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The background of the entire page is a dense, black and white photograph of oat grains. The grains are scattered across the frame, showing their characteristic elongated shape and the pointed awns at the top. The lighting creates highlights on the edges of the grains, giving them a three-dimensional appearance against the dark background.

Uton

A New High-Yielding White Oat Resistant
to Loose and Covered Smuts

By D. C. Tingey
R. W. Woodward
T. R. Stanton

Bulletin 296
Utah Agricultural Experiment Station
in cooperation with
Bureau of Plant Industry
U. S. Department of Agriculture
April 1941

Uton

Uton, a new oat variety developed by this Station, not only has a large white kernel, but is resistant to both loose and covered smut. It has produced yields somewhat higher than either Swedish Select or Markton in trials throughout the state. It is recommended to replace both of these varieties.

Uton is a selection from a Markton x Swedish Select cross, and possesses the large white kernel of the Swedish Select parent with the smut resistance of the Markton parent.

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Bureau of Plant Industry
United States Department of Agriculture

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Uton

A New High-Yielding White Oat Resistant to Loose and Covered Smuts¹

D. C. Tingey, R. W. Woodward, T. R. Stanton²

OATS have been among the five or six leading crops in acreage grown in Utah since its settlement. For many years Swedish Select has been by far the most predominant variety. This variety is well adapted to Utah conditions, but because of its high susceptibility to loose and covered smut, it is not the most desirable.

In 1934, after extensive trials, the variety, Markton³, which is resistant to loose and covered smuts, was introduced into the state to replace Swedish Select. In those trials, Markton averaged 13 percent higher in acre yield than Swedish Select. Markton possessed one drawback in that it had a yellowish kernel, whereas Swedish Select produced a large white kernel. As a result of this, Markton has never been grown extensively in the state. Uton, which is a selection from the Markton x Swedish Select cross, is a high-yielding variety resistant to both loose and covered smuts, and yet produces a large white kernel similar to that of Swedish Select. The good qualities of both Swedish Select and Markton appear to have been combined in Uton.

Oat Production in Utah

IN acreage, oats rank in sixth place in the state. It is exceeded by alfalfa, wild hay, wheat, beets, and barley. The oat acreage until recently was larger than that for barley (table 1). In 1932, 54,000 acres of oats and 44,000 acres of barley were reported as being grown in Utah.⁴ In 1938, however, 28,000 acres of oats were reported and 62,000 of barley. Both oats and barley are used primarily for feed purposes and the two crops are so nearly alike in adaptations under irrigated conditions that one can readily replace the other. The shift in acreage of barley and oats is partly accounted for (1) by the fact

¹ Contribution from the Agronomy Department, Utah Agricultural Experiment Station, in cooperation with the Division of Cereal Crops and Diseases, Bureau of Plant Industry, U. S. Department of Agriculture. Report on Project 10.

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³ Woodward, R. W., and Tingey, D. C. Oat varietal tests in Utah. Utah Agr. Exp. Sta. Bul. 260. 1935.

Woodward, R. W., and Tingey, D. C. The Markton oats, a new variety for Utah. Utah Agr. Exp. Sta. Leaflet 42. 1934.

⁴ U. S. Department of Agriculture. Yearbook of agriculture.

that barley⁵ produces more total digestible nutrients per acre than oats and (2) the release from the Experiment Station of a new improved variety⁶ of barley easier to cut and harvest.

Table 1. *Acreage of small grains harvested in Utah* (1924 to 1940, inclusive)*

| Year | Crop | | |
|--------------|--------------|--------------|--------------|
| | Spring wheat | Oats | Barley |
| | <i>acres</i> | <i>acres</i> | <i>acres</i> |
| 1924..... | 105,000 | 55,000 | 14,000 |
| 1925..... | 88,000 | 60,000 | 18,000 |
| 1926..... | 88,000 | 54,000 | 20,000 |
| 1927..... | 90,000 | 51,000 | 30,000 |
| 1928..... | 95,000 | 55,000 | 34,000 |
| 1929..... | 80,380 | 45,480 | 38,069 |
| 1930..... | 82,000 | 46,000 | 42,000 |
| 1931..... | 63,000 | 43,000 | 38,000 |
| 1932..... | 76,000 | 54,000 | 44,000 |
| 1933..... | 74,000 | 50,000 | 37,000 |
| 1934..... | 67,000 | 32,000 | 31,000 |
| 1935..... | 71,000 | 36,000 | 45,000 |
| 1936..... | 89,000 | 33,000 | 55,000 |
| 1937..... | 91,000 | 31,000 | 61,000 |
| 1938..... | 81,000 | 28,000 | 62,000 |
| 1939..... | 68,000 | 28,000 | 65,000 |
| 1940** | 65,000 | 29,000 | 76,000 |

* U. S. Department of Agriculture. Yearbooks of agriculture.

