

Making Soil Color More Accessible to Bucks County, PA Residents

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Background & Objectives

- Soil color is an important morphologic feature of soil related to many soil properties.
- Soil color is an accessible soil property that could be used to engage the public, but obstacles include the complexity of soil color and the expense of the equipment currently the standard for soil scientists.

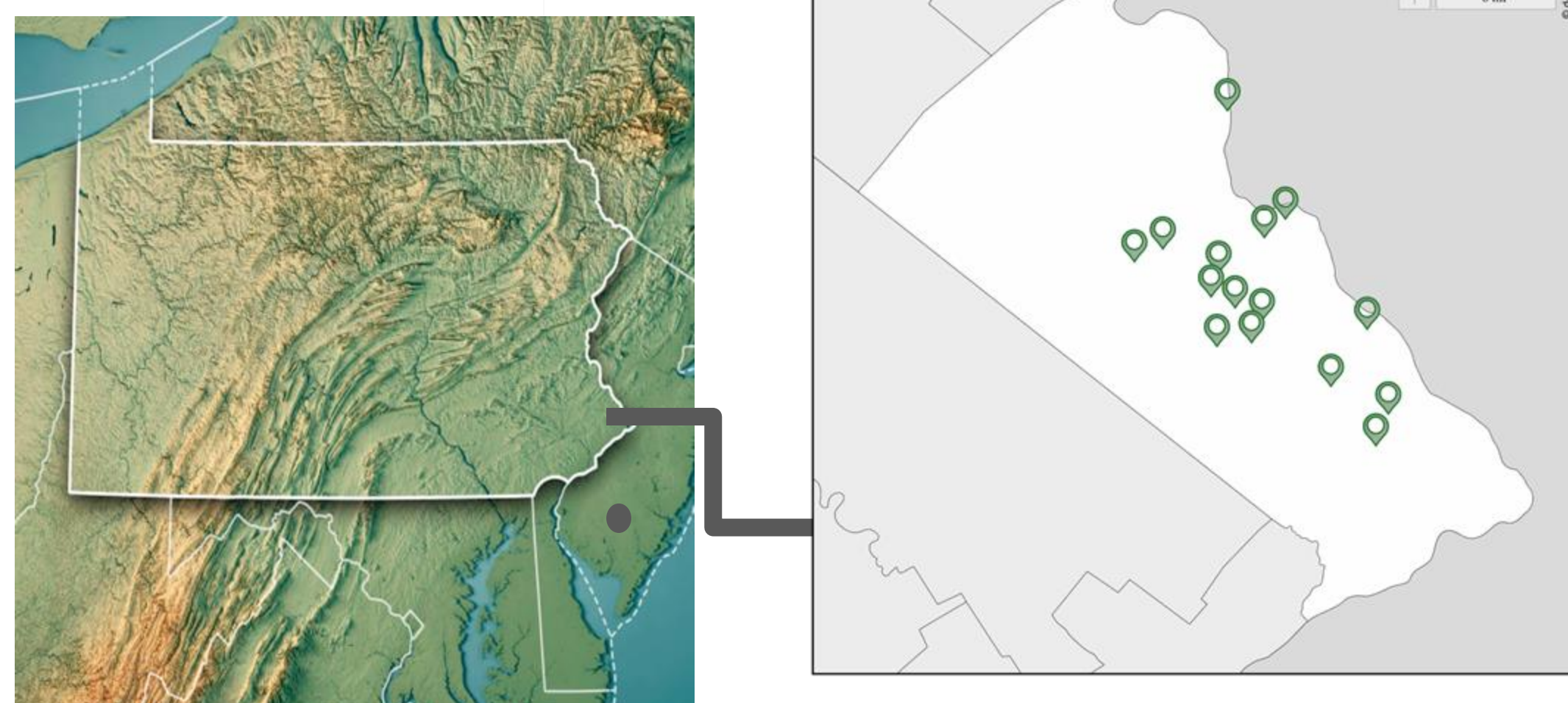
Objectives:

1. Increase the general public's knowledge of soil color through soil outreach and education with soil paint..
2. Create a low-cost Bucks County-specific soil color book that can be given out for education and potentially estimating soil organic matter.

