MAKING BETTER DECISIONS

2002 Colorado Spring Wheat, Barley and Oats Performance Trials

Agricultural Experiment Station

Knowledge to Go Places

Colorado State University, U.S. Department of Agriculture and Colorado counties cooperating. Cooperative Extension programs are available to all without discrimination.
ACKNOWLEDGMENTS

The authors are thankful to, Lot Robinson, Fred Judson, Daniel Dawson, Carroll Bennett (Western Colorado Research Center), and Tom Hooten (Southwestern Colorado Research Center). Most important, the authors are grateful for the cooperation and contributions of land, labor, and equipment made by the following Colorado farmers who consent to having performance trials conducted on their farms: Rick Lewton (Akron, Washington County) and Dutch and Mike Williams (Hayden, Routt County). We also thank C.J. Mucklow, CSU Cooperative Extension for his assistance with our small grain research effort in northwest Colorado and are grateful to Don Obert and Charles Erickson (USDA-ARS Aberdeen) for providing oat and barley varieties for testing in Colorado. Special appreciation is extended to the Colorado Wheat Administrative Committee for financial support of this research.
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Introduction

Making Better Decisions is a publication intended for use by farmers, seedsmen, consultants, agribusiness, and others. Colorado State University’s crop researchers try to provide reliable and unbiased performance trial results in a timely manner to Colorado cereal producers. Good information can lead to better variety selection and faster adoption of higher yielding varieties.

The Spring Cereal publication is a collection of all variety performance trials conducted by Colorado State University researchers working on spring wheat, spring barley, and oats. Crops Testing issues the annual report but the trials are conducted in all four corners of the state by different researchers. Scott Haley screens spring wheat varieties at Akron and Walsh. Merle Dillon hosts high-yield barley, wheat, and oat trials at Center. Mark Stack and Abdel Berrada test barley, wheat, and oat varieties at Yellow Jacket, and Calvin Pearson tests barley, wheat, and oat varieties at Hayden and Fruita. The sum of this collection of work is quite impressive.

CSU’s Crops Testing program publishes current trial results on the Crops Testing Internet page:

www.colostate.edu/Depts/SoilCrop/extension/CropVar/index.html

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Small grain variety performance tests at Hayden, Colorado 2002
by Calvin Pearson

Each year small grain variety performance tests are conducted at Hayden, Colorado to identify varieties that are adapted for commercial production in northwest Colorado. Three small grain variety performance tests (winter wheat, spring wheat, and spring barley) were conducted at Hayden in 2002. The 2002 growing season was very dry and overall yields in the trials were low. The 2002 results provide information about the performance of wheat and barley varieties under high stress conditions. Grain yield in the spring wheat variety performance test averaged 12.0 bu/ac. The highest yielding variety in the spring wheat test was Dirkwin at 18.2 bu/ac with five varieties out-yielding the other six. Grain yield in the spring barley variety performance test averaged 18.4 bu/ac. The highest yielding variety in the spring barley test was Hector at 28.5 bu/ac with eight out-yielding the other fourteen.

Growers in northwest Colorado are limited to only a few crops they can grow because of constraints created by dryland production conditions, a short growing season, limited precipitation, and isolation to markets. Growers in this region of Colorado are supportive of agronomic research that provides them with science-based information that when adapted to their farms can lead to increased crop yields and profits. They are also interested in alternative crops for production in northwest Colorado. The principal cash crop grown in northwest Colorado is wheat. Alternative small grains, such as malting barley, triticale, and specialty wheats (i.e., hard white wheats) are of interest to growers because these crops often create specialty markets that demand a premium selling price. Alternative crops, such as these specialty small grains, are also of interest because they can be grown with production practices and equipment already owned by farmers. During 2002, we conducted winter and spring small grain variety tests that included not only traditional small grains but also some of these specialty small grains. Precipitation during the 2002 growing season for the months of April, May, June, July, August, September, and October was 1.57, 0.23, 0.35, 0.74, 1.90, 1.26, and 1.61 inches, respectively. Precipitation in the Craig/Hayden area varies considerably from month to month and year to year and is the most limiting factor for dryland grain yields.

Table 1. Dryland spring barley performance trial at Hayden1 in 2002 by Calvin Pearson.

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1Trial conducted on Dutch and Mike Williams Farm; seeded 5/6 and harvested 9/4.

Comments:
Twenty-two spring barley entries were evaluated during the 2002 growing season. The experiment design was a randomized complete block with four replications. Plot size was 4-feet wide x 40-feet long with six seed rows per plot. Spring barley was planted at 56 lbs seed/acre. No fertilizer, herbicides, or insecticides were applied. Plots were harvested using a Hege small plot combine.
Table 2. Irrigated spring malting barley performance trial at Center\(^1\) in 2002 by Merlin Dillon.

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LSD\(_{0.05}\) 17 1.9 1.4 2 2 0.6 1.2

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\(^1\)Trial conducted at the San Luis Valley Research Center; seeded 4/8 and harvested 8/8.

