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CHAPTER 1

INTRODUCTION TO ANNUAL RYEGRASS

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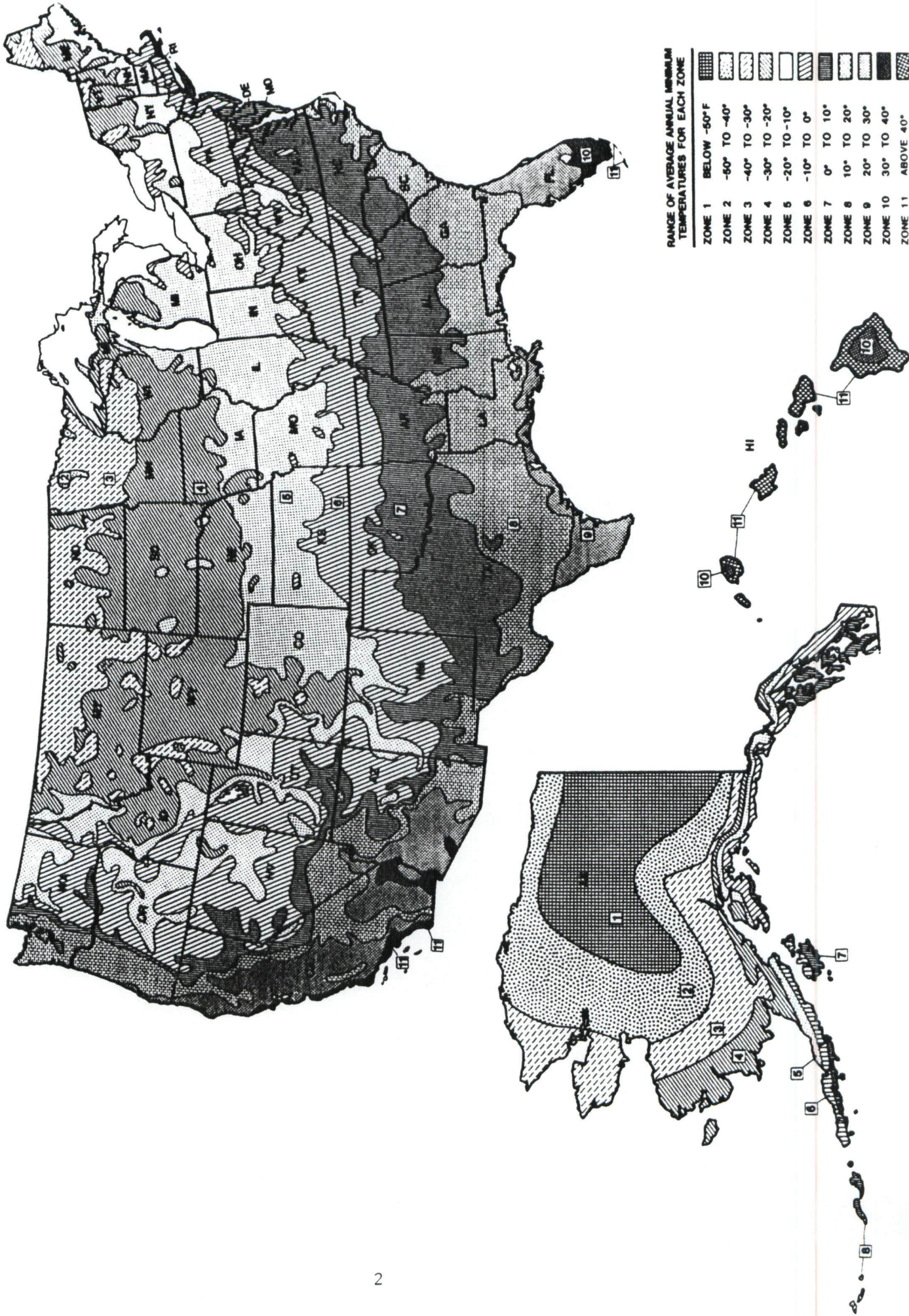
Introduction

Annual ryegrass (*Lolium multiflorum* Lam.) is indeed a marvelous forage plant. It establishes without seedbed preparation, grows on a wide range of soil types, persists in a range of environmental conditions, and best of all, tolerates abuse by both livestock and producer. Annual, also called Italian, ryegrass is indigenous to southern Europe with reports of it being grown in meadows of northern Italy as early as the thirteenth century. It was brought to America in early colonial days (Holt and Lewis, 1976). The time of its expanded use into the southeastern USA is not known. Wheeler and Hill (1957) reported the average annual seed production of common (annual) ryegrass from 1939 to 1945 was 34 million pounds. It is assumed that a large portion of this seed was shipped to the southeast. Assuming a seeding rate of 25 lb/acre, half of the annual seed production during this period would plant 680,000 acres. At the time of their report (1957) they stated that commercial seed production of annual ryegrass "in the United States is less than 25 years old." This indicates the expanded use of annual ryegrass in the US probably began in the early 1930's. There are many types of ryegrass grown in the world including perennial ryegrass (*Lolium perenne* L.). For the purpose of this publication, the term "ryegrass" will refer to the multiflorum species (annual ryegrass) only, unless stated otherwise.

