



HEALTH +
ENVIRONMENTAL
RESEARCH INSTITUTE



BLACK SOLDIER FLY FARMING

FOR HEALTHY ENVIRONMENT +
SUSTAINABLE COMMUNITIES

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HERI-Kenya Welcomes You to BSF Farming



We are so excited about your interest in starting your own Black Soldier Fly farm. This booklet is your personal guide to start your own Black Soldier Fly (BSF) Farm, keep your community healthy, care for the environment, and earn more income



HERI-Kenya is proud to support women like you in leading change for your family, your neighbors, and the environment.

What is HERI-Kenya?

HERI-Kenya is a non-profit organization that works closely with schools, communities, and local leaders in Kenya to share information, solve problems together, improve people's health, and care for the environment



Partnering with communities

We work with schools, policymakers, and businesses to build inclusive, local solutions



Led by environmental research

We help communities use nature-based methods that lower disease and support better health.



Promoting education and circular economies

We support women by teaching sustainable farming skills that help them earn money and support their families.



Connection through projects

From Eco-Clubs to clean-ups, HERI-Kenya strengthens community leadership and sustainable environmental action

Introduction to BSF



The Black Soldier Fly (BSF) is harmless and does not bite, sting, or spread diseases. It helps break down organic waste and supports recycling. BSF farms use BSF to feed livestock, grow crops, and reduce harm to the environment

BSF larvae produce two main products:
5th-instar larvae and frass

FRASS

A fertilizer rich in nitrogen, phosphorus, and other key nutrients needed for healthy crop growth



LARVAE AS FEED

Nature-beneficial and healthy animal feed (for poultry, pigs, fish, pets, etc.)

WOMEN + HEALTH

Women can use BSF farming to lead waste management and support community health

Nutrition Facts

Serving Size: 1 BSF Larva (0.28g)

% Daily Value*

Total Fat 30-40%

Total Carbohydrate 5-10%

Protein 40-50%

Calcium 4-8%

Phosphorus 0.5-1.5%

Zinc 1-10%

Iron 0.1-0.35%



SOME OF WHAT BSF CAN DO

BSF can turn 80-100% of organic waste into useful biomass
One acre of BSF can recycle up to 20 tonnes of waste each day



HOW BSF PROMOTES HEALTH

By reducing waste, BSF helps lower water contamination and disease.
BSF reduces the spread of harmful germs that grow in rotting waste

How to Get Started!

Step 1: Proper Permits & Paperwork



- ☐ **NEMA & KEBS Product Certification:** Ensures BSF-made feed and fertilizer are safe and quality
- ☐ **Traceability Records:** Requires farms to document production details
- ☐ **Worker Safety Measures:** Verifies use of proper protective equipment and safe handling
- ☐ **Farm Biosecurity Standards:** Prevents disease and contamination

How to Get Started!

Step 2: Building A BSF Farm

General Tips

Choose a place with shade and protection from rain

.....

Keep the farm close to waste sources for easy feeding

.....

Stay away from large pools of water to avoid attracting pests

.....

Neem oil can help reduce pests on plants if needed

Small-Scale Farms



Ex: Bucket Setup

- Use buckets, tubs, or crates to hold waste
- Add drainage to prevent flooding
- Add a sloped surface to help prepupae climb out
- Add holes for airflow

Intermediate-Scale Farms



Ex: Wooden Bed Setup

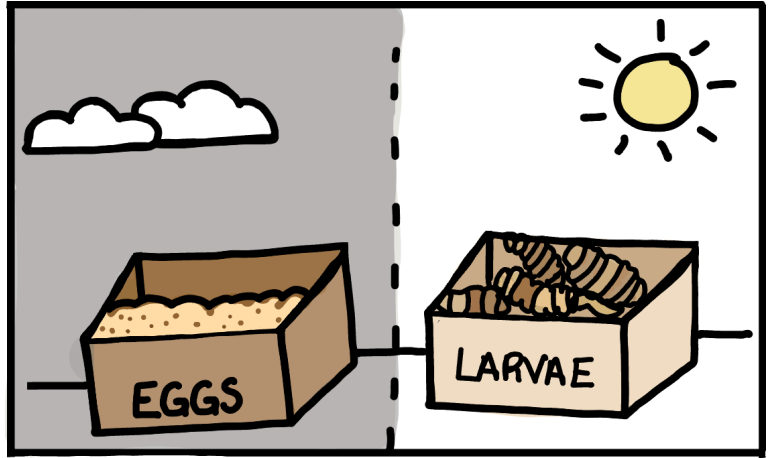
- Use sun covers, trees, or shade netting to protect the BSF from direct sun
- Use larger beds made of wood or metal to hold more waste
- Build a ramp so prepupae drop into a container

How to Get Started!