** 1940 figures taken from Utah Crop Reports issued by the Agricultural Statistician, Salt Lake City.

The acreage, production, percentage of all farmers growing oats, and average farm acreage for each county in 1934 are shown in table 2. The five counties with the largest oat production are Cache, Box Elder, Utah, Weber, and Garfield, all of which produced over 50,000 bushels. The counties lowest in production are Grand, Juab, Daggett, Tooele, and San Juan. None of these latter counties produced over 4,000 bushels. In the percentage of farmers growing oats, Wayne County leads the list with 48.6, and Grand is lowest with 0.6. The average acreage per farm on farms growing oats is 5, and this varies from 15.6 for San Juan to as low as 3 acres for Utah County.

⁵ Woodward, R. W., and Tingey, D. C. Relative production of feed grains from spring-grown cereals in Utah. Utah Agr. Exp. Sta. Bul. 263. 1935.

⁶ Woodward, R. W., and Tingey, D. C. Velvon, a new smooth-awned barley. Utah Agr. Exp. Sta. Bul. 293. 1940.

Table 2. *Acreage, production percentage of farmers growing oats, and average acreage per farm planted to oats in each county of the state, 1934**

| County | Acreage | Production | Farmers growing oats | Average acreage per farm |
|------------------|--------------|----------------|-------------------------|-----------------------------|
| | <i>acres</i> | <i>bushels</i> | <i>percent</i> | <i>acres</i> |
| Beaver | 313 | 9,476 | 18.1 | 3.9 |
| Box Elder | 1,260 | 70,892 | 9.7 | 5.6 |
| Cache | 1,943 | 84,930 | 18.2 | 4.4 |
| Carbon | 402 | 10,136 | 17.4 | 5.7 |
| Daggett | 182 | 3,524 | 16.0 | 14.0 |
| Davis | 284 | 10,470 | 4.9 | 3.6 |
| Duchesne | 1,548 | 45,166 | 19.1 | 6.8 |
| Emery | 1,072 | 21,835 | 27.9 | 4.2 |
| Garfield | 1,830 | 52,702 | 35.4 | 10.5 |
| Grand | 10 | 350 | 0.6 | 10.0 |
| Iron | 301 | 10,870 | 12.9 | 4.0 |
| Juab | 101 | 3,200 | 6.1 | 3.2 |
| Kane | 329 | 5,602 | 16.5 | 7.8 |
| Millard | 239 | 7,810 | 3.9 | 4.8 |
| Morgan | 296 | 14,527 | 33.1 | 3.5 |
| Piute | 637 | 21,789 | 35.7 | 7.0 |
| Rich | 219 | 9,095 | 7.7 | 10.4 |
| Salt Lake | 929 | 29,720 | 7.3 | 3.6 |
| San Juan | 140 | 3,625 | 1.5 | 15.6 |
| Sanpete | 1,596 | 39,655 | 21.2 | 4.3 |
| Sevier | 1,202 | 46,816 | 28.4 | 4.0 |
| Summit | 471 | 14,894 | 15.2 | 5.7 |
| Tooele | 176 | 3,941 | 3.7 | 6.8 |
| Uintah | 1,360 | 38,396 | 14.2 | 6.9 |
| Utah | 1,922 | 69,669 | 16.1 | 3.0 |
| Wasatch | 548 | 20,918 | 24.0 | 4.6 |
| Washington | 281 | 10,629 | 8.4 | 4.4 |
| Wayne | 911 | 27,287 | 48.6 | 6.4 |
| Weber | 1,432 | 62,092 | 11.8 | 5.9 |
| State | 21,934 | 750,016 | 14.4 | 5.0 |

* U. S. Census of Agriculture, 1935.