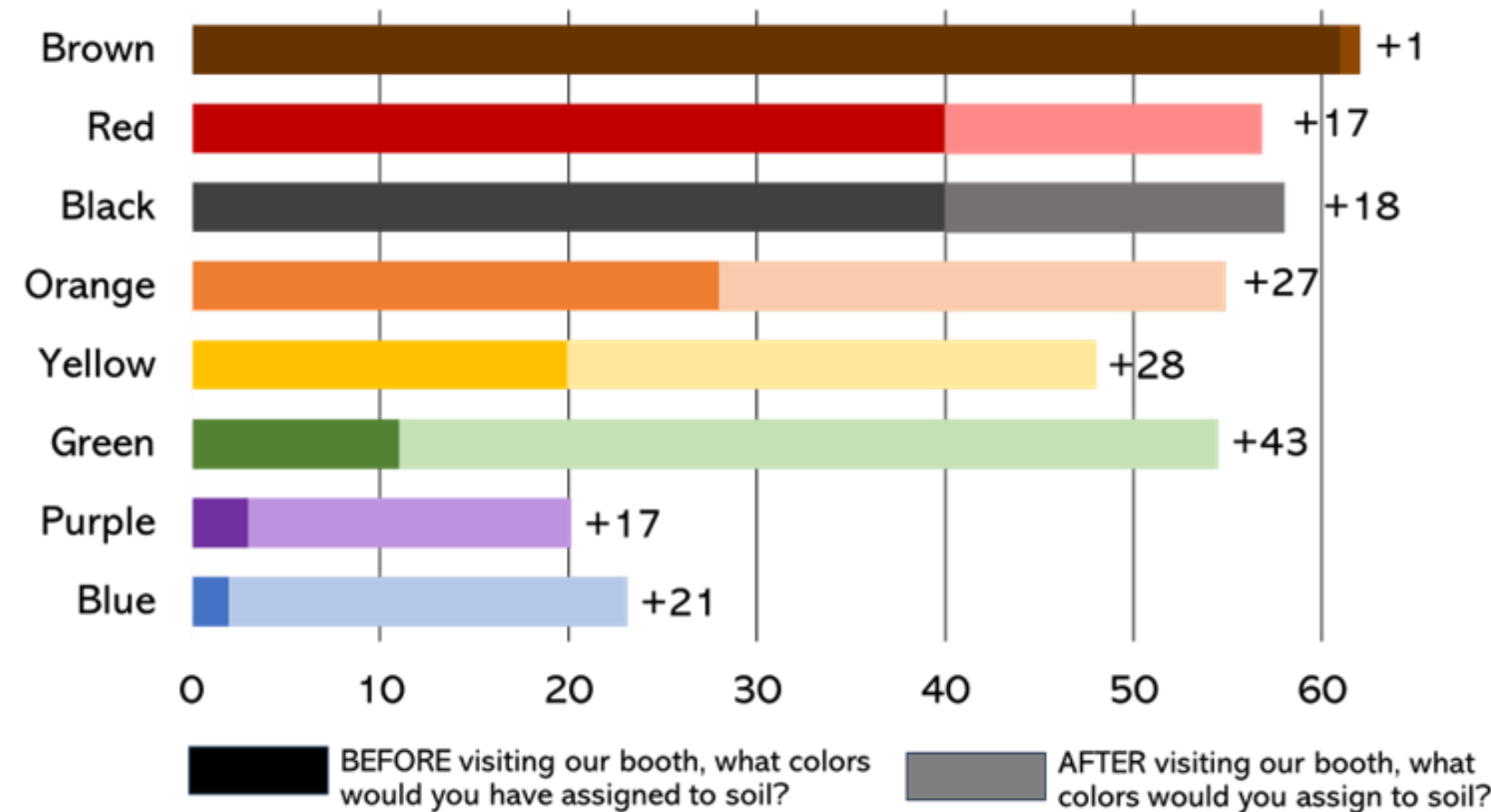
Methods

Part 1: Public outreach about soil color

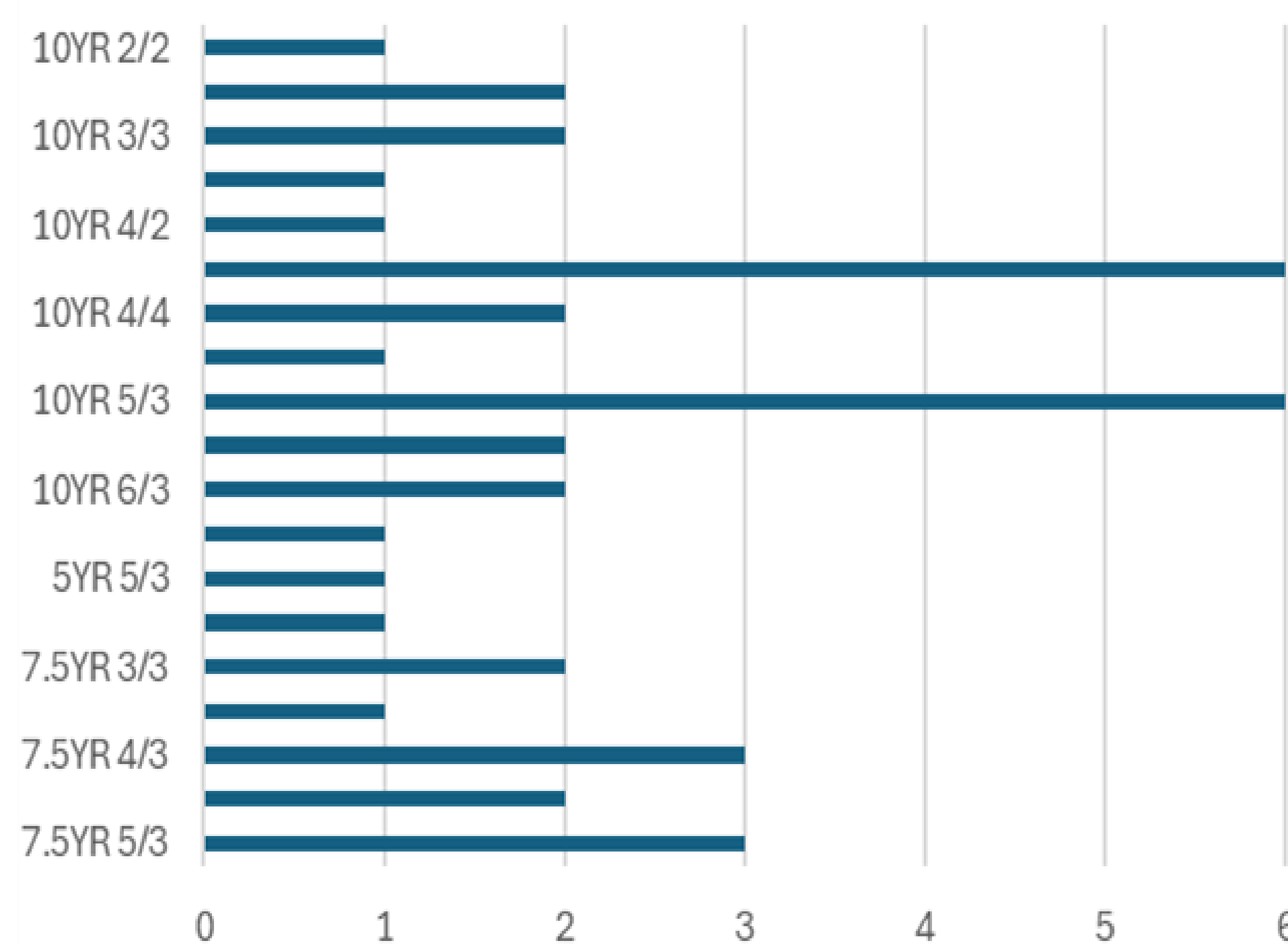
1. Created soil paints by mixing local soils with gesso, made sure to include every color of the rainbow.
2. Hosted free soil painting during DelVal's annual outreach event, A Day, that 8,000+ people attended.
3. 63 participants filled out a before and after survey about (1) what colors they thought existed in soil (2) their knowledge and understanding of soil color.
4. Most frequent questions were about garden soils, so we decided to make a soil color book specific to Bucks County, PA.