Step 3: BSF Farm Preparation for Larvae

Creating Stations to Care for the Adult Female BSF

- Use milled fruit/vegetable waste as bait
- Add fine mesh or cardboard for egg-laying
- Place bait + sugar water in shaded areas



Eggs in shade & Larvae in partial shade

Supporting Egg & Larvae Yield

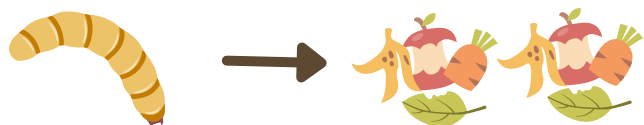
- Mix eggs with bran for 3 days to hatch and then 5 additional days
- At 5 days old, feed substrate (milled organic waste)
- Keep food moist, not wet
- Protect food from ants and birds



Preparing Safe Food for Larvae

Category	What to Consider	Examples	Why It Matters
Nutrient Content	Carbs, proteins, fats	Fruit waste (high carbs), brewery waste (high protein)	Carbs → growth Protein → size Fats → oil
Keep Waste Safe	Avoid chemicals, metals for safe food	Avoid pesticide or industrial waste use	Can harm larvae or reduce yield
Moisture Level	Too dry vs. too wet	Add water to dry waste; add bran to wet waste	Moisture affects egg survival
Breakdown	How fast waste breaks down	Good: Fruit scraps, vegetable scraps Poor: Woody stems, dry leaves	Faster breakdown = better feeding

