



## Paper Chromotography

Posted by [Mike Biltonen](#)

[Forum List](#) [Message List](#) [New Topic](#)

[Mike Biltonen](#)

[Paper Chromotography](#)

November 06, 2015 04:05PM

Registered: 10 years ago

Posts: 298

Has anyone ever used or have experience with paper chromatography to assess the quality of soils or compost or anything else derived through the hard work of micro-organisms?

[Mike Biltonen](#), [Know Your Roots](#)

Zone 5b in New York

[Reply](#) [Quote](#)

[Nick Segner](#)

[Re: Paper Chromotography](#)

November 06, 2015 06:07PM

Registered: 9 years ago

Posts: 49

Nope!

Is that test something one could do at home?

This spring, we took a class by Peg Schafer of the Chinese Medicinal Herb farm in Paloma, CA. She mentioned many times Thin-Layer Chromatography (TLC) and High Performance Thin Layer Chromatography (HPTLC) in evaluation of the medicinal quality of the Chinese herbs she is growing and marketing.

So, that's evaluation of roots/leaves/bark, etc, but I wasn't aware chromatography could be used to evaluate soils.. Interesting! Tell us more!

Nick Segner

Wildcat Valley Farm

Zone 8b

Olympic Peninsula Rainshadow

Port Angeles, Washington

[Reply](#) [Quote](#)

[Mike Biltonen](#)

[Re: Paper Chromotography](#)

November 06, 2015 07:05PM

Registered: 10 years ago

Posts: 298

I am learning about this myself and based on what I've discovered it is something that can be done at home with minimal expense and training. I'll post more as I learn more, but for now you can read Ehrenfried Pfeiffer's book "Chromotography Applied to Quality Testing."

[Mike Biltonen](#), [Know Your Roots](#)

Zone 5b in New York

[Reply](#) [Quote](#)

[Claude Jolicoeur](#)

[Re: Paper Chromotography](#)

November 08, 2015 07:49AM

Registered: 11 years ago

Posts: 226

First question - I guess you mean chromatography here (and not chromotography)

Interestingly, paper chromatography is a test that can be done at home for testing the malolactic fermentation in a cider (or wine). The paper reacts with acid in the cider, thus permitting to monitor the decrease of malic acid and the production of lactic acid.

I am not too sure how you could use this is soil analysis however...

Claude

[Jolicoeur Orchard](#)

Zone 4 in Quebec

Author, [The New Cider Maker's Handbook](#)

[Reply](#) [Quote](#)

[David Maxwell](#)

[Re: Paper Chromotography](#)

November 08, 2015 05:46PM

Registered: 11 years ago

Posts: 197

Perhaps a little practical theory will help here. Chromatography is actually pretty simple. It depends on the fact that different constituents in a mixture of substances have different solubilities. One simply dips one edge of a piece of filter paper, (I suspect one could even use paper towel), in the

solution, the liquid wicks up into the paper, and the most soluble substances get carried up first, with the less soluble ones trailing along behind. When the liquid reaches near the upper edge, one removes the paper and dries it, (evaporates off the liquid), leaving the various constituents of the original mixture deposited as a series of bands of material. This can be further refined by rotating the paper 90 degrees, and dipping the bottom of the paper in a different solute, which, as it migrates up redissolves the deposited materials and again separates them out based on their respective solubilities. One then ends up with a series of "islands" of material scattered across the surface of the paper.

Now comes the hard part. We need some means of showing us where these dots of material lie on the paper. This is generally done by using a suitable chromogen - a material which combines with the substances we are tracing, and shows up as a coloured dot. We then identify the exact nature of each dot by comparing its position on our test paper with the position reached by a known reference control, (run separately, in parallel)

So, the chromatography itself is dead simple, and do-able by any amateur in their kitchen. But one then has to find an appropriate chromogen, and a supply of the individual things one is trying to monitor, so as to prepare the reference standards. In other words, this doesn't serve to determine the constituents of an unknown mixture; you have to start from a knowledge of possibilities, identify the behaviour of these known substances, and then determine whether these particular substances are present or not.

There is a minor additional point here: the more of each substance is present, the larger and brighter the coloured dot on the paper will be. So it also gives an indication of the relative quantities of the various constituents of the mixture.

[Broomholm Orchard](#)

Zone 5b in Nova Scotia

[Reply](#) [Quote](#)

[Mike Biltonen](#)

[Re: Paper Chromotography](#)

November 10, 2015 03:20AM

Registered: 10 years ago

Posts: 298

First of all, thanks to Claude for catching my typo...that's usually my job!

Second, my introduction to PC has been as a qualitative analysis of soil/compost quality and not for specifically (i.e., quantitatively) analyzing anything. In other words, this is not a simple soil test. That said, what David has to say is interesting...using a chromagen to determine what you are actually looking at.

As I said, I am still learning about this interesting process and I'm not sure what the practical applications may be. So far, the analysis of the patterns is a visceral reaction to the patterns. There is more to it than that, however.

The process is this: using a wick system, wick silver nitrate onto the filter paper [we used a 4-5" diameter piece of filter paper]. You then take the pulverized [with a mortar and pestal] compost or soil and "dissolve" it in sodium hydroxide. Then wick that solution [or suspension if you will] on to the AgNO<sub>3</sub> soaked filter paper and observe the pattern. The pattern, in fact a series of patterns, should tell you everything you need to know about the quality of your soil or compost -- at least qualitatively.

That's where it gets a little esoteric. More to come. If anyone has anything to add, I'm all in. Will definitely have more info by Stump Sprouts next spring.

[Mike Biltonen, Know Your Roots](#)

Zone 5b in New York

[Reply](#) [Quote](#)

[Newer Topic](#) [Older Topic](#)

[Print View](#) [RSS](#)

Sorry, only registered users may post in this forum.

[Click here to login](#)

This [forum](#) is powered by [Phorum](#).