

The “Perfect” Burn: Defining What Success Means To You or Your Organization

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My Perspective



Experience:

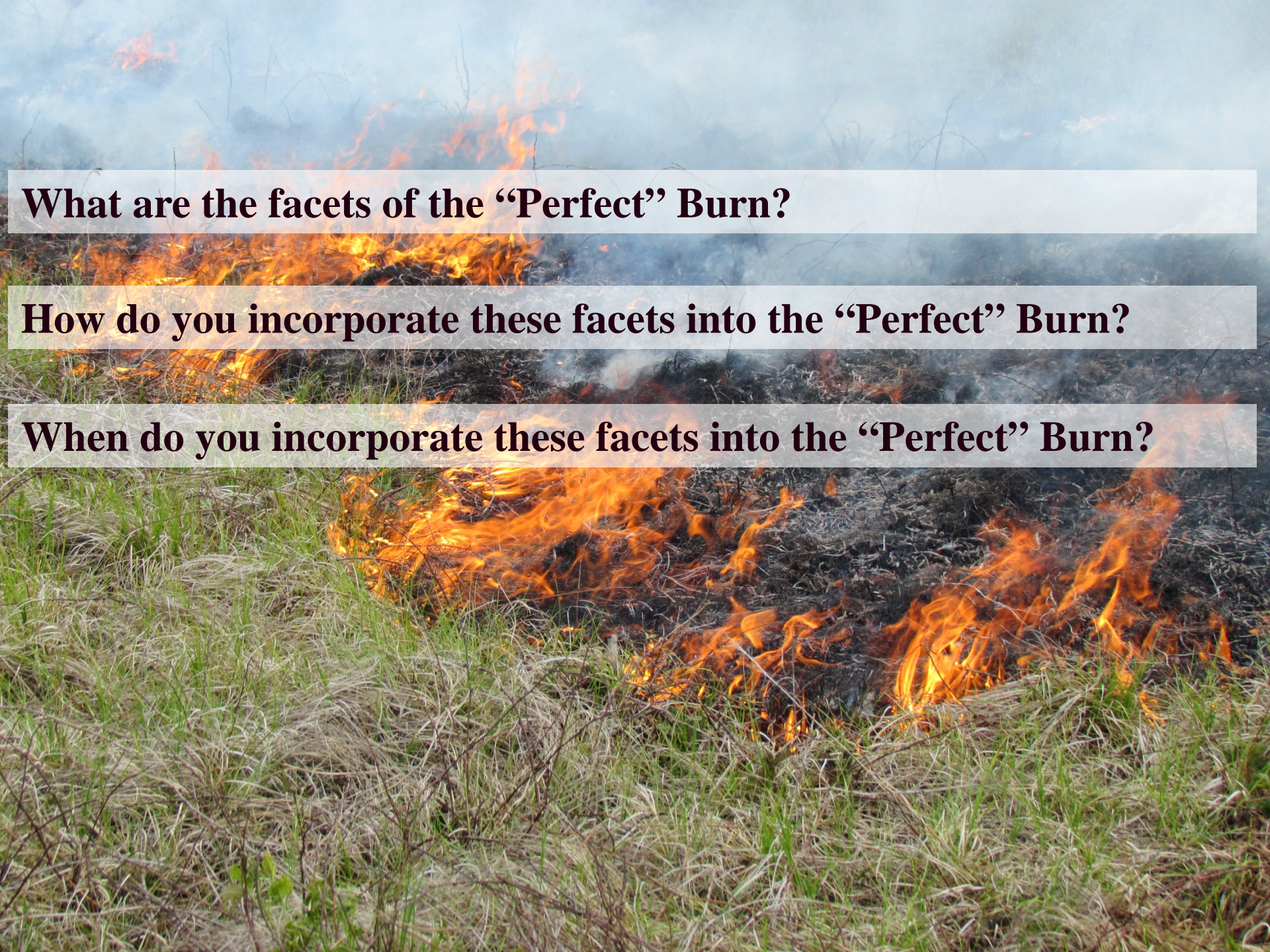
- Environmental Consultant
- Prescribed fire in Illinois and Michigan
- Research in fire dependent ecosystems in Kansas and South Carolina

Teaching:

- Ecological Restoration
- Soils
- Wildland Fire Management (S130, S190, S290, S133)

Research:

- Interaction of fire, soil, and invasive plant species control in Michigan grasslands



What are the facets of the “Perfect” Burn?