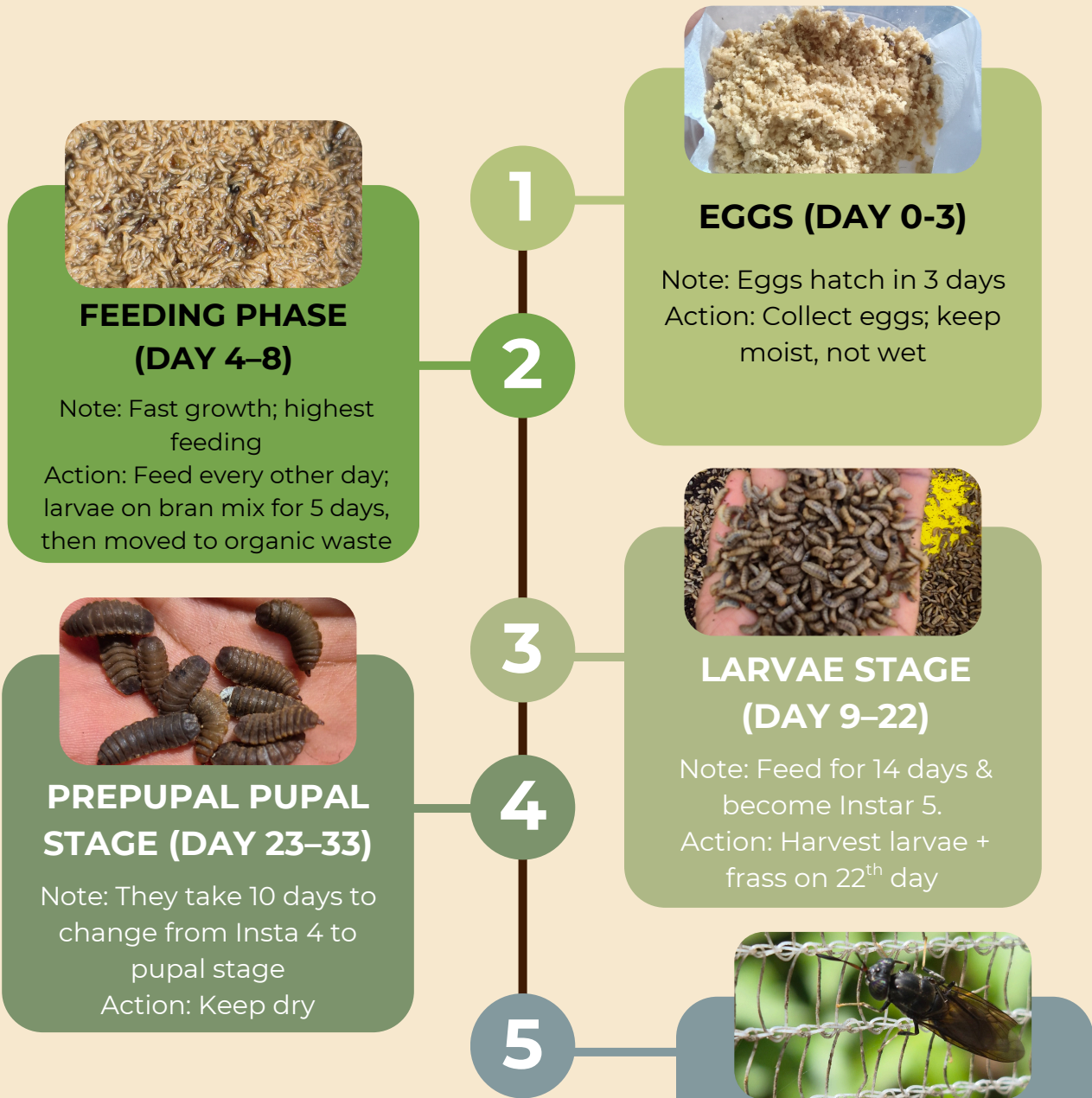
Feeding Guide



1 Part BSF Larvae 2 Parts Food Mix

Feed once at the start. Add more only if the waste runs out

BSF 101: Life Cycle & What to Do



Larvae Color Code



Cream → young, feeding



Brown → Has a dark nose, ready for harvest (max protein)



