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325

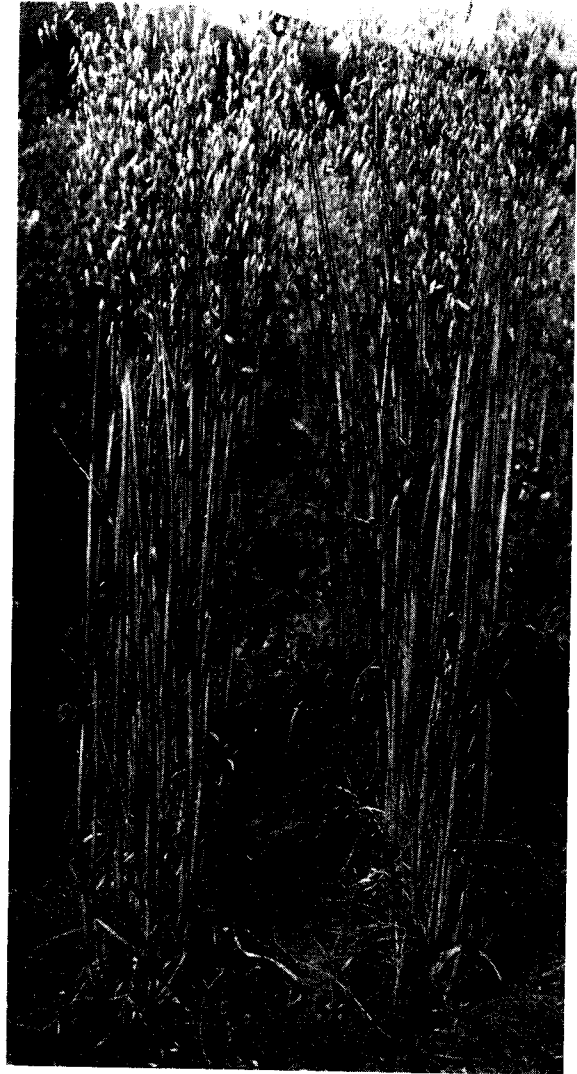
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THE Blount Oat Variety

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by
N. I. Hancock

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The University of Tennessee
Agricultural Experiment Station
John A. Ewing, Director
Knoxville

Contents

	<i>Page</i>
Important Characteristics	3
Yield	3
Lodging	4
Maturity	5
Forage and Green-cut Silage	6
Resistance to Diseases	6
Test Weight	6
Botanical Description	7
Grower Trials	9
Literature Cited	10

Acknowledgment: The author wishes to thank the county agents for their cooperation.

The Blount Oat Variety

N. I. HANCOCK*

Plant Breeder

The Blount** variety of oats has been released for planting in Tennessee. This variety has been named "Blount" in honor of William Blount who was first governor of the Southwest Territory which afterward became Tennessee.

Blount is the result of a head or individual panicle selection from the cross of LeConte x Fulgrain St. 6 made in 1946, followed by a cross of Santa Fe to this selection in 1947. Thus, Blount contains genes from the three varieties—LeConte, Fulgrain St. 6, and Santa Fe.

Important Characteristics

Blount is very resistant to lodging. Its stems are 3 to 9 inches shorter than stems of Forkeddeer and LeConte at harvesting time and also it has the stiff straw of LeConte. Therefore, Blount is particularly recommended for planting on soils of high fertility, where lodging of such varieties as LeConte and Forkeddeer frequently occurs. The panicle of Blount is longer, more spreading, and ripens about 3 to 5 days earlier than LeConte. Both Blount and LeConte have semi-prostrate seedling growth as compared with the prostrate seedling growth of Forkeddeer, and are not as winter hardy as Forkeddeer.