\(^2\)Yields based on 48 lb/bu and 12% moisture.

\(^3\)Date 50% of the plants headed; days after June 1.

\(^4\)Grain screening: percent that falls through 6/64 inch screen.

*Plant lodging was low (0-5 %); non-significant differences.

**Site Information:**
- Soil Type: Norte gravelly sandy loam
- Previous Crop: Potatoes
- Herbicide: Bronate at 1 pt/ac
- Fertilizer: Nitrogen; 75 lb/ac dry preplant + 30 lb/ac fertigation
- Irrigation: Center pivot = ET

**Comments:**
Yields were very good this year ranging from 98 to 177 bu/ac; the average was 139 bu/ac. Two Coors experimental varieties produced excellent yields; higher than Moravian 14.
Table 3. Irrigated spring barley performance trial at Yellow Jacket\(^1\) in 2002 by Mark Stack.

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<th>Grain Moisture</th>
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<td>48.8</td>
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<td>29</td>
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<tr>
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<td>9.6</td>
<td>50.4</td>
<td>28</td>
<td>177</td>
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</table>

\(^1\)Trial conducted at the Southwestern Colorado Research Center; seeded 4/23 and harvested 8/26.

\(^2\)Yields based on 48 lb/bu and 12% moisture.

\(^3\)Number of days after January 1.

\(^4\)Rating scale 1-9; 1 = no lodging and 9 = completely lodged.

Site Information:
- Soil type: Wetherill silty clay loam
- Previous crop: Dry bean
- Seeding rate: 100 lb/ac; (8-inch row spacing)
- Fertilizer: 75 lb N/ac broadcast preplant + 20 lb N/ac top-dress
- Herbicide: Harmony Extra 0.5 oz/ac + 2.4-D Ester 8 oz/ac
- Insecticide: Lorsban SG 1 pt/ac. Seed was treated with Vitavax for loose smut.
- Irrigation: 22.5 inches (sprinkler)
- Precipitation: January 1, 2002 thru August 26, 2002: 1.1 inches (long-term average 9.7 inches)

Comments:
- The spring barley variety trial yielded remarkably well notwithstanding the hot and dry conditions that persisted throughout the growing season. Lorsban SG was applied on June 18 to control Russian wheat aphid. The lines ID 242, ID 1269B, and ID 196 were developed with resistance to the Russian wheat aphid.
- The 2-row barleys all had greater test weights (50.7 lb/bu or better) than the 6-row barley types. Colter had the lowest test weight (46.3 lb/bu). The 6-row barley types also were prone to developing late tillers. These tillers had small heads that were still green at harvest. Stress to the barley plant early in the growing season may have caused the plants to produce the late tillers.

Description of spring oat varieties in trials.

<table>
<thead>
<tr>
<th>Variety Name</th>
<th>Origin</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ab406</td>
<td>USDA-ARS-Aberdeen</td>
</tr>
<tr>
<td>Ab502</td>
<td>USDA-ARS-Aberdeen</td>
</tr>
<tr>
<td>Ab8597</td>
<td>USDA-ARS-Aberdeen</td>
</tr>
<tr>
<td>Ab10854</td>
<td>USDA-ARS-Aberdeen</td>
</tr>
<tr>
<td>AbSP19-9</td>
<td>USDA-ARS-Aberdeen</td>
</tr>
<tr>
<td>Ajay</td>
<td>USDA-ARS, ID AES</td>
</tr>
<tr>
<td>Lamont</td>
<td>USDA-ARS, ID AES</td>
</tr>
<tr>
<td>Maverick (Ab1322)</td>
<td>USDA-ARS-Aberdeen</td>
</tr>
<tr>
<td>Monico (AbSP9-2)</td>
<td>USDA-ARS-Aberdeen, MT-ID-CO AES</td>
</tr>
<tr>
<td>Monida</td>
<td>USDA-ARS, ID-MT-OR-WA AES</td>
</tr>
<tr>
<td>Otana</td>
<td>USDA-ARS, MT AES</td>
</tr>
<tr>
<td>Powell</td>
<td>USDA-ARS, ID AES</td>
</tr>
<tr>
<td>Provena</td>
<td>USDA-ARS, ID AES</td>
</tr>
<tr>
<td>Rio Grande</td>
<td>USDA-ARS, ID-CO AES</td>
</tr>
<tr>
<td>Russell</td>
<td>Canada</td>
</tr>
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</table>
Table 4. Irrigated spring oat performance trial at Center\(^1\) in 2002 by Merlin Dillon.