How Uton Was Produced

THE new variety Uton was developed at the Utah Agricultural Experiment Station through cooperation with the Division of Cereal Crops and Diseases, Bureau of Plant Industry, U. S. Department of Agriculture. Uton originated from a single plant selection of a Markton x Swedish Select cross made from material received in

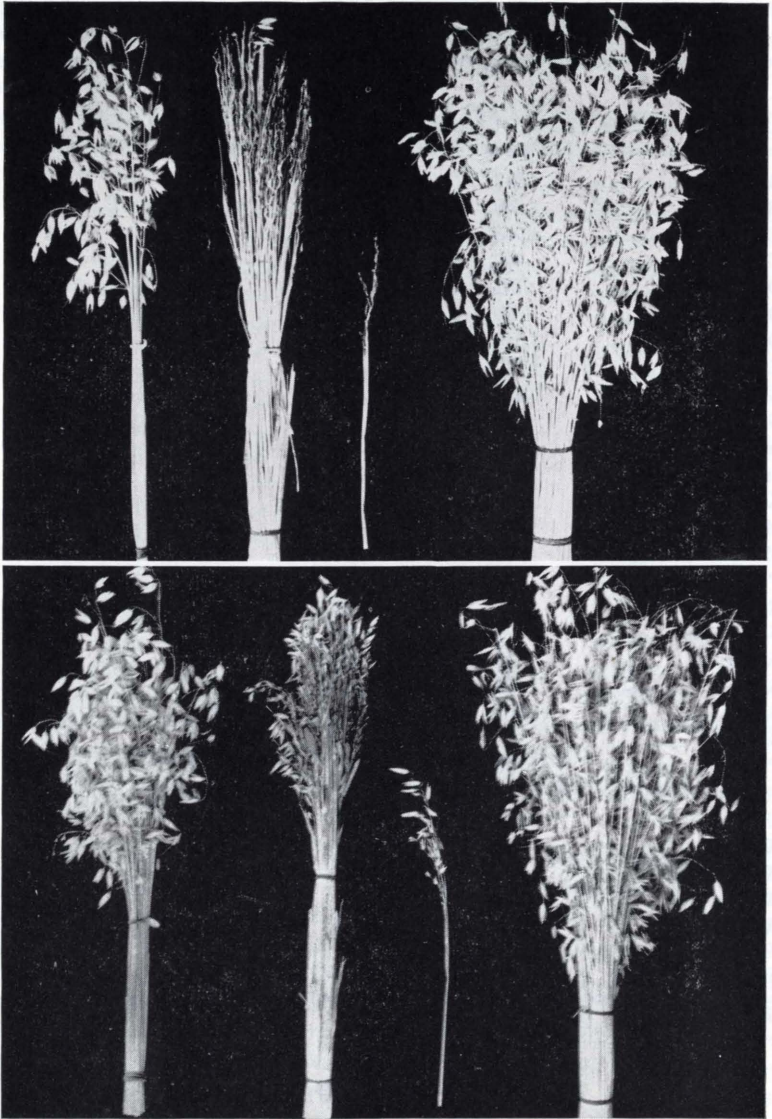


Figure 1. Showing the proportional amount of loose smut (upper photo) and covered smut (lower photo) occurring in Swedish Select and Uton. In each photo the two bundles on the left are Swedish Select, the one to the extreme left is smut free, the other is smutty. The two bundles to the right are Uton, the single plant on the left is smutty and the other is smut free

1929 from T. R. Stanton of the Division of Cereal Crops and Diseases. This hybrid material was grown in 5-foot rows at the experimental farm at North Logan. During the summer of 1929 all the rows were examined to determine whether some were breeding true for a desirable kernel type and color. Many of the rows were found to be segregating, and others were discarded because of undesirable grain color. Later, at harvest time, a number of head selections possessing the desirable large white kernel were made from some of the segregating rows. These selections were grown in head rows in 1930, and some of the more promising added to the rod-row yield nursery in 1931. Some strains appeared to be higher yielders than Swedish Select.

