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Introduction to Prescribed Fire

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Course Instructions

To successfully complete the course, both the online and field portions must be completed.

Online portion:

- Read and watch the videos presented in this three hour presentation.
- Complete the attached study guide.
- Upon completion of the presentation and study guide, submit the study guide to the instructor at wkoehler2@unl.edu .
- Submission of the study guide will add your name to the field day contact list.

Course Instructions

Field portion:

- Field days opportunities will be communicated through email by the instructor with one to three days notice, due to weather restrictions.
- The five hour field days have a capacity of eight students and will be first come first serve.
- Field day opportunities will extend from October to May.

Course Introduction

Welcome to Introduction to Prescribed Fire. In this course you will learn the basics of why we conduct prescribed fire and how we conduct prescribed fire safely. Upon completion, you will have the knowledge to safely participate in prescribed fire as line crew.

This course is broken into two sections, three hours of online learning, followed by five hours of hands on live fire training.

Video's presented in this course have been provided by our partners at Nebraska Pheasants Forever and Nebraska Quail Forever and Platte Basin Timelapse.

Learning Objectives

1. Define prescribed fire and how is it different from wildland fire
2. Understand the uses of prescribed fire and how prescribed fire fits in the Great Plains complex
3. List the basic factors that influence fire behavior
4. Classify command structure and fireline roles on UNL prescribed fires
5. Understand commonly used tactics for successfully conducting a prescribed fire
6. List personal protective equipment (PPE) required to wear on UNL prescribed fire
7. List specialized tools for prescribed fire and how are they used
8. Understand the expectations when participating in UNL prescribed fire

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2. Prescribed Fire Uses and Benefits

3. Fire Behavior

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6. Communications

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9. Why We Burn at Nine-Mile Prairie

10. What to Expect on a Burn at Nine-Mile Prairie

11. What to Bring on a Burn at Nine-Mile Prairie

1) What is Prescribed Fire and Why is it Important

What is Prescribed Fire:

Prescribed fire is the intentional or planned application of fire on the landscape to achieve a management goal, such as hazardous fuel reduction or increasing forage production.

Prescribed fire differs from wildland fire in the fact that prescribed fire is planned from pre ignition to declaring the fire out and requires specific environmental factors in its prescription.

Freese/Platte Basin Timelapse (2023)

Altman/Platte Basin Timelapse (2023)

2)Fire Uses and Benefits

Youtube Video Presented by Nebraska Pheasants Forever

1) Video Summary

- History of Fire
- Benefits of Fire
- Fire Frequency

2) Fire Behavior

Youtube Video Presented by Nebraska Pheasants Forever

2) Video Summary

- What is Fire Behavior
- Fire Triangle
- Fire Behavior Triangle
- Primary Fuel Groups of Nebraska
- Critical Fire Weather

3) Tactics

Youtube Video Presented by Nebraska Pheasants Forever

3) Video Summary

- Types of Fire
- Ring Fire Technique
- Firing Tactics
- Wet Lining
- Holding and Patrolling
- Mopup

4) Command Structure

Command structure is how specific roles on a fire are organized. While each organization that conducts prescribed fire has their own version of a command structure, they are all relatively similar in their chain-of-command.

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4) Command Structure

Burn Boss: Organizes, plans, commands the line bosses, and determines overall operations during the prescribed fire.

Line Boss: Leads operations on their individual line, communicates with the burn boss, and organizes the line crew.

Line Crew: Communicates with the line boss and conducts the firing and holding.

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5) Communications

As described in the command structure, each role has their specific communication requirements. To maintain proper span of control, communication must follow the command structure. Line crew will communicate with line bosses, line bosses will communicate with the burn boss, and the reverse.

5) Communications

The steady flow of accurate communications are one of the most important factors in keeping all participants safe during prescribed fire operations.

Majority of communication on prescribed fire occurs through the use of:

- Face-to-face conversations
- Radios
- Phones

5) Communications

When using radios:

- Communication must be concise and accurate, radios are for talking not thinking.
- When beginning radio traffic you must state the persons name, then your name (i.e. hey you, it's me). Once a response has been given, communication can begin.
- Radio communications must properly represent the University of Nebraska Lincoln.