Yield

It is seen in Table 1 that Blount has the highest 5 year State

Table 1—Average Yields of Blount, Forkeddeer, LeConte, and Victorgrain 48-93 Oats Over a 5-Year Period at 6 Locations

Variety	State						
	1956-1960	Knoxville	Greeneville	Crossville	Spring Hill	Springfield Jackson	
	Bushels per Acre						
Blount	85.8	73.2	69.0	68.0	85.9	107.3	104.5
Forkeddeer	76.6	65.0	73.6	57.6	80.2	96.8	82.3
LeConte	79.2	71.0	68.6	55.6	84.1	98.4	90.4
Victorgrain 48-93	80.9	58.3	62.7	48.9	77.5	110.3	117.4

average—85.8 bushels, as against 76.6 for Forkeddeer, 79.2 for LeConte, and 80.9 for Victorgrain 48-93. During this time Blount was excelled significantly by Forkeddeer at Greeneville in 1958, and by Victorgrain 48-93 at Jackson in 1957 and in 1959.

*Head of former Botany Department.

**Blount was in the State tests as Tenn. 54-8 for a period of 5 years (1956-60).

Lodging

Resistance to lodging in small grains is an important consideration under present practices of mechanical harvesting and high rates of fertilization. At least three plant characters are concerned in the lodging of small grains; namely 1) height of plants at harvesting time, 2) "nodding angle," and 3) stiffness of straw.

Blount has relatively short stems as shown by the measurements of height in Table 2. Although the data on height were not

Table 2—Height of Blount, Forkeddeer, LeConte, and Victorgrain 48-93 Oats
in 1960 at 6 Locations

Variety	State						
	Av.	Knoxville	Greeneville	Crossville	Spring Hill	Springfield	Jackson
Inches							
Blount	33	28	24	34	29	38	44
Forkeddeer	39	33	32	40	35	47	49
LeConte	38	32	28	37	34	44	50
Victorgrain 48-93	34	28	26	34	31	40	47

Note: Data taken on 2 replicates latter part of May when all plots were in full head, or panicle.

available for preceding years and the dry season at Knoxville, Greeneville, and Spring Hill affected the heights in 1960, yet relative differences are shown between these varieties.

At harvesting time the panicles in some varieties stand almost upright with a small "nodding angle" of 8 degrees to 18 degrees, whereas panicles in other varieties bend over considerably with nodding angles of 20 to 40 degrees. The panicle when ripe constitutes around 60 percent of the weight of a single culm and the stem and leaves about 40 percent (see Table 3). Unless this heavy panicle is held at a small angle with the vertical it will bend over and cause the stem to break more easily during a storm. Blount

Table 3—Measurements on Typical Culms of Blount, LeConte, and Forkeddeer Oats
at Knoxville in 1954

Stem Internodes and Panicle	Blount		LeConte		Forkeddeer	
	Length	Weight	Length	Weight	Length	Weight
Inches Percent						
Internode No. 1	0.50	2.3	0.50	2.3	0.75	1.9
Internode No. 2	4.10	5.0	4.25	6.7	4.35	3.8
Internode No. 3	4.75	6.9	5.00	8.2	5.60	7.8
Internode No. 4	9.25	10.6	11.00	11.5	10.40	10.4
Internode No. 5	16.00	14.8	18.50	15.2	22.00	14.4
Panicle	8.50	60.4	8.25	56.1	9.95	61.7
Total ht., in., & wt., %	43.10	100.0	47.50	100.0	53.05	100.0

Note: The length measurements begin at ground level, or node 1, and continue up the culm; the weight measurements include the leaves on the internodes and seeds of the panicle. These weights are given in percentage each structure bears to total weight of culm. The data are the average of measurements on 35 culms of each variety.

as well as LeConte have small nodding angles of 8 to 18 degrees while Forkeddeer has angles of 14 to 35 degrees.