In order to make the final selection, a test was made of the comparative resistance of the strains to loose and covered smuts. Seeds of each of the selections that had survived the yield tests and the parental varieties were inoculated with the loose and covered smuts. It was found from this and further tests that some of the selections were highly susceptible to both diseases, whereas others were highly resistant. One of these highly resistant selections thought to be most desirable from the standpoint of acre yield, kernel color, and other characteristics, was increased in quantities sufficient to be released to farmers, and the variety was named Uton, (C. I. 3141). The name originated from adding the first letter from the word, Utah, and the last three letters from the word, Markton.

Comparative Smut Resistance

THE Markton x Swedish Select cross, from which Uton was selected, was made for the primary purpose of combining the high resistance to loose and covered smuts of Markton with the large white kernel of Swedish Select. It is apparent from the data given in table 3 that Uton has about the same resistance to these diseases as Markton, the resistant parent. The data further show that Swedish Select is highly susceptible, as was known from previous tests and the fact that farmers in the state have experienced considerable smutting of this variety. The resistance of Uton (fig. 1) is such that seed treatment each year would probably not be necessary; in fact, the variety has been grown at Logan for about 10 years without seed treatment, and as yet no smut has occurred in this selection. If at any time the variety should show even a trace of smut, it would then be advisable to treat the seed before planting.

Table 3. *Percentage of loose and covered smuts occurring in oats inoculated with inoculum of the two diseases*

| Species and sources | year | Plants infected | | |
|-----------------------------------------------------------------|------|-----------------|---------|---------|
| | | Swedish Select | Markton | Uton |
| | | percent | percent | percent |
| Loose smut (Washington, D. C.) (<i>Ustilago avenae</i>) | 1937 | 46.5 | 0. | 0. |
| | 1938 | Heavy* | 0. | 0. |
| | 1939 | 46.0 | 0.5 | 0.5 |
| | 1940 | 7.5 | 0.5 | 0. |
| Loose smut (Utah) (<i>U. avenae</i>) | 1937 | 32.0 | 0. | 0. |
| | 1938 | Heavy* | 0. | 0. |
| | 1939 | 57.0 | 0.5 | 1.0 |
| | 1940 | 25.0 | 0.5 | 0.5 |
| Covered smut (Washington, D. C.) (<i>U. levis</i>) | 1937 | 85.0 | 0. | 0. |
| | 1938 | Heavy* | 0. | 0. |
| | 1939 | 45.5 | 0.4 | 0.1 |
| | 1940 | 15.0 | 0. | 0. |

* Between 31 to 70 percent infection.

Comparative Acre Yields

SMUT resistance alone is not enough to make a variety desirable, but in addition, it must be a high yielder and possess other desirable characteristics. Swedish Select has been the standard variety in Utah. The comparative yields of Uton and its two parents are shown in table 4. This table includes all the yield data obtained in the different counties of the state from nursery rod-rows. In all cases each variety was planted in 3-row plots, with rows 17 feet long and replicated 3 times or more. The longer yield tests were those made at the experimental farm at North Logan, Utah, and extended from 1931 to 1940, inclusive. The average yields per acre for Swedish Select, Markton, and Uton are shown for each year. Since Uton was bred to replace Swedish Select, these two varieties should be compared. A comparison of the yields at Logan shows that the average for Swedish Select was 119.7 bushels and for Uton, 126.8 bushels. In the 10-year period, Markton yielded higher than Swedish Select, 8 years out of the 10. The last two columns of table 4 give the relative yields of Markton and Uton, with Swedish Select placed at 100. From this, it is shown that as an average for the 10 years, Uton has yielded 7 percent higher than Swedish Select. Uton yielded 6 percent higher in Utah County, 9 percent higher in Box Elder County, 36 percent higher in Sevier County, and 25 percent higher in Iron County. In Utah County for the two years, 1935 and 1936, Uton was 8 percent lower than Swedish Select. As an average for all thirty

