

Chemical treatments

- In wildlife habitat management chemical treatments can include pesticides, herbicides, and even fertilizers.
 - pesticides are chemicals whose purpose is to control (kill) pests (unwanted life). These chemicals are usually very toxic to humans
 - herbicides are a subset of pesticide that specifically targets plant life. These chemicals are generally less toxic to humans.
 - fertilizers are chemicals used to enhance plant growth

Herbicides are used to

- control dominant species to release shade intolerant species
- prevent invasion of grasslands by woody species
- maintain openings initially created by other means
- alter habitat structure
- top-kill strong re-sprouters to stimulate palatable re-growth
- manipulate plant succession

Advantages and Disadvantages of using herbicides (Table 9.9)

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| <ul style="list-style-type: none">■ Can be used where mechanical methods cannot■ Variety of application methods■ Rapid plant response■ Low labor and fuel requirements | <ul style="list-style-type: none">■ No chemicals yet found for some species■ Provide few desirable seedbed conditions■ Costs often exceed benefits■ Careless use is hazardous to non-target plants |
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Advantages and Disadvantages of using herbicides (Table 9.9)

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| <ul style="list-style-type: none">■ Phenoxy herbicides \$< mechanical but \$> burning■ Can be selective or selectively applied■ Maintains grass/litter cover■ Safe & reliable■ Don't require special equipment■ Soil-applied can be long-term | <ul style="list-style-type: none">■ Lack of selectivity – 'forb shock'■ Restrictive periods for effective application■ Generally decrease plant diversity■ Forbs in particular wildlife foods lost■ Can directly kill wildlife and have undesirable indirect effects on wildlife |
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Choosing an herbicide treatment

- Before use, managers must completely understand the properties of the herbicide chosen and the respective LD₅₀'s . (for safety)
- Almost all herbicides have some drawback
 - expensive (e.g., glyphosate)
 - highly toxic (e.g., paraquat)
 - damage non-target forbs
 - have biomagnified toxic effects if they enter aquatic systems.

Future rangeland use of herbicides is in question

- Several chemicals widely used in 1960-70's are now banned
 - For example: 2,4,5-T and 2,4,5,-TP
 - cost (> \$1.5million) to test (10 years) and get registered for use is limiting production of new herbicides

Pre-emergent vs. Post-emergent

- Pre-emergent herbicides are applied to soil and usually persist longer killing plants as they germinate or take up nutrients from soil to grow
- Post-emergent herbicides are usually applied to stem or foliage of growing plants, less persistent

Selective vs. Non-selective

- Selective are (relatively) specific to target species or type of plant
- Non-selective have a wide range of toxicity to many species

Concerns when using herbicides

- Indirect effects on wildlife habitat alteration from herbicide application are of greater concern than the direct (toxic) effects on wild animal species.
- Residues of herbicides are usually of low concentration and are usually short-lived in ecosystem. Therefore, toxic effects on wildlife are less likely.
- Effects on habitat may be much more pervasive (e.g., changing structure, composition of plant community may have unintended effects on animal communities that use them)