Black → dormant, becoming flies

How to Harvest Larvae and Frass

General Tips for BSF Rearing

Environment

Temperature: 27–35°C

Humidity: 50–70%

Maintain airflow to prevent anaerobic decomposition

Keep bins in shaded, stable areas



Example: Good Place to Set Up a BSF Farm

Maintenance

Clean bins weekly

Replace bait food every 3–5 days

Ensure bait is accessible to flies

UV light can improve mating success

Harvesting Larvae & Frass

1. Collect



Prepupal larvae + frass

2. Rinse



Hot water to freeze larvae

3. Dry



Air-dry or oven-dry before storage

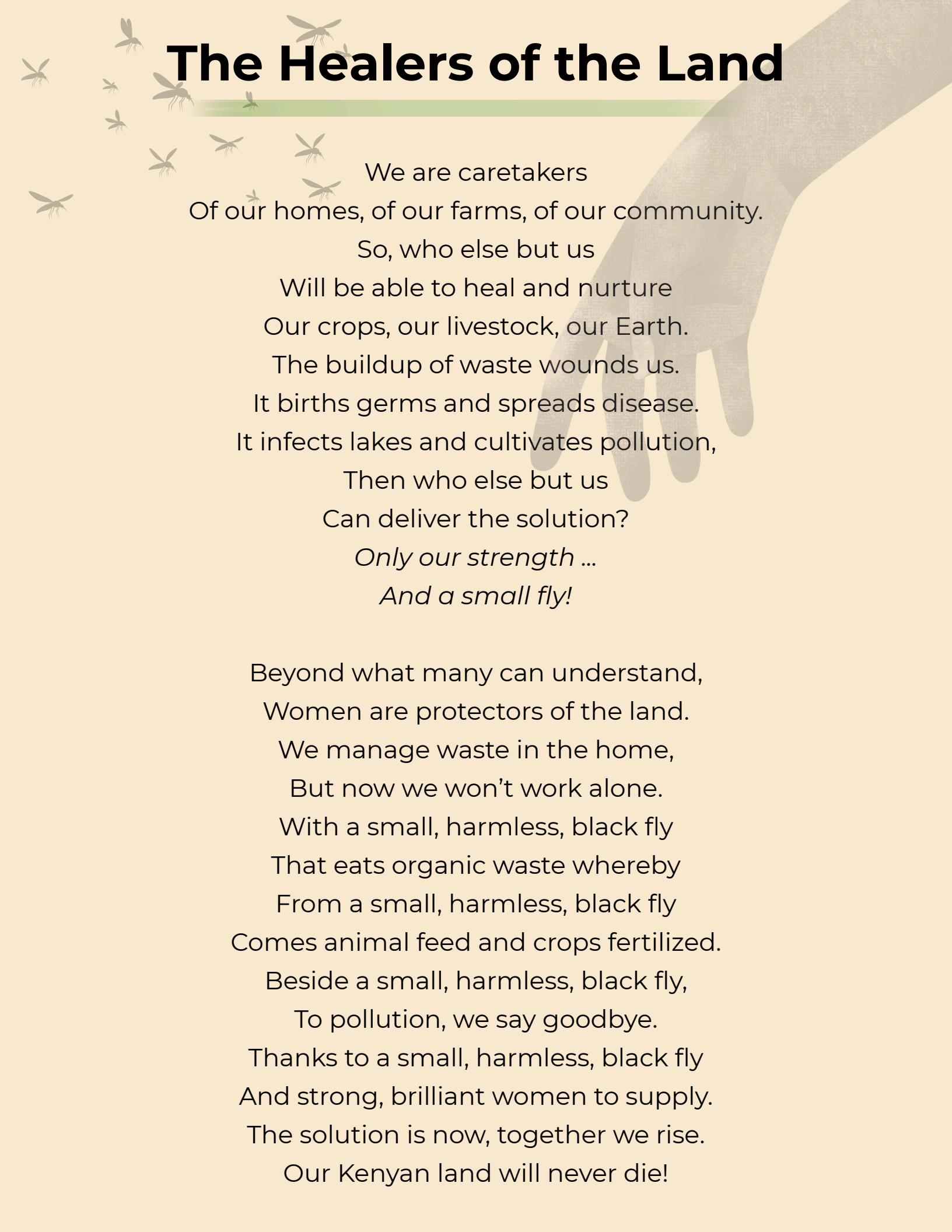
- Start harvesting at prepupal stage (~12–14 days old)
- Use sieves to separate larvae from frass
- Dry frass before using as fertilizer
- Store dried larvae in airtight containers
- For fresh larvae: keep at 4°C for short-term use

Product Applications + Women-Led Impact

We work with women so they can run BSF farms, earn money, and help the environment. Many women manage waste at home but are left out of community decisions. HERI BSF farms give women more voice and leadership. The products below show what BSF can make.



Product Type	BSF Application	BSF-Usage Benefit
Animal Feed	Chickens, fish, livestock	High protein and fat meals
Organic Fertilizer	Soil nutrient improvement	Frass contains nitrogen, phosphorus, potassium (NPK)
Biofuel	Biodiesel development from BSF larvae fat	Renewable fuel source
Pet Food Industry	Dog and cat formulations	Sustainable protein source
Human Protein	Protein powders, snacks, and flour (still in testing stage)	High digestibility + healthy amino acids
Bioplastics & Medicine	Chitin converted to chitosan for plastics and pharmaceuticals	Environment-friendly, biodegradable packaging



The Healers of the Land

We are caretakers
Of our homes, of our farms, of our community.

So, who else but us
Will be able to heal and nurture
Our crops, our livestock, our Earth.
The buildup of waste wounds us.
It births germs and spreads disease.
It infects lakes and cultivates pollution,
Then who else but us
Can deliver the solution?

Only our strength ...

And a small fly!

Beyond what many can understand,
Women are protectors of the land.
We manage waste in the home,
But now we won't work alone.
With a small, harmless, black fly
That eats organic waste whereby
From a small, harmless, black fly
Comes animal feed and crops fertilized.
Beside a small, harmless, black fly,
To pollution, we say goodbye.
Thanks to a small, harmless, black fly
And strong, brilliant women to supply.
The solution is now, together we rise.
Our Kenyan land will never die!

Thank you & Happy farming!



Resources



Training
Curriculum



Post-Training
Survey
(Please scan and
fill out. Help us
help you!)



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