<table>
<thead>
<tr>
<th>Variety</th>
<th>Grain Yield(^2)</th>
<th>Test Weight</th>
<th>Plant Height</th>
<th>Heading Date(^3)</th>
<th>Plant Lodging</th>
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<tbody>
<tr>
<td></td>
<td>bu/ac</td>
<td>lb/bu</td>
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<td>June</td>
<td>%</td>
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<td>247</td>
<td>37.9</td>
<td>48</td>
<td>33</td>
<td>1.3</td>
</tr>
<tr>
<td>Ajay</td>
<td>233</td>
<td>38.1</td>
<td>44</td>
<td>33</td>
<td>0.0</td>
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<tr>
<td>Powell</td>
<td>232</td>
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<td>50</td>
<td>33</td>
<td>58.8</td>
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<tr>
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<td>39.1</td>
<td>56</td>
<td>31</td>
<td>43.8</td>
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<td>53</td>
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<tr>
<td>Ab406</td>
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<td>49</td>
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<td>58.1</td>
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<tr>
<td>Monida</td>
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<td>57</td>
<td>33</td>
<td>81.9</td>
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<td>56</td>
<td>34</td>
<td>76.3</td>
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<tr>
<td>Lamont (HL)</td>
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<td>42.8</td>
<td>58</td>
<td>36</td>
<td>8.8</td>
</tr>
<tr>
<td>Provena (HL)</td>
<td>166</td>
<td>44.4</td>
<td>49</td>
<td>36</td>
<td>1.3</td>
</tr>
<tr>
<td><strong>Average</strong></td>
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<td><strong>39.2</strong></td>
<td><strong>52</strong></td>
<td><strong>33</strong></td>
<td><strong>38.2</strong></td>
</tr>
</tbody>
</table>

| LSD\(_{0.05}\) | 18 | 0.9 | 2 | 1 | 16.0 |

\(^1\)Trial conducted at San Luis Valley Research Center; seeded 4/17 and harvested 9/4.
\(^2\)Yields based on 38 lb/bu and 12% moisture.
\(^3\)Date 50% of the plants headed; days after June 1.

(HL) indicates hulless oat varieties.

**Site Information:**
- Soil type: Norte sandy loam
- Previous crop: Potatoes
- Seed rate: 97 lb/ac, 7-inch row spacing
- Fertilizer: 75 lb/ac preplant + 75 lb/ac + 40 lb/ac (all broadcast dry)
- Herbicide: Bronate at 1 pt/ac

**Comments:**
This trial was located in a spring wheat field and was fertilized excessively. However, this does reveal the lodging tendency and grain yields of the varieties under high yield conditions. **Monico**, a newly released variety from Aberdeen, Idaho, performed very well with an excellent yield (231 bu/ac), excellent bushel weight (39.1), and similar maturity and height as Monida but much lower lodging. Foundation seed of Monico is available from the CSU Southwestern Colorado Research Center at Yellow Jacket, CO. **Maverick** (AB1322), a proposed release from Aberdeen, Idaho looks even more promising with excellent yield, bushel weight, and is less prone to lodging.

Table 5. 5-Yr average irrigated oat performance summary at Center, 1998-2002

*by Merlin Dillon.*

<table>
<thead>
<tr>
<th>Variety</th>
<th>Grain Yield</th>
<th>Test Weight</th>
<th>Plant Height</th>
<th>Heading Date(^1)</th>
<th>Plant Lodging(^2)</th>
<th>Forage Yield(^3)</th>
</tr>
</thead>
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<td>bu/ac</td>
<td>lb/bu</td>
<td>in</td>
<td>June</td>
<td>%</td>
<td>t/ac</td>
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<td>45</td>
<td>32</td>
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<td>4.5</td>
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<tr>
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<td>45</td>
<td>29</td>
<td>43.8</td>
<td>4.0</td>
</tr>
<tr>
<td>Maverick</td>
<td>195</td>
<td>40.8</td>
<td>40</td>
<td>31</td>
<td>1.3</td>
<td>4.1</td>
</tr>
<tr>
<td>Powell</td>
<td>195</td>
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<td>40</td>
<td>31</td>
<td>58.8</td>
<td>4.0</td>
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<tr>
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<tr>
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<td>Ajay</td>
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<td><strong>46.6</strong></td>
<td><strong>4.0</strong></td>
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</table>

\(^1\)Days after June 1.
\(^2\)Plant lodging occurred only one year, 2002.
\(^3\)Forage yields averaged for 3 years, 1999-2001.

**Comments:**
Results show yield advantage for the new varieties Monico, Maverick, and Powell. Monico and Maverick both have very good bushel weight. Monico is the earliest to head while Maverick has good standability.
Table 6. Irrigated spring oat performance trial at Yellow Jacket in 2002 by Mark Stack.

