

Benefits of planting VS natural regeneration

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Benefits of planting VS & natural regeneration

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Goal 1) restore natural structure

- Natural community
- Size & age structure

Planting	Nat. Regen.
+/-	++



Goal 2) restore natural functions

- Water quality
- Flood resilience
- Habitat
- Climate change

Planting	Nat. Regen.
+/-	++



Goal 3) Restore natural processes

- Self-sustaining
- Resilient
- Adaptable

Planting	Nat. Regen.
-	++



Natural regeneration should be an objective

- Tree planting does not always lead to natural regeneration
- A tree planting that doesn't also provide natural regeneration will not achieve all three goals (structure, function & process)





Where is natural regeneration likely to occur?

- Between 2021-2023 monitored 13 tree plantings that occurred between 2002 and 2021
- Some anecdotal results about natural regeneration

July 2021



Flood – April 2019



Disturbance

Seed dispersal VS Invasive spread

Knotweed, poplar and beech colonized disturbed areas

Ground cover correlated with low or no natural tree regeneration

Low (100-400 stem/acre)

- Golden rod (previously corn)



No (<50 stem/acre)

- Grass (reed canary?)
- Joe Pie Weed
- Fern/bracken
- Buttercup



Seed source

- Natural regeneration is not uniform
 - Patchy, follows prevailing winds (on large parcels)
 - Sediment deposits after inundation
- Natural regeneration is not representative of nearby species
 - Species with heavy seeds
 - Box elder, black locust
 - Long-range dispersal
 - Cottonwood
 - Inundation
 - Birch, alder



Other observations

- Exposed soil
 - 50% exposed soil not sufficient for natural regeneration
- Herbivory
 - does not prevent natural regeneration
- Soil type, prior land use
 - importance not clear
- Inundation period
 - No data





When to pursue
active restoration

Invasive species

Infrastructure

Erosion control / Exposed soils

How to accelerate natural regeneration?

- Site preparation – experiments in progress
 - Till / herbicide
 - Invasive control
- Planting density – experiments in progress
 - 800 – 1200 stems / acre
 - Direct seeding
- Site maintenance?
 - Watering
 - Mulch
- Others?



