

## **Guidance for Burning Agricultural Waste in Monroe County New York**

*By Bob King, Ph.D., Senior Agriculture Specialist*

*Agriculture and Life Sciences Institute, Monroe Community College*

This document discusses the controlled burning of agricultural waste materials associated with cultivated farmland and provides guidance on how to burn agricultural waste with less smoke thereby reducing the risk of becoming a significant air pollution nuisance.

### **MOISTURE CONTENT**

Fuel moisture content is one of the most influential factors in the combustion, consumption and emission processes. Fuel moisture content affects the flame temperature that in turn influences the ease of ignition, the amount and rate of consumption and the combustion efficiency. Generally, fuels with low fuel moisture content burn more efficiently and produce fewer emissions per unit of fuel consumed.

### **CURING**

Fuels should be aged for as long as possible before ignition. Once the fuel has been ignited it should be allowed to burn itself out completely.

### **PILES/WINDROWS**

Fuels concentrated into clean and dry piles or windrows generate greater heat and burn more efficiently. A greater amount of the consumption occurs in the flaming phase and the emissions factor is lower. Concentrating fuels into piles or windrows generally require the use of non-traditional orchard equipment. Large piles and windrows also cause temperature extremes in the soils directly underneath and can result in areas of soil sterilization.

### **CLEAN PILES/WINDROWS**

Fuels that are mixed with dirt, rocks or other non-flammable debris will affect the amount and rate of consumption and the combustion efficiency of the pile or windrow. Clean piles/windrows burn more efficiently and generate greater heat, resulting in less emissions. Piles/windrows that are mixed with dirt, rocks or other non-flammable debris will smolder for extended periods of time and produce more emissions.

### **PILES/WINDROW DENSITY**

The structure of fuels and air space within a pile or windrow can either enhance or retard fuel consumption and affect combustion efficiency. A loosely packed pile or windrow will allow plenty of oxygen to be available for combustion, but may result in inefficient heat transfer between burning and adjacent non-burned fuel. On the other hand, a tightly packed pile or windrow allows efficient heat transfer between fuels, but may restrict oxygen availability and reduce consumption and combustion efficiency. An efficiently burning pile or windrow will have fuels close enough for adequate heat transfer while at the same time large enough spaces between fuels for oxygen availability.

### **SEASON**

The season of burn influences many burn parameters. Typically, acceptable burning conditions are more predictable during certain seasons, making it easier to plan and prepare for burn days in advance. Regional effects are important in decision-making for this factor. Selecting the correct season to execute a burn will help maximize the probability of achieving low emissions.

## **PRECIPITATION**

Fuels that are wet generally burn less efficiently and produce more emissions per unit of fuel consumed. Therefore, burning prior to a precipitation event will enhance the combustion, consumption and emission process. Successful application of this practice depends on accurate meteorological forecasts for the area.

## **TIME OF DAY**

The timing of ignition determines whether the burn can be completed in an efficient and effective manner. Timing is also important when considering factors such as: when solar radiation will break a nighttime inversion or dissipate any dew which formed during the night, when atmospheric conditions will support adequate transport and dissipation of smoke, when surface winds may develop or change speed or direction, or when a sea breeze front may reach the area.

## **PUBLIC SAFETY**

If weather conditions change or the controlled burning becomes out-of-control (fire intensity increases, spreads, wind speed and/or direction change, etc) the fire department has the right to extinguish the fire based on overall knowledge and concern for public safety.

## **STATE REGULATIONS**

Prior to a burn, familiarize yourself with the NYS, Department of Environmental Conservation's "Open Fires" regulation. This regulation may be accessed through, [www.dec.ny.gov/regs/4261.html](http://www.dec.ny.gov/regs/4261.html).

- 1) Make sure that you have all required approvals and permits prior to burning any agricultural wastes. Allow adequate time for the submitting, processing, approval and issuing of a burn permit.
- 2) Contact the 911 Center (call 911) and let them know of your controlled burn. Be prepared to discuss your location and the time span of your burn ("I'm burning in the field on the south side of ABC Road from 9 am until 5 pm"). Indicate that you have all the necessary approvals and/or permits for the controlled burn.
- 3) Have the necessary approvals and permits on hand. Should your local fire department get called to the site; many departments will not have received a copy of your approvals and/or permits.
- 4) Avoid burning during weekends or times where smoke may interfere with local activities such as local celebrations.
- 5) Avoid burning when wind conditions may blow excessive smoke toward populated areas.
- 6) Preferably, burn during daylight hours between the periods of 9:00 AM until 4:00 PM depending upon the condition (dryness) of the agricultural waste.
- 7) Burn agricultural wastes only after they are properly dried so that a hot burn is produced with minimum smoke output.
- 8) Control the burn. Make sure that there are adequate fire breaks or buffer areas and that fire fighting equipment is on hand.
- 9) Make sure that local weather conditions (wind speed/direction, temperature, inversion conditions) favor good smoke dispersal.
- 10) Stack the material and allow it to dry. Prunings and small branches may take three weeks; for large branches and stumps, up to six weeks.
- 11) Arrange stacked material to allow air to freely circulate. Allow the pile to breathe by making smaller piles.
- 12) Avoid pushing soil into the pile.

### **Reviewer**

*Samuel J. DeRosa, County Fire Coordinator, Monroe County Fire Bureau (April 2011)*

### **Sources**

*California Air Resources Board (1990). Agricultural Burning Self-Instruction Handbook*  
*Nevada Division of Environmental Protection (2003). The Nevada Handbook for Agricultural Open Burning*  
*Nezperce Prairie Grass Growers Association. Agriculture Burning – A Tool for All Growers*  
*Washington State University (2010). Agricultural Burning Best Management Practices: Orchard Crops*

(April 2011)