
# The 1995 Timothy Report

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## Introduction

Timothy (*Phleum pratense*) is the fourth most widely sown cool-season perennial grass used in Kentucky for forage, ranking behind tall fescue, orchardgrass, and Kentucky bluegrass. It is a late-maturing bunchgrass that can be used for grazing or wildlife habitat, but is mainly harvested as hay, particularly for horses. For hay production, timothy can be sown with alfalfa or red clover, while white clover or birdsfoot trefoil make good mixtures with timothy for grazing. Management is similar to that for other cool-season grasses. Harvesting at the mid- to late-boot stage is needed to assure good yields and high forage quality. Quality of timothy declines more rapidly than other cool-season grasses as it over-matures. In Kentucky, timothy behaves like a short-lived perennial with stands lasting for 2-3 years.

This report provides current yield and percent stand data on timothy varieties included in yield trials in Kentucky as well as guidelines for selecting timothy varieties.

## Considerations in Selecting a Timothy Variety

**Local Adaptation and Seasonal Yield.** Choose a variety that is adapted to Kentucky as indicated by good performance in replicated yield trials, such as is presented in this publication. Also, look for varieties that are productive in the desired season of use, whether for hay or grazing.

**Seed Quality.** Buy either certified or Plant Variety Protected (PVP) seed, which will ensure that the genetics and performance you are paying for are in the bag. Look for the blue tag, which must be attached to all bags of certified seed or look for Plant Variety Protection labelling, which is the proprietor's guarantee. Other information on the label will include the test date, which must be within the previous nine months, and the level of germination and other crop and weed seed. Order seed well in advance of seeding time to assure that it will be available when needed.

## Description of the Test

Timothy varieties were sown in Lexington in the late summer of 1994 as part of the University of Kentucky Grass Breeding Program. The objective of this study was to compare dry matter yields and maturities of three experimental lines under

development at the University of Kentucky (‘94TIMPC’, 'Ky-Early', and 'Ky-Leafy') with a common timothy and selected improved varieties ('Clair', ‘Colt’, ‘Mohawk’, and 'Timfor'). 'Ky-Early' and 'Ky-Leafy' are selections out of 'Clair' and ‘94TIMPC’ is a selection out of ‘Ky-Early’ and ‘Ky-Leafy’. Table 1 lists the varieties included in the 1994 seeding and gives information about developers and distributors as well as characteristics that are specific to each variety. Clair-Breeder is in a class of seed that is two generations prior to certified seed. Therefore it would be expected to perform better than certified ‘Clair’ and so it is placed in the trial for experimental purposes and is not available for sale. The improved varieties were from certified seed and ‘Common’ is from uncertified seed.

Cultivars were sown at the rate of 6 lb/A into a prepared seedbed with a disk drill. Plots were 4' x 15' arranged in a randomized complete block design with four replications. The soil at Lexington was a well-drained Maury silt loam. Nitrogen was topdressed at 50 lb/A of actual N in March, May, and August. The test was harvested using a sickle-type forage plot harvester leaving a 2" stubble to simulate a hay management system with fall stockpiling. The first cutting was harvested when spring growth had reached the boot to head stage. Fresh weights were measured in the field and converted to dry matter production using long-term averages for percent dry matter of timothy. Management for establishment, fertility, and weed control and harvest management was according to University of Kentucky Cooperative Extension Service recommendations.

## Results and Discussion

Weather data for Lexington are presented in Table 2. For the most part temperatures were warmer in the winter months of January and March and the summer months of July and August. February, April, June, September, and October were near normal, while May was much cooler. Precipitation was unevenly distributed across the season at Lexington. There was a surplus in January, while deficiencies were measured in February and March. April had near normal rainfall. Then the wet/dry cycle returned with May and June being wet months and July measuring a deficiency. August and September were near normal but October was wetter than normal. Precipation was unevenly distributed within months as well. In every month except June, with or without a surplus, there was at least one rainfall event of greater than 1 inch and several months received all of their precipitation in a matter of 2-3 days.

