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# OAT VARIETIES FOR IDAHO

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Idaho produced 3.3 million bushels of oats from 60,000 harvested acres in 1976, according to estimates of the Idaho Crop and Livestock Reporting Service. This is 25 percent less than oat grain production in the late 1960's and early 1970's. An additional 15,000 to 20,000 acres of oats were harvested as forage in 1976.

Over 40 named oat varieties were tested at Aberdeen and other locations in Idaho from 1972 to 1976. Varieties which performed well in these trials are described in this publication. Cayuse is currently the most readily available variety in Idaho and accounts for most of the oat acreage.

## Disease and Cultural Practices

Compared with other cereal crops in Idaho, oats have relatively little disease problem. Leaf and stem rust, serious oat diseases in most areas of the United States, seldom occur in Idaho. Proper seed treatment will control smuts in susceptible varieties and may also reduce the incidence of certain foot rots. Early seeding will reduce the risk of infection by barley yellow dwarf virus and root, crown and foot rots.

Oats are generally resistant to strains of take-all (*Ophiobolus graminis*) which infect wheat and barley. Rotation of oats with wheat and barley may not significantly reduce the level of inoculum in the soil, however, so these crops following oats may be damaged by take-all. Ergot is less prevalent in oats than in barley and wheat.

Oat yields are reduced significantly on certain soils because of gray speck. This is a problem primarily in extreme northern Idaho and typically occurs on soils with high content of organic matter. Gray speck is caused by a deficiency of available manganese — either an absolute soil deficiency or a deficiency which results from chemical or biological fixation of manganese in the soil.

Research in northern Idaho has demonstrated that manganese fertilization or foliar applications will reduce or virtually eliminate symptoms of gray speck. Cayuse is very susceptible; Park and Random are relatively resistant; Otana and Corbit are intermediate in reaction. Producers should contact their county Extension agent for more detailed information concerning varietal selection and control measures for areas where gray speck is a problem.

## Grain Quality

Test weight or bushel weight has been widely used as a measure of oat quality. The farmer and grain buyer both consider test weight to be an important quality characteristic. Groat percent is a measure of the groat (kernel without hull) or caryopsis content of the oat kernel. Oat varieties with heavy hulls or oats produced under stress tend to be relatively low in groat content.

The biochemical aspects of oat quality, especially protein content, have received increased attention in recent years. Protein data given in this publication, unless otherwise indicated, are for protein content of groats. Whole kernel protein content is usually 4 to 5 percentage points lower than the groat protein value. In general, varieties which are high in yield tend to be lower in protein content than varieties which are intermediate or low in yield.

## Oats for Forage

Oats are sometimes used to advantage in Idaho for green-chop, silage or dry hay. In general, taller adapted varieties of medium to late maturity will produce the highest dry matter yields per acre. Park and Rodney have performed well as forage varieties in Idaho. Preliminary results from trials in Idaho and adjacent states suggest that in favorable environments Cayuse will produce forage yields equal to Park.

To spread the harvest period, growers may wish to consider planting their acreage with two or more varieties which differ in maturity. A seeding rate of 100 to 125 pounds per acre is recommended for forage production. Oats should be harvested for forage at the late-milk to mid-dough stage of maturity. Harvest at this stage of maturity will produce maximum dry matter yields of forage which is relatively high in protein content.

## Varieties

### Cayuse

Cayuse is a high-yielding, short, stiff-strawed, lodging-resistant variety with tolerance to barley yellow dwarf virus

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## Summary of Agronomic Data

Variety	Yield bu./A	Test wt. lb./bu.	Protein* %	Groat content %	Kernel weight g/1000	Height inches	Heading date	
<b>Irrigated — Aberdeen (1973-76)</b>								
Park	155.3	38.2	18.2	73.2	34.5	35	6/23	
Cayuse	157.9	37.3	16.1	70.5	37.4	29	6/18	
Random	164.2	37.0	16.3	71.7	39.4	32	6/19	
Otana	162.4	39.6	16.8	73.7	34.7	35	6/20	
Corbit	167.6	38.6	15.7	69.6	36.6	30	6/20	
<b>Irrigated — Twin Falls (1973-75)</b>								
Park	159.4	38.6	16.0	72.0	34.1	39	—	
Cayuse	169.0	37.4	14.5	69.8	34.5	34	—	
Random	172.2	37.2	14.2	72.6	35.7	36	—	
Otana	173.9	39.5	15.1	72.7	33.7	39	—	
Corbit	176.7	39.1	12.8	68.8	33.8	37	—	
<b>Dryland — Tetonia (1973-76)</b>								
Park	43.2	36.0	18.9	70.2	30.7	—	7/21	
Cayuse	54.6	35.9	16.1	69.6	33.4	—	7/17	
Random	51.4	35.2	17.0	70.0	36.1	—	7/17	
Otana	46.0	38.3	16.5	69.7	31.2	—	7/20	
Corbit	54.8	36.5	16.0	67.6	33.7	—	7/21	
<b>Dryland — Moscow (1973-76)</b>								
Park	82.9	35.5	—	—	—	36	—	
Cayuse	97.1	35.1	—	—	—	33	—	
Random	88.5	34.5	—	—	—	36	—	
Otana	95.2	37.0	—	—	—	37	—	
Corbit	96.6	35.3	—	—	—	30	—	
<b>Dryland — Bonners Ferry (1974-76) (No Mn Fertilizer)</b>								
Park	96.1	35.5	14.4	—	—	32	2.8	Gray Speck (0-10)**
Cayuse	81.1	34.8	13.3	—	—	28	8.3	
Random	125.2	34.0	13.0	—	—	31	1.3	
Otana	94.2	36.2	13.6	—	—	35	5.3	
Corbit	100.9	34.2	12.5	—	—	28	5.5	
<b>Dryland — Bonners Ferry (1974-76) (Mn Fertilizer Applied)</b>								
Park	114.1	35.3	14.9	—	—	35	1.0	
Cayuse	110.7	35.3	12.9	—	—	29	6.3	
Random	140.4	33.5	13.2	—	—	30	Tr	
Otana	115.4	35.3	13.8	—	—	39	2.3	
Corbit	121.1	34.5	11.5	—	—	28	5.3	