<table>
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<tr>
<th>Variety</th>
<th>Grain Yield</th>
<th>Grain Moisture</th>
<th>Test Weight</th>
<th>Plant Height</th>
<th>Heading Date</th>
<th>Lodging</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>bu/ac</td>
<td>%</td>
<td>lb/bu</td>
<td>in</td>
<td>days</td>
<td>rating</td>
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<tr>
<td>AbSP19-9</td>
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<td>7.5</td>
<td>38.5</td>
<td>36</td>
<td>180</td>
<td>1</td>
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<tr>
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<td>37.4</td>
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<td>181</td>
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<tr>
<td>Monico</td>
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<td>7.9</td>
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<tr>
<td>Ajay</td>
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<td>7.6</td>
<td>38.0</td>
<td>31</td>
<td>180</td>
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<td>Ab8597</td>
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<td>38.1</td>
<td>37</td>
<td>180</td>
<td>2</td>
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<td>39.8</td>
<td>37</td>
<td>184</td>
<td>3</td>
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<tr>
<td>Rio Grande</td>
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<td>7.6</td>
<td>37.9</td>
<td>33</td>
<td>175</td>
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</tr>
<tr>
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<td>45.1</td>
<td>37</td>
<td>185</td>
<td>1</td>
</tr>
<tr>
<td>Russell</td>
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<td>7.6</td>
<td>38.3</td>
<td>38</td>
<td>179</td>
<td>3</td>
</tr>
<tr>
<td>Provena</td>
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<td>9.7</td>
<td>49.4</td>
<td>35</td>
<td>186</td>
<td>1</td>
</tr>
<tr>
<td><strong>Average</strong></td>
<td><strong>144</strong></td>
<td><strong>8.0</strong></td>
<td><strong>39.6</strong></td>
<td><strong>35</strong></td>
<td><strong>181</strong></td>
<td><strong>2</strong></td>
</tr>
</tbody>
</table>

LSD (0.05) 14

1Trial conducted at the Southwestern Colorado Research Center; seeded 4/23, harvested 8/26.
2Yields based on 38 lb/bu and 12% moisture.
3Number of days after January 1.
4Rating scale 1-9; 1 = no lodging and 9 = completely lodged.

**Site Information:**
- Soil type: Wetherill silty clay loam
- Previous crop: Dry bean
- Seeding rate: 100 lb/ac; (8-inch row spacing)
- Fertilizer: 75 lb N/ac broadcast preplant
- Herbicide: Harmony Extra 0.5 oz/ac + 2,4-D Ester 8 oz/ac
- Insecticide: None (seed treated with Vitavax for loose smut)
- Irrigation: 22.5 inches (sprinkler)
- Precipitation: January 1, 2002 thru August 26, 2002: 1.1 inches (long-term average 9.7 inches)

**Comments:**
The oat variety trial yielded remarkably well notwithstanding the hot and dry conditions that persisted throughout the growing season.

Monico performed very well with a yield of 161 bu/ac and 40.5 lb/bu test weight with no lodging. Maverick also yielded very good (162 bu/ac) and it’s relatively short plant height provides superior lodging resistance. Ajay (157 bu/ac) continues to perform very well in southwestern Colorado.

Lamont and Provena are hulless spring oats and consequently had the best test weights. Hulless oats are used as a high-quality feed for horses and dairy cows.

**RELEASE OF ‘MONICO’ A SPRING OAT VARIETY**

United States Department of Agriculture Agricultural Research Service Washington, D.C. and Idaho Agricultural Experiment Station University of Idaho Moscow, Idaho and Montana Agricultural Experiment Station Montana State University Bozeman, Montana and Colorado Agricultural Research Station Colorado State University Fort Collins, Colorado

The Agricultural Research Service, U.S. Department of Agriculture, and the Idaho, Montana, and Colorado Agricultural Experiment Stations announce the joint release of ‘Monico’, spring oat (*Avena sativa*) variety developed cooperatively by Agricultural Research Service, U.S. Department of Agriculture; the Idaho Agricultural Experiment Station, the Montana Agricultural Experiment Station, and the Colorado Agricultural Experiment Station. Monico (M4n Fc∞) is named after the three states joining in its release (Montana, Idaho, Colorado).

Monico originated as a F₁ spaced plant harvested in 1993 at Aberdeen, Idaho, and was given the selection designation of AbSP9-2. It is a selection from the cross 83Ab3119/ ‘Monida’ and was developed utilizing a modified bulk selection program. The parent 83Ab3119 had the pedigree of ‘Cayuse’/76Ab6343 (K71299 (‘Minn II’/Cayuse))/3/’Otana’ //Coker X848-1-1-2/Cayuse). Breeder’s seed of Monico originated from 370 spaced plants grown at Aberdeen in 2000, increased in four-row plots in 2001 and approximately 340 plots were harvested and bulked. Monico was entered in the Uniform Northwestern States Oat Nursery from 1995 through 2001, and grown in replicated trials at
Aberdeen (irrigated) and Tetonia (dryland), Idaho since 1995.

Monico is an early to midseason, relatively tall spring with excellent yield potential under both irrigated and dryland conditions. Juvenile plant growth is erect and immature foliage is blue-green in color. Panicles are equilateral and spreading. Leaf sheath, leaf margins, and culm internodes are glabrous. Kernels of Monico are typically plump, mid-long, creamy-white, and similar in appearance to those of Otana, Cayuse, and Monida.