Koehler (2019)

6) Personal Protective Equipment (PPE)

Personal Protective equipment is any piece of equipment that is worn on your person which will protect you from fire and mitigate risk.

When participating in UNL prescribed fire, you will wear the required PPE.

- 100% cotton/wool clothing (including undergarments)
- all leather boots when possible
- all leather gloves
- nomex overshirt (yellows)
- bullard fire helmet

(100% cotton/wool is required as these materials will burn rather than melt when impacted by fire)

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7) Equipment

7) Equipment

At Nine-Mile Prairie, we will be using vehicle mounted skid units, backpack pumps, drip torches, flappers, and McLeod tool.

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Freese/Platte Basin Timelapse (2023)

7) Equipment: Vehicle Mounted Skid Units

Vehicle mounted skid units allow for the use of water that cannot be reached by hydrants.

Skid units are used for:

- Wetlining
- Mopup
- refilling backpack pumps

Operational controls will be taught during the field portion.

7) Equipment: Backpack Pump

The backpack pump is a soft bodied, foldable five gallon water tank combined with a brass piston hand pump. The backpack pump works similar to a large water gun.

The nozzle of the gun has two settings, mist and jet, allowing it to be used for wet lining and mop up.

Backpack pumps allow us access to water where vehicle skid units are unable to reach.

Koehler (2023)

7) Equipment: Drip torch

The drip torch is the most widely used ignition tool for conducting prescribed fire. Using a mix of diesel and gasoline, the drip torch allows for quick and precise application of fire where and when it is needed.

When using a drip torch:

- PPE MUST BE WORN AT ALL TIMES when handling the drip torch
- When the drip torch is lit, the nozzle must remain inside the unit to avoid dripping fire outside of the unit.

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7) Equipment: Flapper

The flapper (also know as a swatter) is designed to remove oxygen rather than removing fuel.

Unlike its name, a flapper is used by dragging the flap across the fire, removing oxygen and smothering the fire.

DO NOT flap or swat the fire with it. This will only introduce more oxygen to the fire, sending sparks and flames in random directions.

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7) Equipment: McLeod Tool

The McLeod Tool is wildland firefighting hand tool which has a grubbing face and a raking face.

- The grubbing face is used to cut through vegetation and sod
- The rake face is used to pull fuel away or into the fire.

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8) Why We Burn at Nine-Mile Prairie

Nine-Mile Prairie, like all prairies, requires active management to maintain healthy biodiversity, heterogeneity, and battle woody encroachment. As such, we employ prescribed fire as one tool in our management tool box. Our goal is to have a fire frequency of three years for all grassland units on the property.

To accomplish this, our burn season runs from October to May, depending on weather conditions being in prescription.

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8) Why We Burn at Nine-Mile Prairie

The property is divided into large units and teaching units.

- Teaching units, less than two acres, allow us to introduce and educate students to prescribed fire on a manageable scale.
- Large units, greater than two acres, allow us to implement prescribed fire on a landscape scale.

9) What to expect at a Nine-Mile Prairie Burn

- On the day of the burn, we will meet at the Nine-Mile Prairie barn, at the predetermined time.
- We will prepare the equipment, than discuss the burn plan.
- We will cover the specific burn unit, communication plan, specific operation roles, weather, how the equipment will be used, and what will happen if something goes wrong.
- These burns are specifically done for educational purposes. As such, immediately communicate any questions or concerns you have and we will address them.

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Freese/Platte Basin Timelapse (2021)

10) What to Bring to a Nine-Mile Prairie Burn

What to wear:

- All cotton clothing, including undergarments and long sleeve shirts. Jeans and flannels work best.
- All leather boots (if possible)

What to bring:

- Water for the whole day, we do not have potable water on the property
- A pair of all leather gloves
- Sunglasses
- Snacks, if desired

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Altman/Platte Basin Timelapse (2023)