Acreage

The primary growing area of annual ryegrass is from central Texas eastward to the Atlantic Coast in temperature zones 8 and 9 where the average minimum temperature is higher than 10°F (Figure 1). Ryegrass is grown north of this area in temperature zone 7 from southeast Oklahoma eastward to the mid-Atlantic states but with lower yields than zones 8 and 9 because of cooler winter temperatures. A survey of state Extension Forage Specialists conducted by the author in 1992 reported an estimated 2.8 million acres of ryegrass in the United States (Table 1). Essentially, all the ryegrass used for pasture is found in the southeastern USA except for Oregon and northern California. The eastern half of Texas accounts for 32% of the acreage. It is only fitting that the first symposium on annual ryegrass be held in Texas. There is probably some

Figure 1. USDA plant hardiness zone map.



annual ryegrass used in every state for roadside stabilization and turf. It is also grown in Canada and some northern states as a summer annual (Kunelius and Narsimhalu, 1983) and in southwestern USA and Mexico under irrigation (Ehlig and Hagemann, 1982).

Table 1. Estimated annual ryegrass acreage in 1992 by state. (G. W. Evers, 1992, personal communication)

Rank	State	Acreage	% of Total
1	Texas	895,000	31.8
2	Mississippi	364,000	12.9
3	Louisiana	288,850	10.3
4	Alabama	279,500	9.9
5	Florida	272,000	9.6
6	Georgia	212,000	7.5
7	Arkansas	115,000	4.0
8	Oregon	109,100	3.8
9	Oklahoma	100,500	3.5
10	South Carolina	73,450	2.6
11	Tennessee	59,500	2.1
12	Virginia	26,000	.9
13	North Carolina	21,300	.8
Total		2,816,200	

Use

Purpose for planting ryegrass was also estimated in the survey of state Extension Forage Specialists conducted in 1992. Winter pasture is the primary use of ryegrass with the majority of it overseeded on warm-season perennial grasses such as bermudagrass (*Cynodon dactylon* (L.) Pers.), dallisgrass (*Paspalum dilatatum* Poir.), and bahiagrass (*Paspalum notatum* Flugge) (Table 2). This practice extends the grazing season of a summer permanent pasture 3 to 4 months with a high quality forage. Therefore the amount of stored forage and supplement needed to overwinter livestock is reduced. Planting ryegrass is also an option when summer drought limits hay production (Evers, 1981). Acreage devoted to seed production is centered in the lower Willamette Valley in Oregon because of the mediterranean type climate which favors seed production and harvest of cool-season forages. Other ryegrass uses include hay crop, roadside stabilization, turf, and cover crop to prevent erosion. Minor uses not reported in the survey are silage, greenchop,

food plots for wildlife, and control of spring weeds through plant competition.

Table 2. Estimated use of annual ryegrass by state. (G. W. Evers, 1992, personal communication)

State	Pasture	Hay	Turf	Roadside stabilization	Seed production	Cover crop
-----acres-----						
Alabama	235,000	26,000	4,000	2,000	500	12,000
Arkansas	75,000	20,000	0	5,000	5,000	10,000
Florida	200,000	10,000	35,000	22,000	0	5,000
Georgia	200,000	5,000	1,000	1,000	0	5,000
Louisiana	275,000	10,000	2,200	150	500	1,000
Mississippi	350,000	3,500	0	4,000	3,000	3,500
North Carolina	20,000	100	1,000	200	0	0
Oklahoma	100,000	0	0	500	0	0
Oregon	0	0	0	100	109,000	0
South Carolina	70,000	400	2,000	300	0	750
Tennessee	40,000	5,000	7,000	4,000	500	3,000
Texas	840,000	7,000	10,000	37,000	0	1,000
Virginia	6,000	8,000	6,000	3,000	0	3,000
Total	2,411,000	95,000	68,200	79,250	118,500	44,250
% Use	85.6	3.4	2.4	2.8	4.2	1.6

Advantages of Ryegrass

The greatest strengths of annual ryegrass include its adaptability to a wide range of soil types and ease of establishment. It grows well from the deep sandy soils in East Texas to the poorly drained clay soils in the Texas Rice Belt. Ryegrass is the only cool-season annual grass that is adapted to wet clay soils because of its ability to produce adventitious roots on, or near the soil surface. Optimum growth requires a pH of 5.7 or higher but it will survive on more acid soils, but with limited forage production. Successful ryegrass stands can be obtained by broadcasting seed on the soil surface or on a short warm-season perennial grass sod. This makes ryegrass less expensive to plant than small grains because land preparation and seed drills are not required. On many East Texas ranches, ryegrass seed is mixed with the initial fertilizer application and applied by the fertilizer dealer at no additional costs to the producer. Ease of establishment is also the major reason for its use for land stabilization along highways and for turf.

A critical attribute of ryegrass is its high forage quality (Ellis and Lippke, 1976). This is particularly valuable in the lower southeast where the poor quality, warm-season perennial grasses form the basis of the pasture systems. Animal performance in terms of weight gain, milk production, and conception rates is higher on ryegrass than warm-season grasses. Because ryegrass matures in late spring, it is frequently mixed with small grains to extend the grazing season. When planted with clovers, ryegrass provides earlier grazing than the clovers alone and aids in reducing the risk of legume bloat. Ryegrass has few insect and disease problems compared to other cool-season annual grasses. A relatively new role is its use for recycling nutrients from urban and animal waste.

Summary

Annual ryegrass is a major component of pasture systems throughout the southeastern USA because it is well adapted, easy to establish, has high forage quality, and requires a minimum of management. How important is ryegrass? Imagine producing livestock on pasture without it. Annual ryegrass is so easy to grow that we have taken it for granted. Authors of the following chapters are experts in their respective disciplines and have numerous years of experience with annual ryegrass. Objectives of this symposium are twofold. One is to emphasize the value of ryegrass pastures in the USA, and the other is to present the latest information on varieties, management, and utilization. We hope that the information in the following chapters will be both informative and profitable.

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