Table 4. *Acre yield of oat varieties in bushels and relative yield on basis of Swedish Select, by counties and years*

| County | Year | Acre yield | | | Relative percentage when Swedish Select=100 | |
|---------------------------------------|---------|----------------------------------|---------------------------|------------------------|---------------------------------------------|------------------------|
| | | Swedish Select <i>bushels</i> | Markton <i>bushels</i> | Uton <i>bushels</i> | Markton <i>percent</i> | Uton <i>percent</i> |
| Cache, Logan | 1931 | 86.9 | 81.6 | 116.6 | 94 | 134 |
| | 1932 | 77.5 | 80.5 | 83.1 | 104 | 107 |
| | 1933 | 109.2 | 134.5 | 111.0 | 123 | 102 |
| | 1934 | 144.6 | 146.6 | 140.2 | 101 | 97 |
| | 1935 | 137.8 | 121.2 | 138.4 | 88 | 100 |
| | 1936 | 131.7 | 134.6 | 141.4 | 102 | 107 |
| | 1937 | 107.2 | 113.0 | 110.0 | 105 | 103 |
| | 1938 | 143.2 | 138.4 | 140.2 | 97 | 98 |
| | 1939 | 133.8 | 128.6 | 149.8 | 96 | 112 |
| | 1940 | 125.4 | 143.8 | 137.4 | 115 | 110 |
| | Average | 119.7 | 122.3 | 126.8 | 103 | 107 |
| Salt Lake, Murray | 1934 | 111.4 | 119.6 | 104.6 | 107 | 94 |
| | 1935 | 113.0 | 124.6 | 110.2 | 110 | 98 |
| | 1936 | 117.8 | 122.2 | 117.0 | 103 | 99 |
| | 1937 | 78.0 | 80.0 | 82.0 | 103 | 105 |
| | 1938 | 54.4 | 66.4 | 66.4 | 122 | 122 |
| | 1939 | 61.0 | 78.2 | 66.0 | 128 | 108 |
| | 1940 | 82.0 | 94.0 | 94.0 | 115 | 115 |
| | Average | 88.2 | 97.9 | 91.5 | 113 | 106 |
| Box Elder, Riverside | 1934 | 132.2 | 154.6 | 155.2 | 117 | 117 |
| | 1935 | 145.4 | 144.3 | 144.7 | 99 | 100 |
| | Average | 138.8 | 149.5 | 150.0 | 108 | 109 |
| Sevier, Richfield, and vicinity | 1934 | 70.0 | 105.0 | 105.2 | 150 | 150 |
| | 1937 | 103.0 | 92.0 | 121.0 | 89 | 118 |
| | 1938 | 39.5 | 33.4 | 35.9 | 85 | 91 |
| | 1939 | 46.8 | 81.6 | 84.8 | 174 | 181 |
| | Average | 64.8 | 78.0 | 86.7 | 125 | 135 |
| Utah, Springville | 1935 | 75.0 | 74.6 | 53.6 | 99 | 72 |
| | 1936 | 105.8 | 115.2 | 117.2 | 108 | 111 |
| | Average | 90.4 | 94.9 | 85.4 | 104 | 92 |
| Iron, Cedar City | 1936 | 88.4 | 109.1 | 96.7 | 123 | 109 |
| | 1937 | 107.0 | 104.0 | 112.0 | 97 | 105 |
| | 1938 | 62.4 | 91.9 | 104.8 | 147 | 168 |
| | 1939 | 102.6 | 133.4 | 126.0 | 130 | 123 |
| | 1940 | 85.5 | 135.9 | 101.6 | 159 | 119 |
| | Average | 89.2 | 114.9 | 108.2 | 131 | 125 |
| Uintah, Ft. Duchesne | 1934 | 97.2 | 106.3 | 102.4 | 109 | 105 |
| Average for all counties | | 98.3 | 109.1 | 107.3 | 113 | 111 |

tests, considering both location and years, Uton averaged 11 percent higher in yield than Swedish Select. Of the thirty tests, 22 were in

favor of Uton. It therefore appears that Uton, in addition to being resistant to loose and covered smuts, is equal to or better in yield than Swedish Select under the conditions where the tests were made.