How do you incorporate these facets into the “Perfect” Burn?

When do you incorporate these facets into the “Perfect” Burn?

The “Perfect” Burn



- Safe**
- Satisfies Ecological Objectives**
- Cost Effective**
- Incorporates Learning**

Not Mutually Exclusive

A photograph of a controlled fire burning in a field of tall grass, with a diagram overlaid showing the components of a 'Perfect Burn'. The diagram consists of a central purple circle with a yellow border containing the text 'Perfect Burn'. Four other purple circles with yellow borders are connected to the central circle by black lines. These four circles are labeled 'Ecological Objectives' (top), 'Safety' (left), 'Cost' (right), and 'Learning' (bottom). The background of the entire image is a photograph of a fire burning in a field of tall grass, with smoke rising from the flames.

The “Perfect” Burn

Ecological Objectives

“Perfect” Burn

Safety

Cost

Learning



Safety: Avoiding Harm to People and Property

A photograph of a wildfire in progress. Bright orange and yellow flames are visible, consuming dry grass and brush. A thick plume of white and grey smoke rises from the fire, filling the upper portion of the frame. The foreground shows unburned green and dry grass.

How?

-Training: National Wildfire Coordinating Group courses; Agencies





Safety: Avoiding Harm to People and Property

How?

- Training: National Wildfire Coordinating Group courses; Agencies
- Understanding Risk vs. Reward
- Experience

When?

- Planning: Weather, Fuels, Wildland Urban Interface, Go/No Go
- Implementation: Personnel, Communication, Ignition, Equipment, etc.
- Monitoring: After Action Review

Were we safe?

How can we improve safety?

Satisfying Ecological Objectives

How?

- Clear Communication
- Understanding Fire Science and Ecology; Serving Multiple Masters

When?

- Planning: Plant and Animal Phenology, Season of Burn, Weather, Fuels, Non-Target Species, Other Management Tools
- Implementation: Ignition Pattern, Residence Time, Rate of Spread, Refugia
- Monitoring: short term vs. long term, qualitative vs. quantitative

Fire and Herbicide to Reduce Pennsylvania Sedge at Newwaygo Prairies Research Natural Area

- Monoculture of Pennsylvania Sedge



Fire and Herbicide to Reduce Pennsylvania Sedge at Newwaygo Prairies Research Natural Area

- Monoculture of Pennsylvania Sedge
- 5 Fire/Herbicide Treatments
 - Fire only
 - Fire followed by herbicide
 - Herbicide only
 - Herbicide followed by fire
 - Control (no fire or herbicide)