Maturity ratings and dry matter yields are reported in Table 3. Yields are given by harvest date and as total annual production. Varieties are listed by descending maturity. Experimental varieties are listed separately at the bottom of the tables and they not available for purchase commercially. Some varieties had not yet reached the optimum stage of harvest for timothy, which is late boot/early head (45-50), but they all were in a reproductive stage. Statistical analyses were performed on all data to test the significance of varietal differences. In Table 3, the variety with the highest numerical value in each column is marked with two asterisks (**) and those varieties that are not significantly different from that variety are marked with one asterisk (*). To

determine if two varieties are significantly different, compare the difference between them to the LSD (Least Significant Difference) at the bottom of that column. If the difference is equal to or greater than the LSD, the varieties are significantly different when grown under those conditions. The Coefficient of Variation (CV), which is a measure of the variability of the data, is included for each column of means. Low variability is desirable and increased variability within a study results in higher CV's and larger LSD's.

First Production year dry matter yields of timothy were much lower for the test sown in 1994 than for a previously reported test sown in 1992 (4.35 tons/acre vs. 6.35 tons/acre, data published in The 1994 Kentucky Timothy Variety Test Report, Agronomy Notes, Vol. 27, No. 9, 1994). In the 1994 test reported here, the experimental varieties produced well across the season, unlike ‘Clair’ from which they are derived. This difference may be due to selection for earlier maturity and greater aftermath production. Some of the other varieties, which are later maturing, yielded well in the second cutting but only ‘Clair’ and ‘Clair-Breeder’ were not different in total production from the experimental varieties. This is because ‘Clair’ and ‘Clair-Breeder’ are earlier maturing and thus produce more in the first cutting than the later maturing varieties. Early maturity is not a guarantee of higher yields, though. ‘Common’ matured early but acted more like a later maturing variety in production. In other tests of cool season grasses, first year yields have been higher than that of subsequent years.

The three experimentals (94TIMPC, 'Ky-Early', and 'Ky-Leafy') have not been released as yet by the University of Kentucky but do appear to be promising as new timothy varieties for Kentucky. Of the three, ‘94TIMPC’ had a higher % stand two months after seeding, which may give it an advantage in winter survivability and early spring growth.

## Summary

Selecting a good timothy variety is an important first step in establishing a productive stand of grass. Proper management, beginning with seedbed preparation and continuing throughout the life of the stand, is necessary for even the highest yielding variety to produce to its genetic potential. Table 4 lists other College of Agriculture publications related to the establishment, management, and utilization of timothy that are available from your local county Extension office.

**TABLE 1. CHARACTERIZATION OF TIMOTHY VARIETIES SOWN 19 SEPTEMBER 1994 AT LEXINGTON, KENTUCKY.**

| VARIETY | DEVELOPER | KY DISTRIBUTOR | CHARACTERISTICS |
|---|---|---|---|
| 94TIMPC | KY. AGRIC. EXP. STA. | EXPERIMENTAL | EARLY MATURING, LEAFINESS, AFTERMATH PRODUCTION |
| CLAIR | KY. AGRIC. EXP. STA. | PUBLIC | EARLY MATURING, VIGOROUS GROWTH, AFTERMATH PRODUCTION |
| CLAIR-BREEDER | KY. AGRIC. EXP. STA. | PUBLIC | EARLY MATURING, VIGOROUS GROWTH, AFTERMATH PRODUCTION |
| CLIMAX | CANADA AGR. RES. STA. | CAN. SEED ASSOC. | LEAFY, AFTERMATH PRODUCTION, DISEASE RESISTANCE |
| COMMON | FARMER ECOTYPE | PUBLIC | UNIMPROVED |
| COLT | FFR | SOUTHERN STATES | EARLY-MEDIUM MATURITY, AFTERMATH PRODUCTION |
| KY-EARLY | KY. AGRIC. EXP. STA. | EXPERIMENTAL | EARLIER THAN CLAIR, WIDE LEAVES |
| KY-LEAFY | KY. AGRIC. EXP. STA. | EXPERIMENTAL | EARLIER THAN CLAIR, MORE BASAL LEAF PRODUCTION |
| MOHAWK | FFR | SOUTHERN STATES | MEDIUM-LATE MATURING, LATER THAN CLAIR |
| TIMFOR | NORTHRUP KING | NORTHRUP KING | MEDIUM MATURING, FAST RECOVERY, DISEASE RESISTANCE |

**TABLE 2. TEMPERATURE AND RAINFAL AT LEXINGTON IN 1995**

| | TEMPERATURE | | RAINFALL | |
|---|---|---|---|---|
| MONTH | F | DEP. | INCHES | DEP. |
| JAN | 34 | +3 | 3.75 | +0.89 |
| FEB | 34 | -1 | 1.65 | -1.56 |
| MAR | 48 | +4 | 2.85 | -1.55 |
| APR | 56 | +1 | 3.39 | -0.49 |
| MAY | 63 | -3 | 9.75 | +5.28 |
| JUN | 72 | 0 | 4.75 | +1.09 |
| JUL | 72 | +2 | 3.32 | -1.68 |
| AUG | 79 | +6 | 4.61 | +0.68 |
| SEP | 66 | 0 | 2.68 | -0.55 |
| OCT | 56 | 0 | 3.99 | +1.42 |

TEMPERATURES ARE IN DEGREES FAHRENHEIT.
DEP. IS DEPARTURE FROM THE LONG-TERM AVERAGE FOR THAT LOCATION.

