional and commercial composters. Academic Press.
- Rynk, R, Van de Kamp, M, Willson, GB, Singley, ME, Richard, TL, Kolega, JJ, Gouin, FR, Laliberty, L, Kay, D, Murphy, D, Hoitink, HA (1992). On-farm composting handbook. Northeast Regional Agricultural Engineering Service (NRAES).

US EPA. (2000, March). Improved enumeration methods for the recreational water quality indicators: Enterococci and Escherichia coli 821/R-97/004. National Service Center for Environmental Publications (NSCEP).

Center for Food Safety and Applied Nutrition. (1998, October). Guide to minimize microbial hazards for fresh fruits and vegetables. U.S. Food and Drug Administration.

Yatoo, A. M., Ali, M. N., Baba, Z. A., & Hassan, B. (2021). Sustainable management of diseases and pests in crops by vermicompost and vermicompost tea. A Review. *Agronomy for Sustainable Development*, 41(1), 1–26.
<https://doi.org/10.1007/s13593-020-00657-w>

Confirmation of Handbook Receipt and Emergency Contact Information

You will be given a copy of this handout, and asked to sign, fill out, and return this page to the SFWS Safety Officer on day 1 of the workshop.

This acknowledges I have received a copy of the Soil Food Web School "Workshop Handbook." I understand that I am responsible for reading the Handbook with special attention to any health and safety information. I agree that the School has the right to add, delete or otherwise modify the policies, procedures, or other information provided in this Handbook at any time.

Participant name (please print):
Today's date:
Participant signature:

Participant's Emergency Contact Information
Emergency Contact Name:
Relationship:
Contact phone:
Contact email:
Location: