it silked 1 day before A632, 1 day after A619, 8 days after CM 105, and 12 days after A654 (AES 500).

Plants of SD41 are approximately 150-cm tall with ear placement about 60 to 75 cm above the ground, and they have narrow, dark green leaves, small tassels, and a red cob. Ear length is about 16.5 cm and ears are borne on 11-cm shanks. Ears have 18 rows of medium-small kernels. Moisture content generally has been about 20%, 60 days after pollination. SD41 has very good vigor and ear fill, good stalk strength and husk looseness, and acceptable stay green and roots. It has good combining ability with A632 producing a 4-yr average of 7.90 mg ha⁻¹ compared to 8.36 mg ha⁻¹ for Pioneer 3901 when tested at Brookings.

Corn borer (Ostrinia nubilalis Hubner) resistance ratings on a 1 to 9 scale, averaged 3.5 in trials conducted in 1984-1985. SD41 has good resistance to northern corn leaf blight (Exserohilum turcicum (Pass.) Leonard and Suggs) and good resistance to Diplodia stalk rot (Diplodia maydis (Berk.) Sacc.). Complete data are available on request. Breeder seed stocks are maintained by South Dakota Foundation Seeds, Box 2125, Brookings, SD 57007.

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References and Notes

REGISTRATION OF PENNLINNE 2005, PENNLINNE 9010, AND PENNLINNE 9433 HULL-LESS OAT PARENTAL LINES

PENNLINNE 2005, PI 503527 (Reg. no. PL-24); PENNLINNE 9010, PI 503528 (PL-25); and PENNLINNE 9433, PI 503529 (PL-26) hull-less spring oat (Avena nuda L.) parental lines were released in 1985 by USDA-ARS and The Pennsylvania Agricultural Experiment Station. They combine the hull-less grain trait with other useful characteristics and should be of value as parents to produce improved hull-less cultivars. Average performances of these lines at two locations in Pennsylvania during 1983 and 1984 are given in Table 1.

PENNLINNE 2005 was derived from cross XM74G10, 'Nuprime'/Noble*, made in 1974. Nuprime, a cultivar from France, is the source of the hull-less trait. PENNLINNE 2005 was derived from an F₂ panicle selected in 1978 and was grown in replicated tests during 1981 to 1984. It is early maturing (similar to the hulled cultivar 'Larry') and moderately short with excellent lodging resistance, high yield, and relatively clean threshing grain with good test weight.

The leaves and sheaths of PENNLINNE 2005 are glabrous, leaves have nonciliate margins, and ligules are present. Culms are midsized and glabrous. The panicle is midsized, equilateral, and has a straight to slightly flexuous rachis with moderately short ascending to spreading branches bearing many short hairs. Spikelets bear from three to seven florets and frequently have three glumes, especially at the end of rachis branches. In some spikelets, one glume (and infrequently two glumes) subdents the third or fourth floret. Glumes are glabrous and range from 13- to 21-mm long. Second floret rachilla segments are 6- to 8-mm long, and successive segments are 2- to 6-mm long. Short hairs are present on the rachilla segments. Both the lemma and palea are thin and do not adhere to the glume. The lemma is yellow and glabrous, and without awns or basal hairs. The first lemma ranges from 15- to 20-mm long. A dense fringe of very short hairs is present on the margins of the palea. Groats are pubescent with a dense brush and range from 6- to 10-mm long.

PENNLINNE 9010 was derived from the cross XW75G83, Noble*2/Nuprime made in 1975. It traces to a single F₁ panicle selected in 1978 and was grown in replicated tests during 1981 to 1984. It is early maturing (similar to the hulled cultivar 'Larry') and moderately short with excellent lodging resistance, high yield, and relatively clean threshing grain with good test weight.

The leaves and sheaths of PENNLINNE 9010 are glabrous, except that leaf margins may be sparsely ciliate near the base. Ligules are present. Its culms are midsized with hairs above and below the upper nodes. Its panicle is midsized and equilateral with a straight to slightly flexuous rachis and short ascending to spreading rachis branches. Small hairs are present on the rachis branches. Glumes are glabrous and 16- to 21-mm long. The lemma and palea are thin and do not adhere to the groat. The lemma is yellow and glabrous, and the first lemma is 17- to 21-mm long. Awns and basal hairs are present. The margins of the palea have a dense fringe of small hairs, Spikelets have two to five florets. The rachilla segments have very short hairs. The second rachilla segment is 4- to 7-mm long, and successive segments are 2- to 6-mm long. The huss-less kernels are 7- to 10-mm long and are pubescent with a dense brush.

PENNLINNE 9433 was derived from the cross XM77G157, PENNLINNE 116/Bates*, made in 1977. The hull-less trait came from 'James', which was a parent of PENNLINNE 116 (1). The other parent of PENNLINNE 116 was CI8447, a dwarf possessing the dwarving gene Dw 7. PENNLINNE 9433 traces to an F₁ panicle selection made in 1979, and it was grown in replicated tests during 1982 to 1984. It is short and has lodging resistance, with high yield, and above average test weight.

The leaves and sheaths of PENNLINNE 9433 are glabrous, except that leaf margins are sparsely ciliate near the base. The flag leaf may be nonciliate. Ligules are present. Culms are midsized and glabrous. The panicle is midsized, equilateral, and has a straight to slightly flexuous rachis with midlong, ascending to spreading branches. Spikelets have three to five florets. Secondary and successive rachilla segments are elongated. The rachilla segments have sparse, short hairs. Glumes are 19- to 24-mm long. The lemma and palea are thin and do not adhere to the groat. The lemma is yellow and glabrous, and first lemma is 21- to 25-mm long. Awns usually are absent, but a few weak, straight awns occur infrequently. Basal hairs are absent. A dense fringe of short hairs is present on the margins of the palea. Groats are 6-

### Table 1. Performance of three hull-less oat lines at two Pennsylvania locations during 1983 and 1984.

<table>
<thead>
<tr>
<th>Line</th>
<th>Height</th>
<th>Maturity</th>
<th>Lodging</th>
<th>Yield</th>
<th>Test weight</th>
<th>Groat weight</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>cm</td>
<td>%</td>
<td>kg ha⁻¹</td>
<td>kg m⁻¹</td>
<td>mg</td>
<td></td>
</tr>
<tr>
<td>PENNLINNE 2005 (PL-24)</td>
<td>99</td>
<td>ML</td>
<td>65</td>
<td>3007</td>
<td>337</td>
<td>24.8</td>
</tr>
<tr>
<td>PENNLINNE 9010 (PL-25)</td>
<td>88</td>
<td>E</td>
<td>33</td>
<td>3381</td>
<td>515</td>
<td>22.5</td>
</tr>
<tr>
<td>PENNLINNE 9433 (PL-26)</td>
<td>84</td>
<td>ME</td>
<td>27</td>
<td>3147</td>
<td>493</td>
<td>21.6</td>
</tr>
</tbody>
</table>

1 E = early (similar to Larry cultivar), ME = medium early, ML = medium late (2 days later than Ogle).

2 Average for two tests under severe stress.