\*Protein = N x 6.25. Percentage shown is groat protein content except for Bonners Ferry where whole oat protein content was measured.

\*\*Rating of 0 to 10 with 0 representing no symptoms. 1973-76 average for No Mn Fertilizer summary.

(red leaf). It is susceptible to gray speck in northern Idaho. The kernels are pale yellow. Cayuse heads 2 to 5 days earlier and averages 3 to 6 inches shorter than Park.

Cayuse is adapted over a wide area. It has an excellent yield record in irrigated trials in the northwestern states and also yields well in dryland trials. It has consistently outyielded Park in irrigated trials at Aberdeen and Twin Falls and has equaled or exceeded Park, Random, Otana and Corbit in dryland comparisons at Moscow and Tetonia.

Cayuse is a selection from the cross Craig/Alamo made in 1952 by N. F. Jensen of Cornell University. The Washington and Idaho Agricultural Experiment Stations jointly released Cayuse in 1966.

### **Park**

Park is a high-yielding, stiff-strawed variety with plump white kernels. It is moderately resistant to gray speck in northern Idaho. Park usually yields less than Cayuse, but it is generally superior to Cayuse in test weight and groat per-

cent. It is superior to most adapted varieties in protein content. Park is taller than Cayuse and therefore is preferred by some growers for green-chop, silage or hay.

Park is a selection from the cross Clinton/2\*Overland. Developed cooperatively by the Idaho Agricultural Experiment Station and the Agricultural Research Service, U.S. Department of Agriculture, it was released by the Montana Agricultural Experiment Station in 1953. It was released in Idaho in 1958.

### **Random**

Random is a high-yielding, stiff-strawed, white-kernelled variety with moderate to good resistance to gray speck in northern Idaho. Random has an excellent yield record in trials at Bonners Ferry. It also outyielded Park in trials at Aberdeen, Twin Falls, Teton and Moscow. It is 1 to 3 inches taller than Cayuse and heads about the same time. It has generally averaged lower than Park in test weight and protein content.

Random was developed at the Lacombe Research Station, Alberta, Canada, from the cross Glen/Pendex. It was licensed for sale in Canada in 1971. Limited quantities of seed may be available in Idaho.

### **Otana**

Otana is a relatively tall mid-season oat variety which has plump, short, white kernels. Otana has produced high test weight grain in both irrigated and dryland trials. It has yielded less than Corbit in irrigated trials, but more than Cayuse or Park. In dryland trials at Bonners Ferry in the presence of gray speck, it did not perform as well as Random. In other Idaho dryland trials, Otana yielded less than Cayuse and Corbit, but more than Park. Otana is similar to Park in height and heading date. Although Otana has a relatively good yield record under irrigation, it is too tall for production under irrigation in most environments.

Otana is a selection from a cross of CI 5345/Zanster. It was developed cooperatively by the ARS-USDA and the

Idaho Agricultural Experiment Station, and was released by the Montana Agricultural Experiment Station and ARS-USDA in 1976.

### **Corbit**

Corbit is a high-yielding, relatively stiff-strawed variety with good resistance to lodging. The kernels are pale yellow. It is intermediate in gray speck reaction at Bonners Ferry. It tends to have slightly lower groat protein content and groat percent than Cayuse. Corbit has performed well in irrigated trials at Aberdeen and Twin Falls, averaging about 5% higher yield than Cayuse and higher test weight as well. In non-irrigated trials in the absence of gray speck, Corbit generally performs about the same as Cayuse. In irrigated trials, it has averaged from 1 to 3 inches taller than Cayuse. It has had about the same height as Cayuse in non-irrigated trials.

Corbit is from a cross of Cayuse/Orbit. It was developed cooperatively by the ARS-USDA and the Idaho Agricultural Experiment Station and released by these agencies in 1977. Adequate seed supplies should be available in 1978.

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### **About This Research**

Oat investigations in Idaho are conducted cooperatively by the Western Region, Agricultural Research Service, U.S. Department of Agriculture, and the University of Idaho Agricultural Experiment Station. Trials reported in this publication were conducted in cooperation with U-I College of Agriculture research personnel at Twin Falls, Teton, Aberdeen, Moscow and Sandpoint. Protein determinations were made at the USDA Oat Quality Laboratory, Madison, WI, and the U-I Wheat Quality Laboratory, Aberdeen.

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