

RESIN BAG PROTOCOL

Materials Needed/Chemical Recipes:

- Gloves
- Nylon/Lycra Swimsuit liner material
- Tablespoon (15mL)
- Plastic Cable Ties (at least 7 in)
- Resin beads: Sigma Aldrich Dowex Marathon MR-3 hydrogen and hydroxide form 13687-U
- Scissors
- Hori-Hori knife
- Ziploc bags
- 2M KCL (KCl, Fisher: P217-3; recipe: 1 L DI water + 149.1 g KCL)
- 250 mL Erlenmeyer flasks, numbered, one per resin bag and blanks
- Shaker table
- Flasks and funnels (Fisher # 10-500-20)
- Whatman filter paper #1, 70mm (Fisher # 09-805C)
- Squirt bottle with KCl
- 20 mL Scintillation vials (one per resin bag and blanks) (Fisher #03-341-72C)
- Acid bath

Making Resin Bags

- Cut material into 5 ½” squares.
- Scoop a leveled off tablespoon of resin onto each square
- Bundle up corners and edges of material and tie off with cable tie.
- Once the zip tie is over the fabric edges (make sure it is not squeezing a lot of resin), pull it tight with your fingers.
- Cut the extra material. Bags are ready for leaching.
- Soak/rinse assembled bags in 5% HCl for 15 minutes.
- Rinse multiple times in de-ionized water until litmus paper indicates the rinse water is neutral or at least the same pH as the DI water supply.

Deploying Resin Bags

- Using a hori-hori knife cut a triangle or square shaped soil plug, about 10 cm deep.
- At an angle, cut a slice from the wall of the hole, making a shelf for the resin bag to sit on with undisturbed soil above it.
- Place resin bags on the shelf.
- Replace as much soil back into the hole as possible and replace the soil plug
- Make sure the tail of the cable tie is sticking out of the ground
- Leave the bags in the ground for 30 days

Extracting Resin Bags

- Remove soil plug from above resin bags
- Dig approximately 10cm and put soil on the side of the plot

- Resin bags will be located on the side of the main hole. Remove the resin bags.
- Each resin bag should be placed in a Ziploc bag that is labeled with the plot number and date collected.

Extracting N from Resin Bags

- Have a spread sheet with 5 columns: Block, Plot #, Resin bag #, Flask #, and Notes.
- Rinse the resin bag in DI water to remove soil/litter/debris from the outside of the bag
- Place resin bag into a acid-washed numbered 250 mL flask that has been previously filled with 100 mL of 2M KCl
- Shake the resin bags for an hour
- After the bags are done shaking, let them sit for an hour
- Gravity Filter the solution after the hour and place in labeled scintillation vials
 - Line the funnels with filter paper and soak with 2M KCl before filtering extract
- Freeze the vials afterwards until they are ready to be analyzed. Be sure to leave space in scintillation vials. Don't fill to the top.