

(Computer cont'd.)

to contact these external computers. Baud rate is a measure of the speed at which data is transferred through the telephone. For most intensive purposes, 10 baud units are equal to a single character, such as a letter of the alphabet or a number per second. A rate of 300 baud, therefore, means the transfer of 30 characters per second. Likewise, 1200 baud sends 120 characters per second. Not all information sent across the telephone line are data. Each piece of information, called a bit, will either represent data or some kind of a control mechanism to tell the receiving computer how to interpret the stream of information being sent down the line. Each character consists of one stop bit, and a stream of seven to eight data bits followed by one or two stop bits. Generally, these settings are all one needs to know to implement correct communication settings for outside computer communication. Several other factors, i.e., turn around time, and hand-shaking protocol can also come in to play. These will be explained in greater detail at the 1984 NCTE Workshop on Computer Communications on December 11.

As previously mentioned, the appropriate program or software is necessary to handle conversion of information from one computer to a form which can be transferred across telephone lines and then converted into useful information on the receiving end. This communication software comes in various forms and can range in cost from several hundred dollars to availability at no charge. My recommendation for first time communications is to obtain a copy of PC-Talk III which is available at no cost from any computer use group or BBS. This software runs only on the IBM PC. Should you be unable to locate a copy locally, it can be ordered, at a cost of \$35, from the Headland Press, Inc., P. O. Box 862, Tiburon, CA 94920; telephone (415) 435-9775.

In addition to the appropriate communications software, several pieces of hardware are also required. Information is normally transferred internally within the computer, in groups of eight to 64 bits at a time. However, for external communication, these groups need to be broken up into individual bits. This is done through an asynchronous card or port. Check with a local computer store for details on the appropriate card for your machine.

In addition to the card, an instrument called a modem which stands for modulation-demodulation is required to convert the stream of data bits into the appropriate telephone signal for transport down the line to the receiving computer. On the receiving end, a modem must also be connected to the telephone to reassemble the stream of signals into the appropriate data bits. Modems, like many instruments for connection to a computer, come in various sizes, shapes, and have many different features. Basically, they sit either outside of the computer attached up to the telephone or fit within the computer and require the telephone cord be plugged into a socket in the back of the system.

The advantages of the external modem are in its portability from one computer to another and, more importantly, a series of lights which indicate the status of the connection and processing of the signal across the telephone. The disadvantage to the external modem, which is an advantage to the internal type, is the compactness and savings of desk top space. As well, internal modems generally incorporate an asynchronous port on the same card. Thus, the amount of necessary equipment is minimized.

The Present and Future of Turfgrass Varieties₁

by Dr. William A. Meyer₂

There has been a tremendous increase in cool season turfgrass breeding in the United States in the past twelve years. The major increase has been in the number of private companies as a result of the passage of the U.S. Plant Variety Protection Act of 1971. This Act allows the breeder and owner of a newly developed variety to obtain exclusive U.S. production and marketing rights. Other individuals cannot produce or market a protected variety without the permission of the owner. Many improved varieties of Kentucky bluegrass, perennial ryegrass, tall fescue and fine fescue are now on the market as a result of the many breeding programs.

National Turfgrass Evaluation Program

In 1982, Jack Murray, a turfgrass specialist of the USDA, Beltsville, MD, initiated the development of the National Turfgrass Evaluation Program (NTEP). This program will develop and coordinate uniform evaluation of turfgrass varieties and blends for the U.S.

This program will be a self-supporting, non-profit program sponsored by the Beltsville Agricultural Research Center and the Maryland Turfgrass Council. It is not a federal program. A policy committee made up of members from the different regions of the U.S. will administer the trials.

Each year the NTEP will send out different turfgrass species to be planted in uniform trials throughout the U.S. The owner pays a fee to cover the distribution costs of the seed, and the accumulation and analysis of the data. The yearly summaries from each test will be available upon request.

The NTEP has already released the first 2 years of data from the 1980 Kentucky bluegrass trials that included eighty-four varieties. In 1982 a perennial ryegrass trial with forty-seven varieties was distributed for trials. The 1982 NTEP trials included thirty tall fescue varieties, and forty-seven fine fescue varieties. The NTEP program will provide excellent information to the turfgrass industry as to which varieties are widely adapted to the diverse environments of the U.S.

Kentucky Bluegrasses

Many new improved varieties of Kentucky bluegrass have been developed and released in the U.S. during the past 10 to 12 years. There appears to be a reduced interest in bluegrass breeding and variety release at the present time in favor of other species such as ryegrass and fescue.

Leaf spot, caused primarily by *Helminthosporium vagans* in the Northwest, can severely damage common type varieties (characterized by narrow leaves and erect growth habit) such as Park, Kenblue, Bayside, Geary and Delta. The varieties A-34, Adelphi, America, Bonnieblue, Challenger, Columbia, Fylking, Majestic, Midnight and Sydsport are examples of new lower growing turf-types with improved resistance to leaf spot. The turf-type varieties Baron, Glade, Merit, Ram I and Victa would be considered as having intermediate resistance. Leaf spot is especially serious in poorly drained areas, and in shady areas.