No satisfactory method has been devised for measuring the stiffness of straw in relation to lodging resistance. Thus, one must depend primarily upon the effects of storms during the growing season to evaluate this characteristic. At Knoxville in 1959 a severe wind and rain storm hit the small grains test about 10 days before combining. The data in Table 4 are averages of all four

Table 4—Lodging Percentage of Blount, Forkeddeer, LeConte, and Victorgrain 48-93 Oats in 1959 and 1960 at Two Locations

Variety	Knoxville		Jackson	
	1959	1960	1959	1960
	Percent		Percent	
Blount	6	1	0	1
Forkeddeer	80	16	25	50
LeConte	30	3	5	3
Victorgrain 48-93	43	1	4	2

Note: Data taken on all 4 replicates latter part of May when all plots were in full head, or panicle.

replications and show that Blount was much superior to the other three varieties in resistance to lodging. Fig. 1 shows the plot

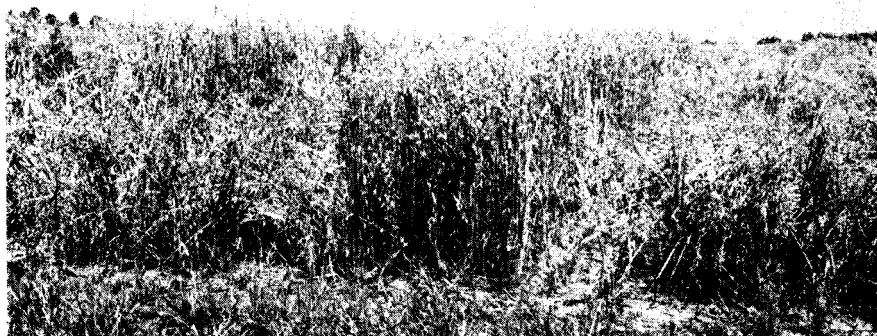


Figure 1—The middle plot of Blount is standing up.

of Blount at Knoxville standing up while varieties on either side are lodged. This picture was taken 2 days after the storm at the same time percentages of lodging were estimated.

Maturity

Maturity is a very important plant character, especially as it is related to conditions in Tennessee. If the variety is very early, then floral initiation will begin during warm spells in early March. A freeze later on will kill the young potential seeds unless the tillers have been grazed or cut back to delay maturity. In Table 5 it

Table 5—Difference in Days from Time in Full Panicle to Time Harvested When Compared with Victorgrain 48-93 Oats—the Earliest Variety Taken as Check

Variety	1955		1959		1960	
	Knoxville	Springfield	Jackson	Jackson	Knoxville	
	Days		Days		Days	
Blount	5	8	5	9	11	
LeConte	13	10	5	12	13	
Forkeddeer	6	6	4	6	6	
Victorgrain 48-93	0	0	0	0	0	

is observed that Blount is 1 week to 10 days later than Victorgrain and 0 to 8 days earlier than LeConte. Apparently, seasonal conditions will affect these differences between varieties.

Forage and Green-cut Silage

It has been shown by Long and Ewing (3), Washko (6), and Parks and Chapman (4), that oat forage is very palatable and that winter oat varieties under proper management provide a fairly high production of fall and spring forage. Although no clipping data are available, Blount does have a semi-prostrate seedling growth and should be comparable to LeConte for grazing.

Green-cut silage of LeConte has been used by farmers of this State for some time, because it has a vigorous growth and responds well to fertilization. It is doubtful that Blount would make as much green-cut silage as LeConte, because of its dwarfy habit of growth.

Resistance to Diseases

Winter oats varieties are seldom affected by leaf and stem rusts in Tennessee when planted at the recommended date so that Blount probably has never been exposed to severe infections of leaf rusts. Although Blount carries genes of Bond, Victoria, and Sante Fe, yet it is probable that Blount would be susceptible to the recent races of rusts. Over 150 races of leaf rusts have appeared in the past 20 years, and no variety of oats has been found resistant to all of them. In 1957, the yields of all oat varieties were lowered at Crossville and Knoxville by barley yellow dwarf. This disease is insect-borne, probably by aphids. Barley yellow dwarf causes stunted growth and the oat leaves turn red. This disease appeared again in 1961, and no oat variety has been found resistant to it.

