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Water Filtration for DNA Extraction Kit

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*****Please read all instructions before starting sampling*****

Use and Application

This procedure outlines how to filter water samples (i.e. hydroponic water, nutrients, and leachates) to obtain biomass through membrane filters using syringes and needles. This procedure concentrates biomass from a sample into a small volume of storage solution that can be used with our Sox DNA Extraction Kit to extract genetic material (DNA). The resultant DNA is suitable for applications such as PCR and sequencing in order to profile the microbial community.

Materials

Components	Quantities
60 ml syringes	10
10 ml-syringes	10
0.22 µm membrane filters	10
Blunt-end needles	10
1.5 ml screw-cap vials containing 1 ml storage solution	10

Materials and equipment needed that are not included:

- A fine-tip, water-resistant marker to label vials
- A jar or bin to collect filtered fluids
- Container to store capped needles for proper disposal

Preparation before Sampling

- Place ice packs in freezer 24 hours before shipping samples
- Print and fill out the Sampling Submission Form on healthyhydroponics.ca

Diagrams



Figure 1. Filter. Avoid touching the bottom of the filter once it's out of the package. Hold the filter by the colour ring.



Figure 2. Syringe attached to the filter.

Caution

This protocol involves using needles. Always handle needles with care away from your body.

Types of Samples That Can Be Collected

- Nutrient Solution
- Leachate Solution (nutrient solution leaving the growth tray without/before treatment)

Methods

- Please wear clean gloves when carrying out the following procedures.
- If your gloves get dirty in the process of sampling, please change gloves in order to minimize cross-contamination
- Please print legibly when labelling samples on the vial

Sampling Nutrient and Leachate Solutions

1. Check that there is no precipitate in the storage solution. If there is, gently warm vials for 10 minutes in warm water (~50°C) until the precipitate disappears.
2. Record the date and time of sampling on the Sample Submission Form.
3. Record metadata at the time when the sample was taken.

If you have automated monitoring of metadata in your system, you may choose to record metadata when all samples have been taken.

4. Use a 60 ml syringe to aspirate the **nutrient** or **leachate solution** to 50 ml.
5. Peel off the cover of the package containing the filter.
6. Attach the 60-ml syringe to the filter by screwing it on. Be careful not to touch the bottom of the filter. The filter packaging may be used to handle the filter.
7. Take the filter out of the package with the syringe attached (do not dispose of the filter package yet).

Push the fluid in the syringe through the filter until the syringe is empty and collect the filtered fluid into a jar or bin for disposal.

8. Unscrew the filter from the syringe. You may choose to put the filter in its package before unscrewing it from the syringe. Set down the filter in its packaging.
9. Reuse the 60 ml syringe to aspirate another 50 ml of solution by repeating steps 6-8 with the same filter that is in use. When fluid is exiting the filter at less than 1 drop per second, the membrane is likely clogged from biomass and you may stop.
10. Unscrew the 60 ml syringe and set it aside on a clean surface.
You may use the same 60 ml syringe to filter multiples of the same type at the same site.

For example, you may use the same syringe to collect 2 nutrient solution samples from Site A, but you should use a different syringe when collecting leachate from Site A or nutrient solution from Site B.