Monico was first tested in replicated trials in Idaho in 1995. It was widely tested in both irrigated and dryland trials in Idaho and other western states since regional testing in the Uniform Northwestern States Oat Nursery was initiated in 1998. Monico has an excellent yield record in Idaho and other locations in the West. In seven location-years of testing in irrigated trials at Aberdeen, Idaho in 1995-2001, Monico averaged 219.6 bu/A (7841 kg ha\(^{-1}\)) in grain yield. Yields for other varieties in the same trials were 218.4 bu/A (7800 kg ha\(^{-1}\)) for Monida; 206.1 bu/A (7361 kg ha\(^{-1}\)) for Cayuse; and 187.1 bu/A (6682 kg ha\(^{-1}\)) for Otana. In seven location-years of testing in dryland trials at Tetonia, Idaho in 1995-2001, Monico averaged 114.3 bu/A (4083 kg ha\(^{-1}\)) compared to 109.3 bu/A (3894 kg ha\(^{-1}\)) for Cayuse, 108.0 bu/A (3855 kg ha\(^{-1}\)) for Monida, and 94.5 bu/A (3373 kg ha\(^{-1}\)) for Otana. In 18 location-years of testing in irrigated trials in Montana in 1998-2001, Monico averaged 196.7 bu/A (7023 kg ha\(^{-1}\)) compared to 195.2 bu/A (6970 kg ha\(^{-1}\)) for Cayuse, and 181.5 bu/A (6480 kg ha\(^{-1}\)) for Otana. In 25 location-years of testing in dryland trials in Montana in 1998-2001, Monico had an average grain yield of 95.0 bu/A (3391 kg ha\(^{-1}\)) compared to 96.7 bu/A (3452 kg ha\(^{-1}\)) for Monida and 90.8 bu/A (3242 kg ha\(^{-1}\)) for Otana.

Monico is similar in appearance to Monida and Otana for plant type and color. Monico was 1.6 in (4.0 cm) taller than Cayuse, 2.0 in (5.1 cm) shorter than Monida, and 4.1 in (10.4 cm) shorter than Otana when grown under irrigation at Aberdeen. Under dryland conditions at Tetonia, Idaho, Monico was 0.9 in (2.3 cm) shorter than Cayuse, 5.0 in (12.5 cm) shorter than Monida, and 5.4 in (13.8 cm) shorter than Otana. Monico averaged 1.4 d earlier in heading date than Otana and 3.5 d earlier than Monida in regional trials in Idaho and Montana. In 57 location-years of testing in irrigated and dryland trials in Idaho and Montana, Monico demonstrated good test weight, averaging 37.8 lbs/bu (486 kg m\(^{-3}\)). Monida averaged 36.7 lbs/bu (472 kg m\(^{-3}\)) and Otana averaged 38.4 lbs/bu (494 kg m\(^{-3}\)).

Breeder’s seed of Monico was increased in 2000, and foundation seed was produced in 2001. The Montana, Idaho, and Colorado Agricultural Experiment Stations will maintain breeder’s and foundation seed of Monico. Requests for breeder’s seed should be directed to the Coordinator, Foundation Seed Program, College of Agriculture, Kimberly Research and Extension Center, 3793 N 3600 E, Kimberly, Idaho 83341. Requests for foundation seed should be directed to the Director, Montana Foundation Seed Stocks Program, Montana State University, Bozeman, MT 59717. It is requested that appropriate recognition of source be given when this germplasm contributes to research or development of a new breeding line or cultivar. The U.S. Department of Agriculture has no seed for distribution.

**PROPOSED RELEASE OF ‘MAVERICK’ A SPRING OAT VARIETY**

**SELECTION NO.:** 90Ab1322  
**PARENTAGE:** 80Ab988 (PI 578241)/Monida  
**SOURCE:** USDA-Agricultural Research Service, Aberdeen, Idaho  
University of Idaho Aberdeen Research and Extension Center, Aberdeen, Idaho  
**DEVELOPED BY:** Darrell M. Wesenberg  
Telephone: (208) 226-2638  
ARS-USDA, (retired)  
**SUBMITTED BY:** Charles A. Erickson  
Telephone: (208) 397-4162, ext. 185  
ARS-USDA, Aberdeen, Idaho  
FAX: (208) 397-4165

**DESCRIPTION:**  
Growth Habit: spring  
Head: equilateral, medium, spreading  
Rachis: straight  
Glumes: white
HISTORY:

‘Maverick’ was developed cooperatively by the USDA Agricultural Research Service and the Idaho Agricultural Experiment Station. Maverick was selected in 1990 from an F₅ head row and given the selection number 90Ab1322. Maverick has the pedigree of 80Ab988(PI 578241)/Monida. The cross was made in 1984 at Aberdeen, the F₁ and F₂’s were increased as bulks at Aberdeen, and then increased as head rows through the F₅. Maverick was tested in Uniform Northwestern States Oat Nursery from 1993 through 2001. It has been grown in replicated trials at Aberdeen, Idaho under irrigation since 1992 and in irrigated and dryland trials at Tetonia, Idaho, since 1993. Maverick was tested in the Montana Oat trials from 1994-2001. It is a short strawed variety that is suited to irrigated and high moisture areas in Idaho and Montana, and is the type of white hulled, high protein oat favored in the equine industry. Approximately 400 bushels of breeders seed is available in Montana for spring of 2002. This would be a joint release with Idaho and Montana.