Test Weight

The legal standard weight of 1 bushel of oats is 32 pounds. However, the weight of a bushel of oats may vary depending on such factors as the shape of grains, their percent moisture, and content of foreign matter. Oat varieties such as Blount and Le-

Conte having plump seeds and a small ratio of length to the width of the lemma give fairly high test weights under most conditions. The test weights reported in Table 6 are over 32 pounds. The test

Table 6—Test Weight and Seed Sample Weights of Blount and LeConte Oats

Variety	Knoxville			Knoxville
	1955	1956	1959	1960
Blount	33.8	34.3	33.6	Weight of 100 seeds 2.6 grams
LeConte	33.1	34.1	33.9	Weight of 100 seeds 2.2 grams

Note: Samples taken from breeders tests in 1955, 1956 and 1959.

weights as well as 100 seed sample weights show no differences between Blount and LeConte. The application rate of nitrogen did not significantly affect test weights of Blount (Table 7).

Table 7—Test Weight of Blount Oats Grown With and Without Extra Nitrogen—
Monroe County*

Hicks Farm	Lb.	Davis Farm	Lb.
33 lb. extra nitrogen	33.8	33 lb. extra nitrogen	35.3
No extra nitrogen	34.0	No extra nitrogen	34.8

*Samples furnished by R. C. Stamey, County Agent, 1960.

Botanical Description

Blount is identified primarily by its major plant characters, such as seedling growth, dwarfy growth of culms, resistance to

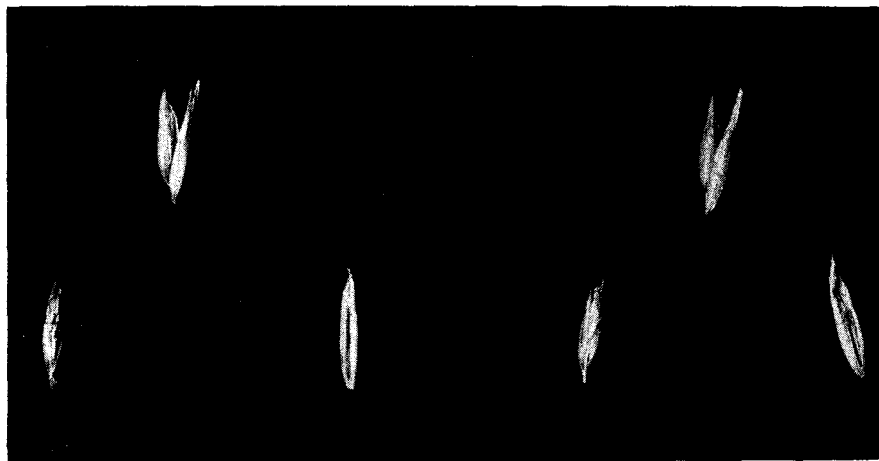


Figure 2—First and second florets attached and separated with attached rachilla.

lodging, date of maturity, yielding capacity of panicles, and not by its minor botanical structures.

The stem internode length with panicle, and their lengths and weights are shown in Table 3 for single culms of Blount, LeConte, and Forkeddeer. The diameter and wall thickness of stem internodes in Blount are 3-6 mm. and 2-3 mm.

Fig. 2 shows first and second florets attached in seeds of threshed oats from a breeder's field of Blount at Knoxville in 1959. This firm attachment of the rachilla between first and second florets is common to all red oat varieties. Part of this segment may remain attached to each floret. The first floret is 10-15 mm. long and 3-5 mm. wide; the second floret is 6-10 mm. long and 2-4 mm. wide. The caryopsis (seed free of lemma) 5-8 mm. long, 2-3 mm. wide, and almost naked with sparse hairs, is seen in Figure 3. The



Figure 3—Weak awns and caryopses of Blount seeds.

lemmas of the seed are brownish yellow. Fig. 3 shows grains with weak awns of lemma of first floret; 6 grains with these weak awns were found in 10,000 seeds of Blount.

