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sweet Spanish strains are adapted

by

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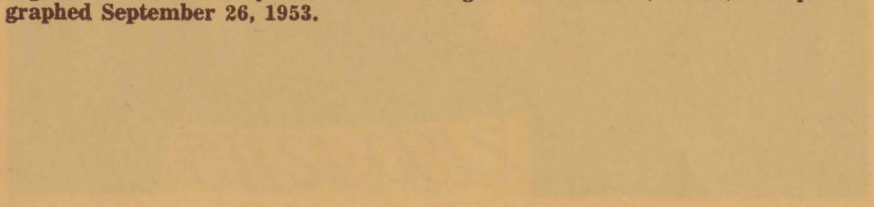
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Figure 1. Fiesta F1 hybrid onion bulbs grown at Parma, Idaho, and photographed September 26, 1953.



Fiesta

A New Hybrid Onion for Use Where Sweet Spanish Strains Are Adapted

By DeLance F. Franklin¹, Henry A. Jones²,
and Clinton E. Peterson³

Onion growers in Idaho and elsewhere in the intermountain west have long been in need of an onion variety in which the yielding capacity of the Yellow Sweet Spanish variety and the storage quality of more pungent varieties are combined. Such an onion has been found in Fiesta, an F1 hybrid resulting from crossing a male-sterile inbred line from Brigham Yellow Globe, B 2190, and a Yellow Sweet Spanish inbred line, B 12115. Other important characters possessed by Fiesta are vigorous seedling emergence, uniformity, earliness, high solids content, and more resistance to purple blotch than Sweet Spanish strains. Fiesta should be investigated by growers and seedsmen as a possible successor to the Yellow Sweet Spanish variety, especially where good keeping quality in storage is desirable.

FIESTA'S BULB CHARACTERISTICS

Fiesta is a solid, highly refined variety in which the shape varies only slightly from that of a true globe. Whenever it varies from this typical shape it tends most often to be a slightly elongated globe. It has well-filled shoulders which sometimes result in a faintly flattened area immediately surrounding the neck. Often, too, the area immediately around the stem plate at the base of the bulb may be slightly flattened. When compared with open-pollinated Yellow Sweet Spanish strains, it is highly uniform in shape despite these variations (See figure 1 on page 2). This is true whether the bulbs are large or small. Fiesta has a small, well-closed and well-filled neck which adds appreciably to its attractive shape.

The scales of Fiesta bulbs are yellowish-copper to copper in color. These scales, three to four in number, adhere well in normal handling.

Fiesta is the result of a "hard x soft" cross and is intermediate in flavor between its two parents.

FIESTA'S YIELDS

Fiesta's yield of U. S. No. 1 onions was significantly greater than the yield of two out of seven commonly used strains of

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Yellow Sweet Spanish tested in 1953 at the Parma Branch Station, where performance trials consisted of six replications of each entry. Only strain D yielded more U. S. No. 1 onions than Fiesta, but in this case the difference in yield between the two was not significant. Fiesta's yield of U.S. No. 1 onions 3 inches in diameter or over was, statistically, equal to yields of 6 out of 7 commonly used strains. Results of these trials are shown in Table 1.

Table 1. Yields of Fiesta and seven different representative strains of Yellow Sweet Spanish onions, Parma Branch Station, 1953.

Variety	Yield, 50-lb. bags/Acre		
	Total	U. S. No. 1	U. S. No. 1 3 inches or more in diameter
Fiesta	1329	1249	657
Yellow Sweet Spanish A	1060	956	528
Yellow Sweet Spanish B	1210	1115	707
Yellow Sweet Spanish C	1478	1190	811
Yellow Sweet Spanish D	1533	1414	926
Yellow Sweet Spanish E	1334	1249	777
Yellow Sweet Spanish F	1160	1020	533
Yellow Sweet Spanish G	1220	1080	747
L.S.D. at 19:1 odds	169	184	199
L.S.D. at 99:1 odds	219	244	264

In addition to the foregoing trials, Fiesta was tested on a larger scale by three growers on farms located near Parma. Each grower planted approximately 1 pound of seed so that the total area occupied by this hybrid at each place was approximately $\frac{1}{3}$ acre. In each trial, Fiesta was planted in rows which alternated with rows of two or more other hybrids in such a way that the grower's own commercial planting could be used as a check. Although the planting design does not permit analysis of the data, Table 2 affords examples of how Fiesta performs under different local conditions as compared with three important strains of Yellow Sweet Spanish at Wilder, Parma, and Payette.