**TABLE 3. DRY MATTER YIELDS (TONS/ACRE) AND RATINGS FOR STAND AND MATURITY OF TIMOTHY VARIETIES SOWN 19 SEPTEMBER 1994, AT LEXINGTON, KENTUCKY AS PART OF THE KENTUCKY GRASS BREEDING PROGRAM.**

| | % STAND MATURITY | 1995 HARVESTS | | | | 1995 |
|---|---|---|---|---|---|---|
| VARIETY | NOV19 94 | MAY11 95 | MAY12 | JUL03 | OCT26 | TOTAL |
| **COMMERCIAL VARIETIES - AVAILABLE FOR FARM USE** | | | | | | |
| COMMON | 1.00 | 45.25 | 1.18 | 1.13* | 1.08 | 3.39 |
| CLAIR | 5.75 | 45.00 | 2.81* | 1.10* | 1.06 | 4.97* |
| COLT | 4.75 | 36.00 | 2.20 | 1.09* | 1.01 | 4.30 |
| CLIMAX | 4.50 | 35.00 | 1.95 | 0.65 | 0.87 | 3.47 |
| MOHAWK | 4.25 | 34.75 | 2.12 | 1.44* | 1.02 | 4.58 |
| TIMFOR | 3.00 | 33.50 | 1.48 | 0.83 | 0.99 | 3.30 |
| **EXPERIMENTAL VARIETIES - NOT AVAILABLE FOR FARM USE** | | | | | | |
| KY-LEAFY | 5.75 | 51.00** | 2.91* | 1.06* | 1.10* | 5.08* |
| 94TIMPC | 7.00** | 50.25* | 3.01** | 1.70** | 1.23** | 5.94** |
| CLAIR-BREEDER | 5.50 | 49.75* | 2.94* | 1.02* | 1.05 | 5.02* |
| KY-EARLY | 6.50 | 49.75* | 2.96* | 1.28* | 1.21* | 5.45* |
| MEAN | 4.80 | 43.02 | 2.36 | 1.13 | 1.06 | 4.35 |
| CV,% | 14.89 | 4.76 | 6.60 | 53.19 | 9.15 | 15.80 |
| LSD, 0.05 | 1.04 | 2.97 | 0.23 | 0.87 | 0.14 | 1.04 |

MATURITY RATING SCALE:
U. SIMON AND B.H. PARK, PP 416-418, PROC XIV IGC (J.A. SMITH AND V.W. HAYS ED), WESTVIEW PRESS, BOULDER, CO. 1983.

20-29=VEGETATIVE
40=EARLY BOOT
42=MID BOOT
45=FULL BOOT
50=EARLY HEAD
58=FULL HEAD
62=EARLY BLOOM
64=FULL BLOOM
85=EARLY SEED
91=MATURE SEED

**HIGHEST NUMERICAL VALUE IN THE COLUMN.

*NOT SIGNIFICANTLY DIFFERENT FROM THE HIGHEST NUMERICAL VALUE IN THE COLUMN BASED ON THE 5% LSD.

**TABLE 4. UNIVERSITY OF KENTUCKY AGRICULTURAL EXTENSION PUBLICATIONS RELATED TO TIMOTHY MANAGEMENT.**

| PUBLICATION | TITLE |
|---|---|
| AGR-64 | ESTABLISHING FORAGE CROPS |
| ------ | SEED TAGS: WHAT THEY REVEAL |
| AGR-26 | RENOVATING HAY AND PASTURE FIELDS |
| AGR-18 | GRAIN AND FORAGE CROP GUIDE FOR KENTUCKY |
| AGR-1 | LIME AND FERTILIZER RECOMMENDATIONS |
| AGR-103 | FERTILIZATION OF COOL-SEASON GRASSES |
| ASC-16 | BEEF: GRASS TETANY IN BEEF CATTLE |

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