Description of spring wheat varieties in trials.

<table>
<thead>
<tr>
<th>Variety Name</th>
<th>Class</th>
<th>Origin</th>
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<td>Washington State</td>
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<td>Hard Red</td>
<td>North Dakota</td>
</tr>
<tr>
<td>Hank</td>
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<td>Hanna</td>
<td>Hard Red</td>
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<td>ID 582</td>
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<td>Ingot</td>
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<td>Jagger (winter)</td>
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<tr>
<td>Pristine</td>
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<td>General Mills</td>
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<tr>
<td>Reeder</td>
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</tr>
<tr>
<td>Russ</td>
<td>Hard Red</td>
<td>South Dakota</td>
</tr>
<tr>
<td>Sky</td>
<td>Durum</td>
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<tr>
<td>Sylvan</td>
<td>Hard Red</td>
<td>Utah/Colorado</td>
</tr>
<tr>
<td>Walworth</td>
<td>Hard Red</td>
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</tr>
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<td>Winsome</td>
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<td>Oregon</td>
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<td>Yecora Rojo</td>
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<td>California</td>
</tr>
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<td>Yu 894-75</td>
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<td>Yu 895-99</td>
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<td>Yu 995-241</td>
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### Table 7. Dryland spring wheat performance trial at Hayden\(^1\) in 2002 by Calvin Pearson.

<table>
<thead>
<tr>
<th>Variety</th>
<th>Grain Yield (bu/ac)</th>
<th>Grain Moisture %</th>
<th>Test Weight (lb/bu)</th>
<th>Plant Height (in)</th>
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</thead>
<tbody>
<tr>
<td>Dirkwin</td>
<td>18.2</td>
<td>10.2</td>
<td>53.4</td>
<td>15</td>
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<td>16.2</td>
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<td>16</td>
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<td>ID 377s</td>
<td>14.1</td>
<td>9.7</td>
<td>57.9</td>
<td>15</td>
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<td>Forge</td>
<td>13.6</td>
<td>9.7</td>
<td>58.4</td>
<td>14</td>
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<td>57.1</td>
<td>14</td>
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<td>Oxen</td>
<td>11.7</td>
<td>9.7</td>
<td>56.5</td>
<td>13</td>
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<tr>
<td>Eden</td>
<td>11.7</td>
<td>9.7</td>
<td>57.8</td>
<td>13</td>
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<tr>
<td>Winsome</td>
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<td>9.8</td>
<td>55.7</td>
<td>13</td>
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<tr>
<td>Grandin</td>
<td>8.3</td>
<td>9.9</td>
<td>57.1</td>
<td>13</td>
</tr>
<tr>
<td>Briggs</td>
<td>8.1</td>
<td>9.5</td>
<td>56.7</td>
<td>14</td>
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<tr>
<td>Walworth</td>
<td>6.9</td>
<td>10.9</td>
<td>53.6</td>
<td>13</td>
</tr>
<tr>
<td><strong>Average</strong></td>
<td><strong>12.0</strong></td>
<td><strong>9.9</strong></td>
<td><strong>56.5</strong></td>
<td><strong>14</strong></td>
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</tbody>
</table>

LSD (0.05) = 5.7

\(^{1}\)Trial conducted on Dutch and Mike Williams Farm; seeded 5/6 and harvested 9/4.

**Comments:**

Eleven spring wheat entries were evaluated during the 2002 growing season. The experiment design was a randomized complete block with four replications. Plot size was 4-feet wide x 40-feet long with six seed rows per plot. Spring wheat was planted at 60 lb/ac. No fertilizer, herbicides, or insecticides were applied. Plots were harvested with a Hege small plot combine.

Grain moisture in the spring wheat variety performance test averaged 9.9% (Table 7). Grain yields averaged 12.0 bu/ac. Grain yield ranged from a high of 18.2 bu/ac for Dirkwin to a low of 6.9 bu/ac for Walworth. Test weight averaged 56.5 lb/bu. Plant height averaged 14 inches. Plant height ranged from a high of 15.5 inches for ID 566 to a low of 12.5 inches for Eden. There was no lodging in the spring wheat variety performance test in 2002.

