Beyond Aerial Applications

Alternative Herbicide Application Methods
Start with the End in Mind

• What is your desired future state?
  Conifer plantation
  Riparian restoration
  Wildlife Recreation Area

What are your constraints?
  Time
  Budget
  Neighbor, Environmental or Other
What is your current site situation?


Topography (<50% ; 50-80%; >80% benchy or vertical?)

Access (Are there year-round roads? Is access seasonal or walk-in only?)


Hydrology (Braided streams? High water Table? Perennial? Fish? Domestic water downstream?)

Climate Zone (Water limited/droughty? Rain/fog belt? Snow zone? Elevation?)

Wildlife issues (T&E species? Heavy browse? Extreme Mt beaver?)

Neighbors? Activist Area?
Prioritize the vegetation you need to manage

- Is there a woody component that you need to remove to prepare the site? If there is a dense stand, you may not need to site prep.

- Site Preparation Option #1: no site preparation treatment
In sites with an unwanted woody component evaluate your options and choose the method that best achieves your target.

Site Preparation Option #2: Pre-harvest vegetation treatment
In sites with good access and potential for woody and herbaceous vegetation competition consider a broadcast tank mix.

Site Preparation Option #3:
Backpack spray of woody and herbaceous with pre-germinant batch tank mix.
Does a pre-germinant make sense?

Site Preparation Option #4: broadcast of pre-germinant/herbaceous treatment only.
No spray stand 2 years after planting (4 ft tall) in area with dense conifer preharvest canopy

Release Option 1: No herbaceous treatment.
Herbaceous Release Spray

Release Option #2: Spot or broadcast herbaceous spray.
Hardwood Release

Release Option #3: Hardwood Hack, Spray or Slashing
Invasive Species

Release Option #4: Invasive species spray
Using Insects to attack invasives

Release Option #5: Insects; Slashing; Grubbing
Know your Toolbox

For Pre-germination: Sulfometuron Methyl; Metsulfuron Methyl; Indaziflam; Aminopyralid; Atrazine; Hexazinone

For site prep and dormant release: Glyphosate; Imazapyr; Triclopyr; 2,4-D, Fluroxypyr

For release during active tree growth: Clopyralid
Personal Protective Equipment

MINIMUM: LONG SLEEVE SHIRT AND LONG PANTS OR COVERALLS WITH SHOES AND SOCKS

MOST: CHEMICAL RESISTANT GLOVES THAT ARE WATERPROOF

SOME: PROTECTIVE EYEWEAR

A FEW: - CHEMICAL RESISTANT APRON FOR MIXING AND LOADING; GOGGLES OR FACESHIELD

ALWAYS – CHECK YOUR PPE PRIOR TO USE AND REMOVE AND CLEAN OR REPLACE AFTER USE.
Technology and the Future View: Drones; Autonomous Robots; Using APPS

- Precision spraying - Autonomous robot for agriculture
  https://ecorobotix.com/en/

- Mechanical Weeding – autonomous robot for agriculture
  https://farmwise.io

- Laser and Electric weed control
  https://www.escarda.eu/technology/
Summary:

* Identify your objectives and constraints
* Prioritize your treatment needs: woody /herbaceous /invasive
* Evaluate timing and prescription choices and select one or more option
* Know your chemicals and required PPE
* Check for new tools and technology
* Check results and learn from your experiences