SeedSmart

What to Plant Where in a Changing World

Our Planet is Changing.

Global changes in climate will have a direct impact which trees and plants will thrive over the course of the next several decades. Yet, due to the lack of a widely accepted tool, key or standard on this topic, millions of trees and other types of vegetation are planted each year without considering these factors. If we want restoration efforts to succeed and native ecosystems to thrive we need to start planting species in a “climate-smart” way.

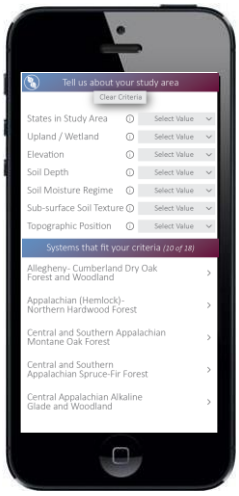
Introducing SeedSmart.

NatureServe, with funding from the Alcoa Foundation, is developing a mobile-ready online tool that does just that. SeedSmart is the first of its kind - a comprehensive tool that guides land management and restoration decisions by determining what species to plant where using climate trend data. Even without considering climate change, there is surprisingly little relevant and easily accessible information about the ecology of plants that would help land managers answer basic questions about the sites they are trying to restore. SeedSmart hopes to answer some of these questions: which species are native here? What are the important soil characteristics I should know about? Which plants grow best in this setting? Which plants will be more likely to survive changing climatic conditions? The tool enables users to answer these questions about their restoration site by guiding them to first identify a target native ecosystem for the site to be restored to, and secondly, by finding a “climate-smart” source of plant materials to restore the site with.

SeedSmart works with any smart phone or browser

1. *Determine which ecological system the site should be restored to*

2. *Get more information about th target ecological system*



3. *Enter attributes of your site and get a filtered list of potential ecological systems*

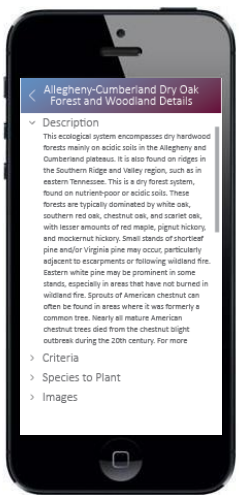
Results

SeedSmart will be used by environmental professionals across the spectrum, from those planting trees to revegetate an area, to those restoring a more functional ecosystem.

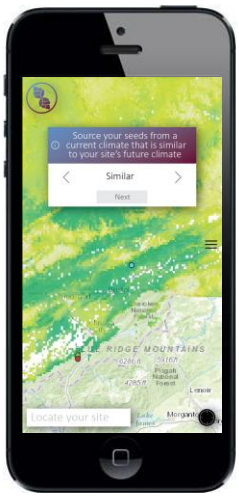
For this first iteration, the tool focuses on the ecosystem types in the Great Smoky Mountain region of Tennessee. Since these ecosystem types reach beyond the Smokies we anticipate that this Alcoa-funded tool will help with the “climate-smart” restoration of over 2,000 acres with over 40,000 trees, and will catalyze a quick uptake with expansion to other ecoregions.

How it works

To determine which ecological system the site should be restored to, SeedSmart allows you to view a map that uses a model to suggest the ecological system best suited for the site. To confirm that the conditions at the site are suitable for the suggested ecological system, users can enter characteristics of the site. These characteristics include features like environmental setting (steep slope or flat, mountain top or at the foot of the hill), influence of water (never flooded to sometimes flooded, etc), and other factors, that filter down the list of suitable ecological systems. Once the user has confirmed the native ecosystem that the site will be restored to, SeedSmart provides a descriptions of the system, pictures, and lists of characteristics and most common plants of the ecosystem.



4. *Learn about wha species to plant*



5. *Run an analysis to determine where to source your seeds in a "climate-smart" way*

SeedSmart then determines the most "climate-smart" locations for sourcing seeds to restore the site with. It does this by integrating the geographic range of the target ecological system with spatially explicit data on historic climate change observations, and comparing the results to your site. The result, a map of areas where the target ecosystem exists where climate has been trending in the same way as your restoration site. In other words, it identifies sources of seed and other plant material from plant populations that are best adapted, most resilient to the conditions at your site.

Help us out

We could use your help making SeedSmart the best tool it can be. If you think SeedSmart would be valuable for the work that you do, or know someone who might use the tool let us know. With any comments or for further conversation contact:

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Questions to consider:

1. How do you currently select where to source your seeds?
2. How much do climate predictions factor into your current restoration activities?
3. Which geographies would you be most interested in using this tool?
4. Could you see yourself using this tool on a regular basis?
5. Are there additional features of the tool that would make you more likely to use it?
6. Do you know of any other similar tools or resources?
7. On a scale of 1 (low) to 10 (high), how useful do you think this tool will be?
8. Do you have recommendations of other people who should be interviewed as we build out the tool?