### Table 8. Dryland spring wheat performance trial at Akron\(^1\) in 2002 by Scott Haley.

<table>
<thead>
<tr>
<th>Variety</th>
<th>Planting Date 1 Low Seed Rate (bu/ac)</th>
<th>Planting Date 1 High Seed Rate (bu/ac)</th>
<th>Planting Date 1 Overall Rate (bu/ac)</th>
<th>Planting Date 2 Low Seed Rate (bu/ac)</th>
<th>Planting Date 2 High Seed Rate (bu/ac)</th>
<th>Planting Date 2 Overall Rate (bu/ac)</th>
<th>Overall Rate (bu/ac)</th>
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<tr>
<td>Grandin</td>
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<td>3.0</td>
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<td>10.5</td>
<td>6.4</td>
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<tr>
<td>Ingot</td>
<td>10.0</td>
<td>3.9</td>
<td>7.0</td>
<td>7.9</td>
<td>7.5</td>
<td>7.7</td>
<td>7.3</td>
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<td>Walworth</td>
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<td>Hanna</td>
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<td>3.5</td>
<td>1.3</td>
<td>2.4</td>
<td>3.6</td>
</tr>
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</table>

**Average** | 8.8 | 4.6 | 6.7 | 5.7 | 4.9 | 5.3

\(^{1}\)Trial conducted on the Rick Lewton Farm.

**Notes:**

- **S** Trial conducted at the Rick Lewton Farm south of Akron, planted into millet stubble. Good soil moisture at planting was followed by minimal rainfall and high temperatures through harvest.
- **S** An identical trial at the Akron Central Great Plains Research Station was abandoned prior to harvest due to absence of rain.
- **S** Both planting date treatments included three replications for each seeding rate and entry treatment. Statistical analysis revealed an extremely high degree of variability within both planting date treatments; no statistical differences were observed between planting dates, seeding rates, or entries.
- **S** Planting date treatments: date 1 = March 11, 2002; date 2 = April 1, 2002.
- **S** Seeding rate treatments: low rate=1 million seeds/acre, high rate=2 million seeds/acre.
- **S** Entries denoted as "CO98S" are experimental spring wheat lines with Russian wheat aphid resistance developed by the CSU Wheat Breeding Program.
Table 9. Irrigated spring wheat performance trial at Center\(^1\) in 2002 by Merlin Dillon.

<table>
<thead>
<tr>
<th>Variety</th>
<th>Grain Yield(^2)</th>
<th>Grain Moisture %</th>
<th>Test Weight lb/bu</th>
<th>Plant Ht</th>
<th>Heading Date(^3)</th>
<th>Grain Protein %</th>
<th>Grain Hardness(^4)</th>
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<tr>
<td>Centennial SW</td>
<td>168</td>
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<td>61.2</td>
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<td>Lolo HW</td>
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<td>59.6</td>
<td>32</td>
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<td><strong>60.0</strong></td>
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<td><strong>25</strong></td>
<td><strong>15.4</strong></td>
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\(^1\) Trial conducted at San Luis Valley Research Center; seeded 4/17 and harvested 9/16.
\(^2\) Yields based on 60 lb/bu and 12% moisture.
\(^3\) Days after June 1.
\(^4\) Grain hardness rating; <40 indicates soft wheat and >40 indicates hard wheat.

**Site Information:**
Seeding rate: 120 lb/ac; durum at 140 lb/ac
Nitrogen: 75 lb/ac dry pre-plant + 75 lb/ac dry post-plant + 30 lb/ac fertigation.

**Comments:**
The spring wheat trial included hard white, hard red, and durum wheats. The results are grouped by market class.
This field got too dry near heading; then more water was applied resulting in late tillers. This drought stress may have affected some varieties differently depending on their stage of maturity. The yield range was very great; from 87 to 168 bu/ac.
Table 10. Irrigated soft white spring wheat performance trial at Center\(^1\) in 2002 by Merlin Dillon.

<table>
<thead>
<tr>
<th>Variety</th>
<th>Grain Yield</th>
<th>Grain Moist.</th>
<th>Test Weight</th>
<th>Plant Ht.</th>
<th>Heading Date(^3)</th>
<th>Plant Lodging</th>
<th>Grain Protein</th>
<th>Grain Hardness</th>
<th>Grain Hardness Rating(^4)</th>
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<tr>
<td></td>
<td>bu/ac</td>
<td>%</td>
<td>lb/bu</td>
<td>in</td>
<td>June</td>
<td>%</td>
<td>%</td>
<td>rating</td>
<td></td>
</tr>
<tr>
<td>Centennial</td>
<td>166</td>
<td>11.0</td>
<td>61.3</td>
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<td>-1.3</td>
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<td>60.1</td>
<td>44</td>
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<td>40.0</td>
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<td>31</td>
<td>14.2</td>
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</table>

LSD\(_{0.20}\) 5

\(^1\)Trial conducted at San Luis Valley Research Center; seeded 4/17 and harvested 9/17.

\(^2\)Yields based on 60 lb/bu and 12% moisture.

\(^3\)Number of days after June 1.

\(^4\)Grain hardness rating; <40 indicates soft wheat and >40 indicates hard wheat.

