



**COOPERATIVE EXTENSION SERVICE  
UNIVERSITY OF KENTUCKY COLLEGE OF AGRICULTURE, FOOD AND ENVIRONMENT**

# Millet

## Introduction

“Millet” is a name that has been applied to several different annual summer grasses used for hay, pasture, silage, and grain. The millets most commonly cultivated in Kentucky, pearl millet and foxtail millet, are grown primarily as a forage for temporary pasture. If properly managed, these millets can provide high yields of good quality forage in a short period, without the risk of prussic acid poisoning.

Pearl millet (*Pennisetum glaucum*) is higher yielding than foxtail millet and regrows after harvest if sufficient stubble is left. Dwarf varieties, which are leafier and more suited for grazing, are also available. Foxtail millet (*Setaria italica*) is a lower-yielding grass that will not regrow to produce another harvest. Because it is shorter and finer-stemmed, it is easier to harvest as hay. It can serve as a good smother crop to be used before no-till seeding of other crops, such as fescue or alfalfa. Foxtail millet is also used as a wildlife planting to produce food and cover for various wild birds.

## Marketing

Millet is mainly grown in Kentucky for use as a forage. Because pesticides are generally not applied, millets could be grown organically for the organic livestock feed market. Some pearl millet cultivars have also been developed for their grain and show potential as poultry and livestock feed. Millet seed has also been grown as wild bird feeds and could be marketed in birdseed mixes.



FOXTAIL MILLET (LEFT) AND PEARL MILLET (RIGHT)

## Production Considerations

### *Establishment and management*

Foxtail and pearl millets are planted from the first of May until the end of July in Kentucky. Later plantings reduce harvests and total yields. Seeding at two or more planting dates helps in managing harvests. The seed can be broadcast and cultipacked, or seeded with a grain drill into a well-prepared, firm seedbed. Seed can also be planted without tillage by using a no-till drill. Foxtail and pearl millet need a good supply of nutrients to make high yields.

### *Pest management*

There are no significant diseases or insect problems occurring on millet; however, birds can damage the grain. Summer annual weeds, such as foxtails and Johnsongrass, are extremely competitive with the millets. Killing weeds prior to planting and finding a clean seed source are essential in reducing pressure from weeds. Growing forages in narrow rows can also help suppress weeds. On the other hand, planting millet for grain



in 30-inch rows makes inter-row cultivation possible.

### *Harvest*

Summer annual grasses, such as the millets, must be grazed or harvested at the proper stage of growth for the greatest yield and quality. Grazing is best after the plants are at least 18 inches tall and before the seedheads appear. Enough animals should be placed on an area to graze down the grass within a day or a week at most. Millet should be grazed down to about 8 inches in height, at which time the livestock should be removed. The residue may be mowed to a height of 6 to 8 inches to help promote more uniform regrowth. If pearl millet is mowed or grazed too closely, the rate of regrowth may be reduced and plants can be killed. Pearl millet will take about 4 to 6 weeks of regrowth before it is ready for the next harvest. Grazing can continue until frost is expected.

Silage or hay harvest should be made when heads are just beginning to emerge (boot stage). A conditioner must be used to crush the stems of pearl millet to ensure reasonable drying times for hay. Plants usually need to be cut and wilted before being chopped for silage.

### *Labor requirements*

Labor needs per acre are approximately 1½ hours for production and 2½ hours for harvest. Labor requirements can vary based on forage management and harvest techniques.

### **Economic Considerations**

Making money with livestock in Kentucky usually depends on a farmer's ability to grow his/her own feed. Buying forages, even for short periods of time, can make the difference between a profit and a loss. Using warm-season grasses for rotational grazing is one way to meet the shortage of good quality forage that can occur during the hot months of July and August.

Millet is best suited for use as a forage in Kentucky. Grasses similar to millet can be expected to return \$20 to \$90 per acre to land and management. The release of improved grain millet varieties, combined with higher commodity prices, has created interest in utilizing millet in broiler (poultry) feeds.

According to the Jefferson Institute (Missouri), yields of grain-type millet must increase before it is economically viable. Estimates based on 2013 input costs showed a return to land, capital, and management of \$88 per acre, based on 4,500 pounds of pearl millet sold at \$0.06 per pound (\$3.36 per bushel). Higher prices and millet yields nearer 5,600 pounds (100 bushels) will result in substantially better profitability. Grain millet may also potentially be suited for birdseed production, in which case producers could expect potential returns to land and management of \$35 to \$60 per acre with net prices of \$0.09 per pound at yields of 4,500 pounds.

In 2013, production and harvest costs for pearl millet were estimated at \$137 per acre, excluding land rent. Total expenses per acre, including variable, fixed and \$125 land rent, would come to approximately \$355. Estimated returns to management below are based on the indicated yield and price scenarios.

Pessimistic (3,500 lbs at \$0.06/lb) \$(148)*	Conservative (4,500 lbs at \$0.06/lb) \$(86)*	Optimistic (4,500 lbs at \$0.09/lb) \$49
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*\*Parentheses indicate a negative number, i.e. a net loss*

### **Selected Resources**

- Forage Website (University of Kentucky) <http://www.uky.edu/Ag/Forage/>
- Grain and Forage Crop Guide for Kentucky, AGR-18 (University of Kentucky, 2007) <http://www.ca.uky.edu/agc/pubs/agr/agr18/agr18.pdf>

- Producing Summer Annual Grasses for Emergency Supplemental Forage AGR-88 (University of Kentucky, 1996)  
<http://www.ca.uky.edu/agc/pubs/agr/agr88/agr88.pdf>
- Alternate Field Crops Manual: Millets (University of Minnesota and University of Wisconsin, 1990)  
<http://www.hort.purdue.edu/newcrop/AFCM/millet.html>
- Pearl Millet (Published by the Jefferson Institute)  
<http://www.hort.purdue.edu/newcrop/articles/ji-millet.html>
- Pearl Millet for Grain (University of Georgia, 2012)

[http://www.caes.uga.edu/publications/pubDetail.cfm?pk\\_id=7172](http://www.caes.uga.edu/publications/pubDetail.cfm?pk_id=7172)

- Pearl Millet: New Feed Grain Crop (1993, updated 1997)

<http://www.hort.purdue.edu/newcrop/proceedings1993/v2-198.html>

- Pennisetum (Pearl Millet) (Gramene)

[http://www.gramene.org/species/pennisetum/pearlmillet\\_intro.html](http://www.gramene.org/species/pennisetum/pearlmillet_intro.html)

Website is a joint effort of Cold Spring Harbor Lab, Cornell, Oregon State, NSF, and USDA.

- Progress with Proso, Pearl, and Other Millets (Purdue, 2002)

<http://www.hort.purdue.edu/newcrop/ncnu02/v5-100.html>

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