Results & Discussion



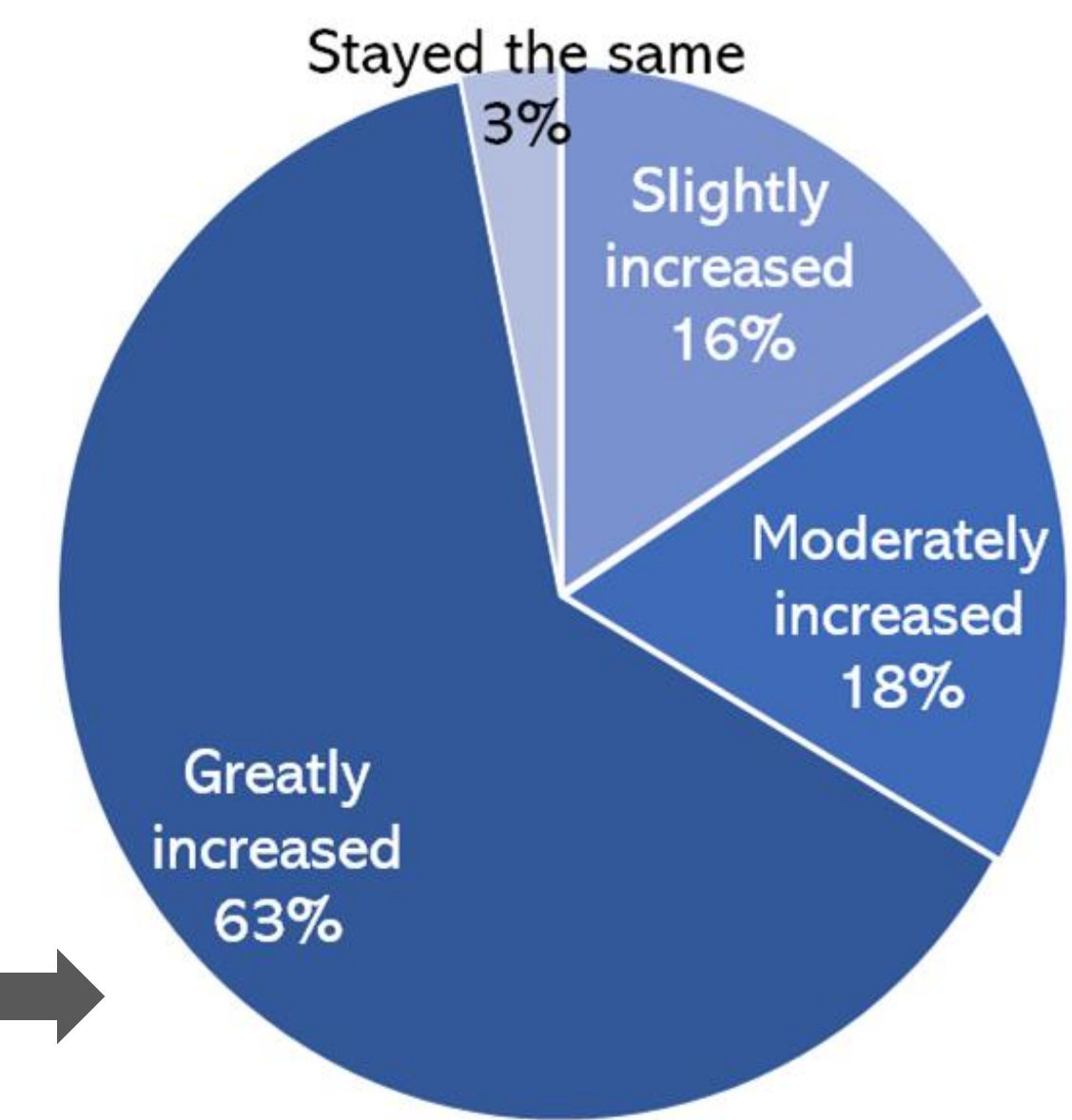
Soil is not just brown! After visiting our outreach table, visitors acknowledged on average 3 more soil colors. Four people wrote in "gray." The largest increase was 43 people learning about the existence of green soils (our green paint was made from glauconitic soils).



Frequency of recurring Munsell soil colors in Bucks County top soils. Two groups emerged: 10YR darker brown colors and redder colors (5YR and 7.5YR) from sites with red shale parent materials. We used these to choose which colors to put in our Bucks County Soil Color Book

Additional survey response results:

- 64% of participants arrived to our table by chance (i.e. did not seek it out).
- 65% reported that they had little knowledge about soils (19% not at all)
- 95% reported that visiting our table **increased their understanding** of soil (30% greatly increased)
- 97% reported that their **appreciation** for soils increased



The first draft of the soil color book made for this project showcasing common colors of topsoil found across Bucks County. 10YR - left and bottom 7.5YR - right 5YR & 2.5YR - top

Cost of color book construction:
8 oz. paint samples \$6 x 13 = \$78
Cardstock paper \$30
Upfront cost: \$108

Estimated # of books with paint volume: 1000

Final cost = 11¢ per book.

Conclusions

Part 2: Bucks County Soil Color Books

1. Visited over fifty different sites including farms, wineries, and soil donations from local property owners across Bucks County.
2. Measured moist color using Pantone's Munsell Color Book then analyzed for frequency of occurrence to choose paint colors.
3. Used a Nix sensor to get Hexadecimal notation of Munsell colors, then used encycolorpedia.com to convert to Behr paint colors.



- Soil paints are useful tools for teaching the public about the diversity of soil color and increasing their appreciation for and understanding of soil.
- Bucks County PA has a range array of topsoil colors generally falling into brown and red color categories depending on parent materials.
- Low cost color books can be constructed by converting Munsell notation to commercial paint colors that are easily obtainable from department stores.
- Future work includes correlating soil colors and %SOM in Bucks Co soils. We also will investigate the influence of the red parent material on color and %SOM.

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