Table 2. Yield of Fiesta compared with that of Yellow Sweet Spanish on 3 different farms in southwestern Idaho, 1953.

Variety	50-lb. bags of U. S. No. 1 Location		
	Wilder	Parma	Payette
Fiesta	1737	1268	1232
B 15-518 x B 12115	1421	1002	1025
B 126 x Peckham Sweet Spanish	1251	—	1286
Asgrow Y-41	1666	—	—
*Yellow Sweet Spanish	1739	1296	1098

* The strain of Yellow Sweet Spanish used at each farm was the strain most commonly used by the respective growers, and each grower used a different nationally-known stock.

FIESTA'S MATURITY

In southwestern Idaho, Fiesta matures approximately five days earlier than the earliest strains of Yellow Sweet Spanish such as Currier's and Imperial Spanish 49. It is approximately 14 days earlier than Riverside Sweet Spanish, Colorado No. 6, and most other common strains of Yellow Sweet Spanish currently grown in Idaho. In Idaho, therefore, its use as an early variety would permit the harvesting of fully matured bulbs during much of the so-called "mid-season" period during which immature and relatively unattractive bulbs are currently shipped for immediate consumption.

FIESTA'S TOTAL SOLIDS CONTENT

To indicate Fiesta's possible use as a variety for dehydration, representative samples of Fiesta grown on three different farms in southwestern Idaho, along with samples of Yellow Sweet Spanish grown on the same farms, were analyzed for total solids¹. Results of these analyses in Table 3 show that total solids in Fiesta from two locations were significantly greater than in Yellow Sweet Spanish. At the third location Fiesta was higher in dry matter than Yellow Sweet Spanish by a difference that closely approached significance at odds of 19:1.

Table 3. Comparison of total solids content between Fiesta and Yellow Sweet Spanish grown on three different southwestern Idaho farms, 1953.

Variety	Total solids at		
	Wilder	Parma	Payette
	Per cent	Per cent	Per cent
Fiesta	11.24**	9.79**	10.14
Yellow Sweet Spanish	9.08	7.41	9.09

**Significantly higher at 99:1 odds.

The value to dehydrators of such differences can be appreciated when it is pointed out that from the Wilder trial, 100 pounds of raw, trimmed Yellow Sweet Spanish would have produced only 9.08 pounds of dehydrated onions, whereas the same amount of raw, trimmed Fiesta onions would have yielded approximately 11.24 pounds of the dehydrated product. From the crop produced at Parma, 100 pounds of raw, trimmed Yellow Sweet Spanish onions would have produced only 7.41 pounds of dehydrated onions, while 100 pounds of raw, trimmed Fiesta bulbs would have produced 9.79 pounds of the dehydrated product. These represent a potential increase in yields of dehydrated onions of 23 per cent and 32 per cent respectively from the use of Fiesta instead of Yellow Sweet Spanish, provided yields of bulbs per acre were equal as they appeared to be in Table 2.

¹ Analyses were made by Ray Dunlap, Chemist, The J. R. Simplot Co., Caldwell, Idaho.

FIESTA'S STORAGE QUALITY

Fiesta's keeping quality in storage is superior to that of the Yellow Sweet Spanish variety as indicated by the performance of the two recorded in Table 4. Here a commercial lot of Fiesta is compared with a commercial lot of an outstanding storage strain of Yellow Sweet Spanish in a good commercial storage.

Table 4. Storage performance of Fiesta compared with that of Yellow Sweet Spanish near Wilder, January 26, 1954.

Variety	Rotted	Sprouted	Total storage loss (rots & sprouts)	Firm-ness ¹	Scales ²	Root Growth ³	Color ⁴
	Per cent	Per cent	Per cent				
Fiesta	0.90	0.00	0.90	4.0	4.0	3.3	4.0
Yellow Sweet Spanish	8.07**	1.88	9.95**	3.2	4.0	3.7	4.0

**Significant at odds of 99:1

¹ Firmness: 1, soft; 5, very firm; 2-4, intermediate.

² Scales: 1, very loose; 5, very tight; 2-4, intermediate.

³ Root Growth: 1, pronounced root growth; 5, no root growth; 2-4, intermediate.

⁴ Color: 1, light straw; 5, dark yellow or brown; 2-4, intermediate.

In this test Fiesta showed a mean loss from rotting of only 0.90 of one per cent by weight, while the Yellow Sweet Spanish gave a mean loss of 8.07 per cent. In addition, Fiesta had no sprouts, while the Yellow Sweet Spanish stock showed a mean weight loss of 1.88 per cent. Thus, the mean difference in total storage loss (rotted and sprouted bulbs) was 9.05 per cent by weight, a highly significant figure. Fiesta was also judged to be firmer than Yellow Sweet Spanish, retained its scales as well, and was of equally desirable color. In this test Fiesta had slightly more root development than the Sweet Spanish check.