Stripe rust, caused by *Puccinia striformis*, is the other serious disease of Kentucky bluegrass in the Northwest. The improved varieties Shasta, America and Mona have shown good resistance, followed closely by Bristol, Columbia, Geronimo, Majestic, Challenger, Sydsport and Trenton. This disease is

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most severe in the spring and fall, and can be reduced by irrigation and increased fertility.

The number of new bluegrasses to be released in the near future will be much less than the number released in the past twenty years. There is a need for bluegrass varieties with greater drought tolerance, insect resistance and improved performance at low fertility.

Perennial Ryegrasses

Since Manhattan perennial ryegrass was released in 1967 as the first improved turf-type perennial ryegrass, there have been many other improved turf-types. These varieties such as Birdie, Blazer, Citation, Dasher, Derby, Diplomat, Fiesta, Omega, Pennfine, Pennant and Yorktown II have displayed the excellent establishment rate and persistence of Manhattan.

AT the present time, there is a new generation of turf-type varieties coming onto the market that are showing improvements in density, mowing quality and overall disease resistance. Manhattan II, Palmer, Prelude, Citation II, Birdie II and Omega can be included in this category. These varieties have also shown improved leaf spot and crown rust resistance compared to the earlier varieties. The above varieties with a II designation also have had excellent resistance to stem rust which is a serious seed production disease. The variety Birdie II has displayed better resistance to red thread than the other varieties in our trials to date.

All of the new improved turf-type varieties have shown excellent wear tolerance in our trials located in Hubbard, Oregon. The variety Manhattan II had to top wear tolerance rating, followed closely by the other good varieties. There is still a need to continue to improve the *Fusarium nivale* and red thread resistance levels in perennial ryegrass varieties.

Tall Fescues

In the last four years the release of Rebel, Falcon and Olympic has resulted in tremendous interest in new turf-type tall fescues. These new longer-growing, denser and finer textured grasses are showing real improvements in disease resistance and turf performance compared to the old common type varieties KY 31, Alta and Fawn. Some other new tall fescue varieties becoming available are Adventure, Apache, Finelawn I, Hounddog, Jaguar and Mustang.

The outstanding characteristic of the new tall fescues is their deep root system that results in their ability to stay green two to three weeks longer than the other cool season turfgrass species under drought conditions. Some of the new varieties such as Adventure, Jaguar, Apache and Olympic have shown improved shade tolerance. Under moderate shade conditions, the leaf texture of these new tall fescues becomes finer and yet they maintain good density.

There will be many new tall fescue varieties released in the near future. Improvements are still needed in leaf spot resistance, dark leaf color and density. All of the new turf-type varieties showed superior traffic tolerance compared to the old tall fescue varieties. They did rate somewhat lower than the best perennial ryegrass varieties, however.

Fine Fescues

There has been a limited amount of breeding work in the U.S. on the three main species of fine fescue: chewings, creeping and hard fescue. Many of the presently available varieties of


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(Turfgrass Varieties cont'd.)

fine fescues have resulted from breeding programs in Europe. The chewing fescue varieties Koket, Barfalla, Atlanta, Highlight and Waldorf, the creeping fescue varieties Ensylva, Moncorde and Ruby, and the hard fescues Biljart, Waldina and Scaldis are all European varieties.

The chewing fescues Banner, Jamestown and Shadow are varieties developed in the U.S. These varieties have shown somewhat better turf performance and leaf spot resistance than the European varieties. Shadow has shown better powdery mildew resistance than most other chewing fescues. All of the chewing fescues need further improvements in red thread resistance and performance under high temperatures. The chewing fescues perform well in shade situations, especially under tree root competition.

The creeping fescue varieties generally perform better under a higher cutting height. The U.S. variety Fortress has performed similar to the European varieties.

Boreal or Common Canadian Creeper is sold in large quantities in the U.S. for mixtures. These two grasses have very poor leaf spot resistance and persistence, but are competitive because of their low prices. Flyer is a new variety of creeping fescue with improved turf quality compared to most other varieties.

The varieties Waldina, Scaldis and Biljart along with the U.S. varieties Reliant, Spartan and Aurora are all hard fescue varieties with very good turf performance. Compared to the other fine fescues, these hard fescues have good leaf spot and red thread resistance and also very good drought, heat and low fertility performance. Hard fescues have a slow vertical growth rate, and are slower to establish than other fine fescues. The major improvement needed is to increase their seed producing ability to make them more price competitive. The variety Aurora is a result of a breeding project to improve seed yield, and yet maintain the improved turf performance of the other hard fescues.

Summary

There are many new improved proprietary turfgrass varieties on the market that are performing much better than the more cheaply priced common varieties. It is encouraging to see a shift in present buying patterns toward the better named varieties. The increased level in turfgrass breeding activities in the U.S. should continue to result in better turfgrasses at competitive prices in the future.

¹ Presented at the 37th Northwest Turfgrass Conference, Kah-Nee-Ta Resort, Warm Springs, OR, September 19-22, 1983.

² Turf-Seed, Inc., Hubbard, OR.

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A motion was made at the last monthly business meeting that all members are required to have a suit or sport coat when attending future business meetings. The appointed "Master-at-arms" will be instructed to collect a \$5.00 fee from all who do not meet the dress code.

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