Comparative Yields in Plot Tests

DURING the period of 1936 to 1940, inclusive, Uton, Swedish Select, and Markton have been grown in plot tests at North Logan. These plots consisted of approximately 1/50 of an acre, and each variety was replicated three times. In these tests the varieties Uton or Markton have not yielded (table 5) as well as Swedish Select. The

Table 5. *Acre yields of oat varieties from field plot tests, North Logan*

| Year | Acre yield | | | Relative percentage when Swedish Select=100 | |
|---------------|----------------|----------------|----------------|---------------------------------------------|----------------|
| | Swedish Select | Markton | Uton | Markton | Uton |
| | <i>bushels</i> | <i>bushels</i> | <i>bushels</i> | <i>percent</i> | <i>percent</i> |
| 1936..... | 129.1 | 111.0 | 109.6 | 86.0 | 84.9 |
| 1937..... | 116.0 | 102.7 | 109.2 | 88.5 | 94.1 |
| 1938..... | 137.1 | 125.7 | 131.8 | 91.7 | 96.1 |
| 1939..... | 146.4 | 148.6 | 138.8 | 101.5 | 94.8 |
| 1940..... | 125.3 | 119.8 | 118.8 | 95.6 | 94.8 |
| Average | 130.8 | 121.6 | 121.6 | 92.7 | 92.9 |

average difference for the 5-year period was about 7 percent in favor of Swedish Select. This difference in yield is statistically significant. The yields in the nursery over a 10-year period under the same conditions gave Uton and Markton an advantage over Swedish Select of about 7 percent; and during the same 5-year period that the plot test was made, the variety Uton yielded higher than Swedish Select every year except one. This differential behavior of the varieties to nurseries and plot tests may be a characteristic of the varieties, that is, it may be that Swedish Select does proportionately better in plot tests than in nursery rows as compared with Uton or Markton; however, this seems doubtful, as the two varieties, Uton and Swedish Select, have been grown side by side by many farmers throughout the state and the yields seem to be as good or better for Uton. The fact that Markton is also lower than Swedish Select in the plot tests is reversed from what it was in previous tests under the same conditions, yet as an average over a long period of time the two varieties have yielded about the same at North Logan. Another possible explanation for the difference in the yield of Swedish Select over Uton and Markton at North Logan in the plot tests is that it may be a

question of chance and that during each of five years the Swedish Select happened to be on a little better soil on the average than either of the other two varieties. The probability, however, of this happening not considering the replications each year is about once in 32 trials, assuming the two varieties, Uton and Swedish Select, are equal in yield.

The experience of the farmers in growing Uton and Swedish Select leads one to believe that Uton will yield as well or better as an average throughout the state than Swedish Select, even when the latter variety does not smut.

Comparative Yields Under High Versus Low Fertility and Early Versus Late Seeding

IN order to obtain additional information on the adaptation of Uton in comparison with its parental varieties, especially Swedish Select, these varieties were grown in nursery rows in 1937 and 1938 in four different counties on high and low fertility soils⁷ and seeded early and late (table 6). In 1937 in Iron County, only high fertility land was available, and in 1938 in Sevier County, only low fertility land. The average acre yield in bushels from early seeding at each of the places for the two years for both levels of fertility were 89, 89.5, and 102.2, respectively, for Swedish Select, Markton, and Uton. Yields for the late seeding in the same localities and for the same years for high and low fertility were 60.2, 65.3, and 75.5, respectively, for Swedish Select, Markton, and Uton. Considered on the basis of relative percentage with Swedish Select as 100, the early seeding was 116.2 and 102.7 for Uton and Markton, respectively, and on the same basis the late seeding was 135.5 and 121 for Uton and Markton, respectively. These data show that both Uton and Markton are superior to Swedish Select in yields under these conditions. Considering the early and late seedings for the various localities over the two-year period for the two levels of fertility, there are 28 comparisons. Of these 28 comparisons, Uton yielded higher than Swedish Select 24 times.

These yield tests were conducted under conditions where little or no smut infection occurred in Swedish Select—no doubt the yield differences would have been greater if smut infection had been allowed to develop in this variety as frequently happens under farm conditions.

⁷ In choosing high and low fertility soils, it was done on the statement of the farmer, and in some cases the difference in what he stated was low and high fertility was not very great. This accounts for the fact that individual varieties sometimes yielded higher on the supposedly lower fertility soils.