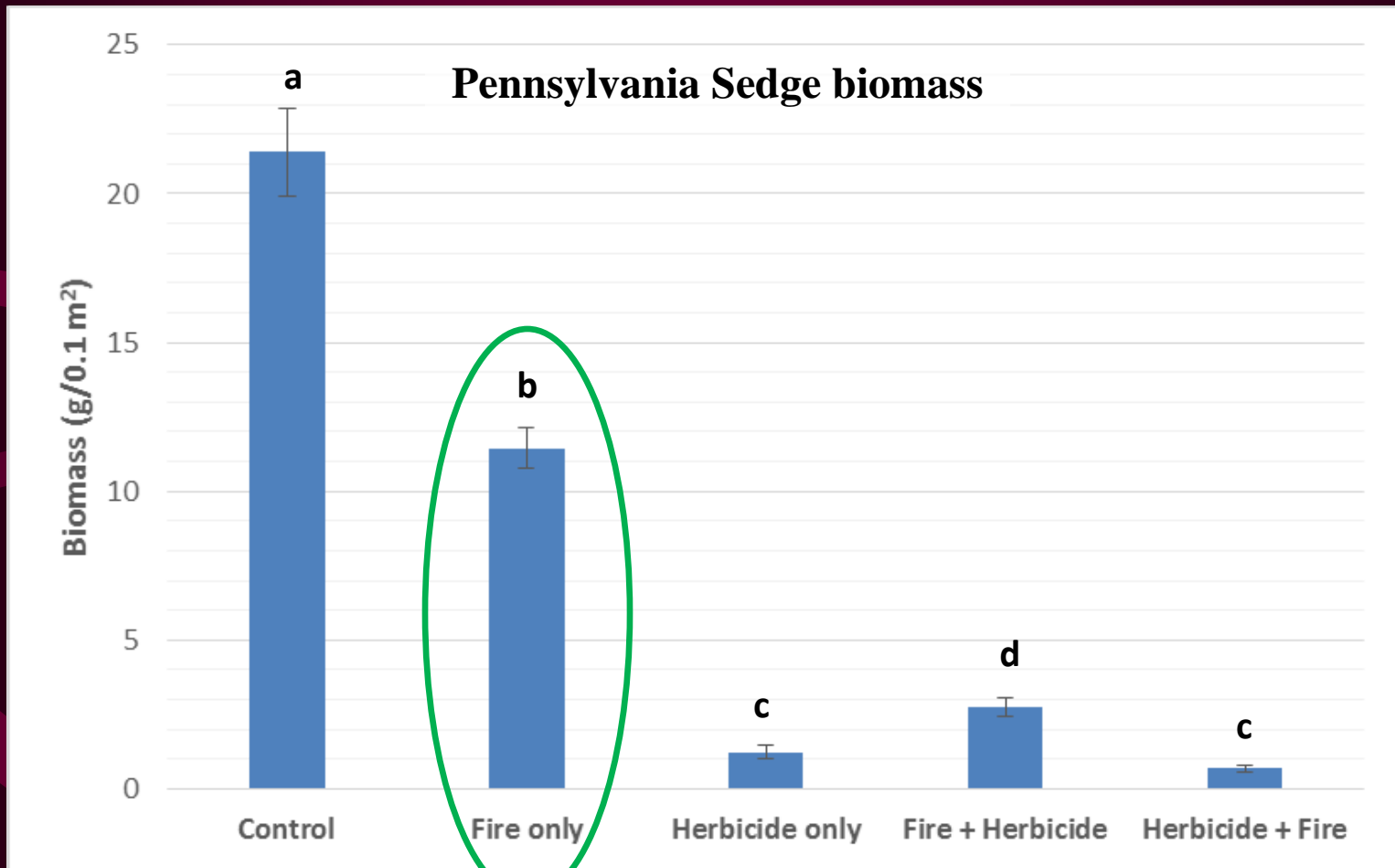
Fire Application



1 Year Post-treatment



1 Year Post-treatment



Different letters denote a statistically significant difference at $p < 0.05$

The effect of fire season and temperature on spotted knapweed infested prairies

- High and Low Temperature Burns in May and June
- Impact on Soil Catechin
- Evaluate growth of seeded and transplanted species
= long-term response

Satisfying Ecological Objectives

How?

- Clear Communication
- Understanding Fire Science and Ecology; Serving Multiple Masters

When?

- Planning: Phenology, Season of Burn, Weather, Fuels, Non-Target Species, Other Management Tools
- Implementation: Ignition Pattern, Residence Time, Rate of Spread, Refugia
- Monitoring: short term vs. long term, qualitative vs. quantitative

Did we satisfy our ecological objectives?



Cost Effectiveness

How?

- Experience

When?

- Planning

- Implementation

- Monitoring

Were we safe and ecologically effective within our budget?

Meeting Learning Objectives



How?

- Critical Evaluation of Fire Science and Ecology, Adaptive Management, Experimentation
- Teamwork, Task Books, and Leadership

When?

- Planning: What do we want to learn?
- Implementation: Observation, Analysis, and Involvement
- Monitoring: Scientific, Technical, and Professional Success





Meeting Learning Objectives

How?

- Critical Evaluation of Fire Science and Ecology
- Teamwork, Task Books, and Leadership

When?

- Planning: What will we learn?
- Implementation: Observation and Involvement
- Monitoring: Scientific, Technical, and Professional Success

What did we learn?

How will it help us in the future?



The “Perfect” Burn

Ecological Objectives

Safety

“Perfect” Burn

Cost

Learning

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graph TD; EO(Ecological Objectives) --- PB(“Perfect” Burn); S(Safety) --- PB; C(Cost) --- PB; L(Learning) --- PB; S --- C; S --- L; C --- L; EO --- L
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The diagram illustrates the components of a “Perfect” Burn, centered around five interconnected factors: Ecological Objectives, Safety, Cost, Learning, and the central “Perfect” Burn itself. The background image shows a controlled fire burning in a field of tall grass, with smoke rising from the flames.

