

Scientists are gaining on grass yield barrier

COLUMBIA, Mo. — Scientists have edged a little closer toward cracking the yield barrier in the grasses that support much of this nation's livestock industry.

"At least we now know some tall fescues grow better than others," Jeff Volence, University of Missouri-Columbia agronomist, told the American Society of Agronomy recently.

"Half the reason some fescues' leaves grow more rapidly is because of larger cells; the other half is because they produce more cells.

"Leaves are the major part of yield in the summer and fall, periods when more yield would be desirable."

Volence said the key area of the plant that contributes to rapid growth is the meristematic region, the base of the plant just above the ground from where the leaf is lengthened and pushed up. (To see one of these close to home, just look at your lawn grass.)

Maximum growth rate of leaf cells with the meristem is determined by the genetic difference between plants.

That growth rate is partially

related to sheath length. The sheath is the whorl of previously formed leaves that wraps around the meristem.

The discovery that the sheath influences fescue growth is a relatively new finding. "It's only been reported in the scientific literature the last few months, but that was with a different grass," said Jerry Nelson, UMC agronomist who directed Volence's research program and who has been making basic studies of fescue growth for the past 15 years.

"Our thrust into basic research on leaf growth has drawn attention from many parts of the world," Nelson said, "the leaf growth concept has been a major breakthrough in terms of developing new varieties.

"Our ultimate aim is to improve the yield of tall fescue. Now that we know the mechanics, we hope to produce plants that have both high leaf elongation and high photosynthetic efficiency."

Another UMC agronomist, David Sleper, has selected grasses with long leaves, and is trying to develop higher producing fescues through selection and breeding.

Sleper has also selected those with short leaves which have more potential for such things as turf. John Dumm, UMC horticulturist, is incorporating them into his research program, because these fescues are slow growing, short and darker green than other fescues.

Nelson's main concern is to combine plants with higher photosynthetic rate with those which tend to grow faster and increase yields. However, he said, plants with high photosynthetic rates usually produce smaller cells, thus having small leaves and therefore, lower yields.

So he's turned to Douglas

Randall, a UMC biochemist, to evaluate polyploid fescues which have 70 chromosomes instead of the normal 42. These polyploids have both large cells and high photosynthetic rate and are being used by Sleper in his breeding program.


Nelson and his colleagues admit that the odds are slim that they will break the yield barrier in tall fescue. But they are slowly acquiring enough basic knowledge so that the possibility of pulling

this off has never been better.

"We know now that we can increase yield by increasing leaf size. But high photosynthesis is still a key," Nelson said.

"It took us 15 years to develop the basic information and to see how all this works."


Then he smiled and added, "Come back in a few years. By then we should have plants with the ability to produce energy and have proper growth mechanics to use it."



THE OLD FARMER'S ALMANAC

DEC. 28, 1981-JAN. 3, 1982
Frosting of snow makes angels glow.

Begin the New Year square with every man... John D. Rockefeller organized Standard Oil Jan. 2, 1882... First quarter of the moon Jan. 2 (Sat)... Average length of days for the week, 9 hours, 6 minutes... YMCA first organized in Boston Dec. 29, 1851... Wise men talk because they have something to say; fools because they have to say something (Plato)



Same as logus of the bogus, or backyard trot, griping of the gizzard, etc.
Home Hints: Avoid using water or waterbased products whenever possible in cleaning wood floors. Water can seep down into the tight boards, causing warping or swelling.

Ask the Old Farmer: I found a letter from an uncle who was mate on a ship out of Boston in 1869. While on shore leave he wrote to his younger brother: "We are all pretty well, only troubled with 'The Flying Axehandle' some." What was that? FR, New Bedford, Mass.

OLD FARMER'S WEATHER FORECAST

New England: Snow, seasonable temperatures through midweek, colder, with flurries, for weekend

Greater New York-New Jersey: Partly cloudy and cold, then rainy, warmer, sunny and cold midweek, weekend brings sleet, snow in mountains

Middle Atlantic Coastal: Rain, sleet, and snow continue until midweek; cloudy and cold at week's end, with flurries

Piedmont & Southeast Coastal: Week begins with rain, heavy snow in mountains, cold, light snow, hard frost through weekend.

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