Fig. 4 shows the attachment of the first floret to the pedicel, and Fig. 5 shows part of this segment attached to the first floret, as well as a clean break but no "suckermouth" cavity at the base of these florets.

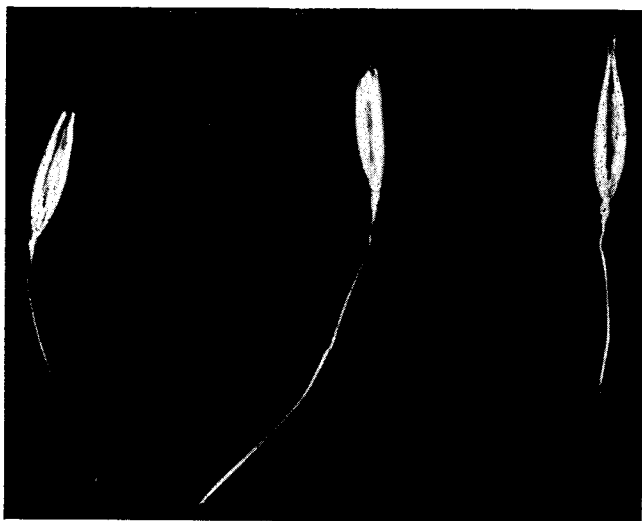


Figure 4—First floret attached to pedicel.

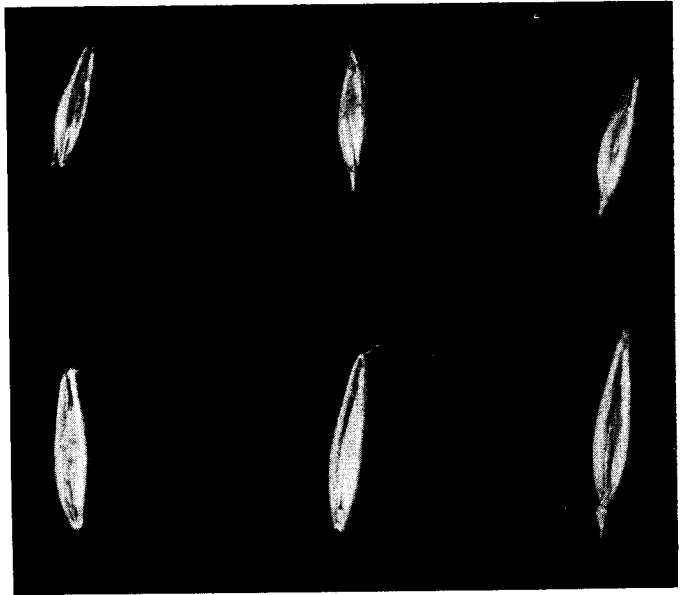
Selections from crosses of varieties of *A byzantina* species, such as Fulghum, Bond, and Santa Fe, are notorious for variations in seed types. Since Blount traces its ancestry back to such varieties, one would expect to find variable seed types in Blount. Thus a tolerance of 45 to 50 such seeds should be allowed in 1 pound of breeder's seed and 100 to 125 such seeds in 1 pound of foundation seed stocks. Even larger tolerances may be permitted in later generations from foundation seed.

Stanton (5) emphasized the manner in which the first floret separates from the rachilla which joins it to the second floret, and from the pedicel to which the first floret is attached at its base, as a method of identifying oat varieties. It is obvious that these delicate structures—rachilla and pedicel—will be affected greatly by the kind of threshing as well as by the weather conditions at time of harvesting. It has been shown that lemmas of oat seeds may be affected by kinds of threshing, to the extent that poor germination is the result, Hancock (2). The lemma is considerably tougher and less subject to injury than the rachilla or pedicel.

Grower Trials

In the fall of 1959, 100 bushels of Blount seeds were distributed to selected farmers over Tennessee through the county agents. In 1960 the reports from farmers and county agents were good

Figure 5—A portion of pedicel is attached at the base of the floret—no suckermouth cavity.



Blount was not tested in other states and may or may not have a wide adaptation.

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