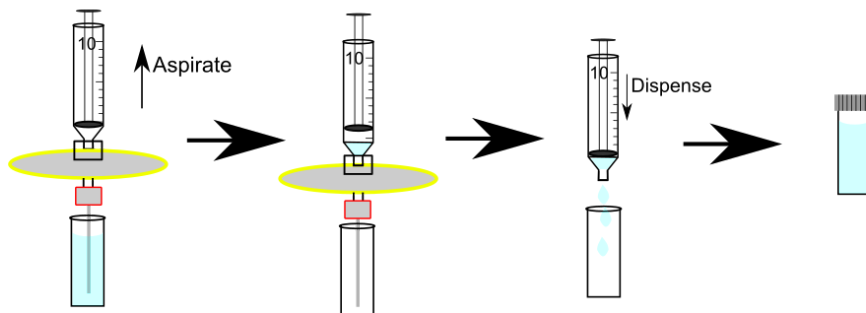
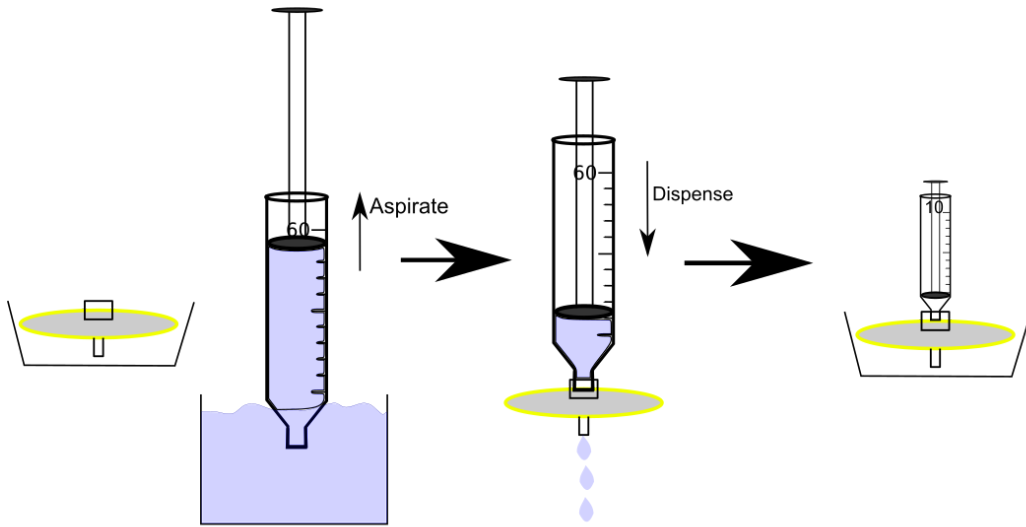
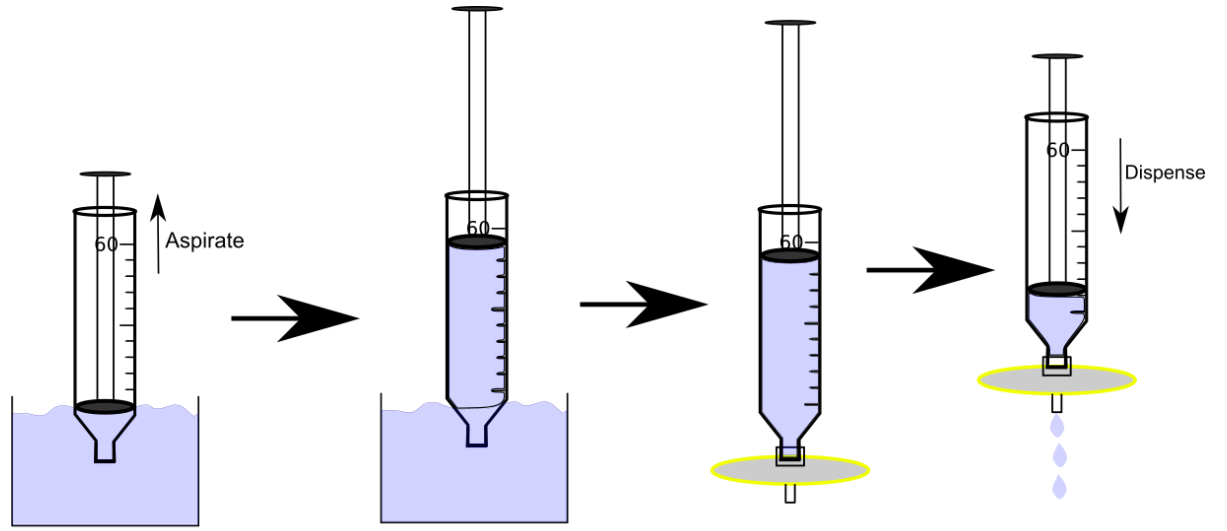
11. Attach the 10 ml- syringe to the filter by screwing it on.

12. With the protective cap on the needle, attach the blunt end needle to the other end (bottom) of the filter by screwing it on **away from your body**. Carefully, remove the protective cap from the needle by pushing the protective cap away from you with your fingertips.
13. Slowly aspirate the entire 1 ml of storage solution from the screw-cap vial. Replace the cap on the screw-cap vial securely.
14. Carefully, replace the protective cap on the needle.
15. Remove the syringe from the filter by unscrewing it. Be careful not to push on the plunger.
16. Slowly dispense the aspirated fluid in the 10-ml syringe back into the screw-cap tube. The biomass is in the storage solution.
17. Label the vial with the appropriate *Sample Name* designated on the Sample Submission Form. Record the *Volume Filtered* and the *Sample Type* on it.
18. You may reuse syringes for future samplings if they have been cleaned thoroughly with soap and hot water. Otherwise, discard the syringes and filters in the garbage.

Discard the needles (with the caps on) in a container to be disposed of at your local waste depot.

Dispose the filtered fluid per your operating instructions on disposing the nutrient solution.

Please see pictorial on the following page for a visual summary of the water filtering procedure.



Temporary Storage of Samples

If not shipping samples on the same day as sampling, store vials containing filtered samples in a plastic zipped bag and place at room temperature (22°C or higher) or in the freezer. Avoid storing at cool temperatures (0-22°C).

Shipping Samples

Please visit healthyhydroponics.ca for instructions.

Thank you for using our Water Filtration for DNA Extraction Kit. Please contact our technical support (support@metagenom.com) if you have any questions, we are at your service.