Site Information:
Irrigation: Center pivot = ET
Seeding rate: 120 lb/ac in 7-inch row spacing
Herbicide: Bronate @ 1 pt/ac  Nitrogen: 75 lb/ac dry pre-plant +75 lb/ac dry post-plant + 30 lb/ac fertigation

Comments:
The yields were exceptional (160 bu/ac) and there was only moderate lodging on most varieties. The test had good precision (CV = 2.2%); however, yield differences were relatively small. Leaf diseases were minimal which produced good bushel weights. Statistical differences were noted in lodging percentages; Centennial, Blanca and ID 582 showed the most lodging resistance. Grain protein differences were also significant; low protein is better for soft white wheats.

Table 11. Irrigated durum wheat performance trial at Center\(^1\) in 2002 by Merlin Dillon.

<table>
<thead>
<tr>
<th>Variety</th>
<th>Grain Yield</th>
<th>Grain Moist.</th>
<th>Test Weight</th>
<th>Plant Ht.</th>
<th>Heading Date(^3)</th>
<th>Grain Protein</th>
<th>Grain Hardness</th>
<th>Ergot(^5)</th>
<th>HVAC(^6)</th>
<th>Grain Hardness Rating(^4)</th>
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<tr>
<td></td>
<td>bu/ac</td>
<td>%</td>
<td>lb/bu</td>
<td>in</td>
<td>June</td>
<td>%</td>
<td>%</td>
<td>rating</td>
<td>rating</td>
<td>rating</td>
</tr>
<tr>
<td>Yu 895-99</td>
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<td>14.0</td>
<td>86</td>
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<td>59.9</td>
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LSD\(_{0.20}\) 10

\(^1\)Trial conducted at San Luis Valley Research Center; seeded 4/17 and harvested 9/16.

\(^2\)Yields based on 60 lb/bu and 12% moisture.

\(^3\)Days after June 1.

\(^4\)Grain hardness rating; <40 indicates soft wheat and >40 indicates hard wheat.

\(^5\)Ergot rating; 0 = none; 7 = very high.

\(^6\)HVAC = Hard, vitreous amber color.

Site Information:
Seeding rate: 140 lb/ac  
Nitrogen: 75 lb/ac dry pre-plant + 75 lb/ac dry post-plant + 30 lb/ac fertigation

Comments:
The durums were also included in the spring wheat performance trial results. This Table 11 lists extra grain quality ratings; ergot rating and HVAC %.

This field got too dry near heading; then more water was applied resulting in late tillers. This drought stress may have affected some varieties differently depending on their stage of maturity. The yield range was very great; from 103 to 126 bu/ac. Dry weather made ergot a nonissue in the grower’s fields this year; however, ergot was high in certain varieties in this trial.
<table>
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<tr>
<th>Variety</th>
<th>Grain Yield</th>
<th>Test Weight</th>
<th>Plant Height</th>
<th>Heading Date</th>
<th>Grain Protein</th>
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<td>bu/ac</td>
<td>lb/bu</td>
<td>in</td>
<td>days</td>
<td>%</td>
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</tr>
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<td><strong>Average</strong></td>
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<td><strong>60.8</strong></td>
<td><strong>26</strong></td>
<td><strong>171</strong></td>
<td><strong>15.6</strong></td>
</tr>
</tbody>
</table>

LSD (0.05) 9

1Trial conducted at the Southwestern Colorado Research Center; seeded 4/23 and harvested 8/22.
2Yields based on 60 lb/bu and 12% moisture.
3Number of days after January 1.

**Site Information:**
- Soil type: Wetherill silty clay loam
- Previous crop: Dry beans
- Seeding rate: 90 lb/ac; (8-inch row spacing)
- Fertilizer: 75 lb N/ac broadcast pre-plant + 30 lb N/ac top-dress
- Herbicide: Harmony Extra 0.5 oz/ac + 2,4-D Ester 8 oz/ac
- Irrigation: 22.5 inches (sprinkler)
- Precipitation: January 1, 2002 thru August 22, 2002: 1.1 inches (long-term average 9.7 inches)

**Comments:**
The spring wheat variety trial yields were below average this year. The check varieties of Sylvan and ID 377s yielded 70 bu/ac and 73 bu/ac compared to their five-year average of 98 bu/ac and 97 bu/ac, respectively. The low yields in 2002 may be due to the hot and dry conditions that persisted throughout the growing season. The grain protein levels indicate that nitrogen was not a limiting factor for yield. Sylvan and ID 377s also headed earlier in 2002 compared to previous years. None of the entries lodged this year. Harvest was two weeks earlier than any spring wheat trial over the past five years at Yellow Jacket.

The CO98S__ entries are experimental lines from Colorado State University with Russian wheat aphid (RWA) resistance. Many of these lines had short tillers with small heads that were late in maturing. Stress to the wheat plant early in the year may have caused the plants to produce the short tillers. The RWA resistant lines also exhibited seed shattering. No insecticide to control RWA was applied in order to subject the experimental lines to RWA feeding pressure. There was moderate RWA activity present in the trial.

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