Table 6. *Average yield and relative percentage of three oat varieties grown under varying conditions for two years*

| Fertility* | Acre yield | | | | | | Relative percentage when Swedish Select=100 | | | |
|------------|----------------|----------------|----------------|----------------|----------------|----------------|---------------------------------------------|----------------|----------------|----------------|
| | Early seeding | | | Late seeding | | | Early seeding | | Late seeding | |
| | Swedish Select | Markton | Uton | Swedish Select | Markton | Uton | Markton | Uton | Markton | Uton |
| | <i>bushels</i> | <i>bushels</i> | <i>bushels</i> | <i>bushels</i> | <i>bushels</i> | <i>bushels</i> | <i>percent</i> | <i>percent</i> | <i>percent</i> | <i>percent</i> |
| Cache | | | | | | | | | | |
| 1937 High | 116.4 | 80.6 | 84.6 | 70.4 | 68.6 | 85.6 | 69.2 | 72.7 | 97.4 | 121.6 |
| 1937 Low | 37.6 | 40.0 | 40.0 | 38.6 | 43.6 | 54.0 | 106.4 | 106.4 | 113.0 | 139.9 |
| 1938 High | 133.4 | 111.0 | 151.4 | 98.4 | 49.0 | 108.2 | 83.2 | 113.5 | 49.8 | 110.0 |
| 1938 Low | 78.6 | 88.0 | 91.0 | 76.4 | 71.4 | 78.6 | 112.0 | 115.8 | 93.5 | 102.9 |
| Salt Lake | | | | | | | | | | |
| 1937 High | 123.0 | 92.4 | 126.6 | 79.0 | 88.6 | 87.0 | 75.1 | 102.9 | 112.2 | 110.1 |
| 1937 Low | 67.4 | 76.4 | 70.6 | 48.4 | 51.4 | 43.6 | 113.4 | 104.7 | 106.2 | 90.1 |
| 1938 High | 107.8 | 112.9 | 114.2 | 39.8 | 62.6 | 50.8 | 104.7 | 105.9 | 157.3 | 127.6 |
| 1938 Low | 54.0 | 71.1 | 69.8 | 15.8 | 18.6 | 30.8 | 131.7 | 129.3 | 117.7 | 194.9 |
| Sevier | | | | | | | | | | |
| 1937 High | 109.2 | 92.5 | 109.3 | 94.7 | 83.5 | 127.5 | 84.7 | 100.1 | 88.2 | 134.6 |
| 1937 Low | 75.0 | 87.2 | 122.3 | 88.7 | 88.2 | 126.2 | 116.3 | 163.1 | 99.4 | 142.3 |
| 1938 Low | 44.8 | 33.9 | 43.9 | 34.1 | 32.8 | 27.9 | 75.7 | 98.0 | 96.2 | 81.8 |
| Iron | | | | | | | | | | |
| 1937 High | 108.8 | 131.3 | 117.6 | 98.8 | 124.5 | 106.7 | 120.7 | 108.1 | 126.0 | 108.0 |
| 1938 High | 116.1 | 152.9 | 175.4 | 30.6 | 72.6 | 66.6 | 131.7 | 151.1 | 237.3 | 217.6 |
| 1938 Low | 73.3 | 83.0 | 113.7 | 29.4 | 58.7 | 63.4 | 113.2 | 155.1 | 199.7 | 215.6 |
| Average | 89.0 | 89.5 | 102.2 | 60.2 | 65.3 | 75.5 | 102.7 | 116.2 | 121.0 | 135.5 |

*In choosing high and low fertility soils, it was done on the statement of the farmer, and in some cases the difference in what he stated was low and high fertility was not very great. This accounts for the fact that individual varieties sometimes yielded higher on the supposedly lower fertility soils.

Agronomic Data Other Than Yield on Varieties

THE agronomic data for Swedish Select, Markton, and Uton show that there is very little difference in date of heading, date of ripening, plant height, test weight per bushel, and lodging percentage. As an average, Swedish Select was slightly higher in test weight per bushel and amount of lodging. The difference, however, was negligible in each case.

Summary

UTON is a new variety of oats with a large white kernel, resistant to both loose and covered smuts. It was bred at the Utah Agricultural Experiment Station in cooperation with the Division of Cereal Crops and Diseases, Bureau of Plant Industry, U. S. Department of Agriculture. Uton descended from a single plant selection from a Markton x Swedish Select cross.

Uton produces yields as good or better than Swedish Select, the common smut-susceptible variety now grown. There is little difference in other agronomic characteristics such as dates of heading ripening, plant height, and weight per bushel.

(College Series No. 610)