Performance of the same two varieties grown at Wilder on the same farm, but stored in a good commercial warehouse at Parma, is shown in Table 5.

Table 5. Storage performance of Fiesta compared with that of Yellow Sweet Spanish in Parma, as observed January 24, 1954.

Variety	Rotted	Sprouted	Total storage loss (rots & sprouts)	Firm-ness ¹	Scales ²	Root Growth ³	Color ⁴
	Per cent	Per cent	Per cent				
Fiesta	2.78	0.00	2.78	4.0	4.0	3.5	4.0
Yellow Sweet Spanish	6.61	1.16	7.76	3.5	4.0	3.8	3.8

Differences not significant at odds of 19:1

¹, ², ³, ⁴ as in Table 4.

Although the differences in storage losses between varieties in Table 5 lacked statistical significance, they are given because they show trends very similar to those in Table 4. Furthermore, Table 5 shows Fiesta to be firmer, to have slightly better color than the Sweet Spanish checks, and to have scale retention equal to them. Again, Fiesta bulbs had slightly more root development than the Yellow Sweet Spanish checks.

Earlier storage data on Fiesta were obtained in 1951 when it was first tested. Although not as complete as the foregoing tests and despite the fact that the data were not analyzed statistically, they are depicted in Table 6 because they appear to corroborate the previous evidence of Fiesta's storage quality.

Table 6. Storage performance of Fiesta compared with that of Colorado No. 6 and Yellow Sweet Spanish, Parma Branch Station, February 10, 1951.

Variety	Rotted	Sprouted	Total storage loss rots & sprouts)
	Per cent	Per cent	Per cent
Fiesta	1.3	0.0	1.3
Colorado No. 6	1.9	4.8	6.7
Yellow Sweet Spanish	12.2	2.4	14.6

Although all of the preceding data point to Fiesta's superior performance in storage, it should be emphasized that the above results will be obtained only when Fiesta is well-grown and properly stored. No variety, however good, can give satisfactory storage under grossly adverse conditions.

FIESTA'S PARENTAGE

The seed parent of Fiesta, B 2190, is an inbred from a shipment of bulbs obtained from J. H. Snyder, Wolcott, N. Y., through Dr. A. G. Newhall, Cornell University. Both A and B lines of B 2190 have been distributed rather widely through the seed trade, but it is not known to what extent they have been increased or whether they are being used in commercial hybrids. The letter "B" preceding 2190 indicates that it is a Beltsville inbred. The letter "A" following B 2190 indicates a male-sterile line. The letter "B" following B 2190 indicates a companion, or maintenance line. Foundation seed has been increased in insect-proof cages at Beltsville, Md., Ames, Iowa, and Parma, Idaho. B 2190 is one of the best seed-producing inbreds that we have tested. The ability to set a good crop of seed is important in an inbred used for the production of single-cross hybrids.

The performance of both the A and B lines of B 2190 in storage at Greeley, Colorado, is given in Table 7. The bulbs were grown at Greeley, placed in storage in late September, and kept under excellent storage conditions in shallow trays. Seed from which these onions were grown was produced at Ames, Iowa, in 1950.

Table 7. Performance of A and B lines of B 2190 in storage at Greeley, Colorado.

Pedigree	Removed from storage	Bulbs	Sprouted	Rotted	Firmness ¹	Scales ²	Root Growth ³	Color ⁴
B 2190 A	March 1-3, '52	665	6	21	4	4	4	4
B 2190 B	March 1-3, '52	538	4	12	4	4	4	4
B 2190 A	March 1-4, '53	495	1	2	4	3	4	3
B 2190 B	March 1-4, '53	581	0	2	4	4	4	4

^{1, 2, 3, 4} as in Table 4.

The data show that under storage conditions at Greeley, Colorado, both the A and B lines of B 2190 keep well at least till the first week in March. There was very little sprouting and rotting, the bulbs remained firm, the scales adhered well, and there was almost no indication of root development at the stem plate.

Pollen Parent of Fiesta. The Pollen parent of Fiesta, B12115, was described by Franklin and Jones¹, and seed has been distributed to the seed trade.

¹ Franklin, DeLance F. and Henry A. Jones. B 12115: A superior new onion inbred for use as a pollen parent in hybridization. Idaho Agri. Expt. Sta. Cir. 125, Feb. 1953.