

Washington Agricultural Research Center  
Washington State University  
Pullman, Washington 99164

and

Idaho Agricultural Experiment Station  
University of Idaho  
Moscow, Idaho 83844

and

United States Department of Agriculture  
Agricultural Research Service  
Washington, D.C. 20250

## NOTICE OF RELEASE OF MASAMI SOFT WHITE WINTER WHEAT CULTIVAR

'Masami' soft white winter wheat (*Triticum aestivum* L.) (Reg. No. CV-XXX, PI 634715) was developed by the Agricultural Research Center of Washington State University (WSU) in cooperation with the University of Idaho, Oregon State University, and the United States Department of Agriculture-Agricultural Research Service (USDA-ARS). Masami was jointly released by Washington, Idaho, and Oregon Agricultural Experiment Stations and the USDA-ARS in 2004. Masami is targeted for the low to intermediate (<460 mm of average annual precipitation) wheat production regions of Washington State. It was released for its excellent grain yield, cold hardiness, end-use quality, and disease resistance. Masami is named in honor of Masami "Dick" Nagamitsu, a retired WSU wheat researcher.

Masami (WA007916, VO95065, V89046) is a selection from the cross 'MacVicar'/PI561031 generated in 1989. A modified pedigree-bulk breeding method was used to advance early generations. Bulk seed from F<sub>1</sub> plants were used to establish an F<sub>2</sub> field plot. Approximately 150 spikes were randomly selected from individual F<sub>2</sub> plants and the bulked seed was used to establish a single F<sub>3</sub> plot. Approximately 100 F<sub>3</sub> spikes were randomly selected and planted to establish 100 F<sub>4</sub> hill plots, each containing grain from a single F<sub>3</sub> spike. The F<sub>3,4</sub> hill plots were visually evaluated for general adaptation, maturity, and resistance to stripe rust (caused by *Puccinia striiformis* Westend.) and strawbreaker foot rot (caused by *Tapesia yallundae* Wallwork and Spooner =

*Pseudocercospora herpotrichoides* (Fron.) Deighton). Seed from all the plants in each selected F<sub>3,4</sub> hill was used to establish an F<sub>3,5</sub> field plot. Following selection for general adaptation, maturity, uniformity, and disease resistance, F<sub>6</sub> seed was bulk harvested and assessed for grain yield, test weight, and end-use quality. F<sub>1</sub>-F<sub>5</sub> progeny were advanced in field nurseries at Pullman, WA while subsequent generations were advanced in replicated yield trials throughout Washington state. Breeder seed of Masami was produced in 2004 from 2000 F<sub>1,4</sub> heads selected from a pure seed increase at Pullman, WA and planted in head rows under irrigation at Othello, WA.

Masami is an intermediate height, semidwarf cultivar. Spikes are fusiform and midense, with white awns and white glumes that are of medium length and width, wanting shoulders, and acuminate beaks. Kernels are ovate, white, soft, and mid-long. Seed of Masami has a midsize germ with a narrow, mid-deep crease, rounded cheeks with a midsize, short brush. Masami has intermediate juvenile plant growth habit, and flag leaves are erect and not twisted.

Masami has strawbreaker foot rot resistance similar to 'Madsen' (Allan et al., 1989). It is also similar to Madsen for stripe rust resistance. Masami showed resistance to races PST-78, 45, and 43 of *Puccinia striiformis* f. sp. *tritici* in 2003 greenhouse seedling tests performed under low-temperature cycle (dinural temperature gradually changing from 4°C at 2:00 am to 20°C at 2:00 pm) and in greenhouse adult plant tests performed under high temperature cycle (dinural cycle gradually changing from 10°C at 2:00 am to 35°C at 2:00 pm). In field tests conducted under natural stripe rust infections at Mt. Vernon and Pullman WA, from 1999-2003, Masami had lower infection types and severity in later growth stages than the early stages, indicating high temperature adult plant resistance to stripe rust. It also has shown resistance to leaf rust (caused by *Puccinia recondita* Rob. ex Des.) and powdery mildew (caused by *Erysiphe graminis* DC. f. sp. *tritici* Em. Marchal). Masami expresses moderate resistance to cephalosporium stripe (caused by *Cephalosporium gramineum* Nis. & Ika.) and dwarf bunt (caused by *Tilletia controversa* Kühn). Masami usually shows physiological leaf spotting under cool, wet spring field conditions.

Grain yields of Masami typically exceed those of Madsen, 'Eltan' (Peterson Jr., et al., 1991) and 'Rod' (Peterson Jr., et al., 1995). In 64 rainfed field trials in the low to intermediate precipitation zones (<460 mm precipitation) in Washington state conducted from 1998 to 2003, the grain yields of Masami, Madsen, Eltan, and Rod were 4623 kg ha<sup>-1</sup>, 4112 kg ha<sup>-1</sup>, 4435 kg ha<sup>-1</sup>, and 4508 kg ha<sup>-1</sup>, respectively. In 115 tests conducted from 1996 to 2003 encompassing all precipitation zones of Washington state, the grain yields of Masami, Madsen, Eltan, and Rod were 5772 kg ha<sup>-1</sup>, 5389 kg ha<sup>-1</sup>, 5516 kg ha<sup>-1</sup>, and 5805 kg ha<sup>-1</sup>, respectively. Grain volume weight of Masami (761.2 g L<sup>-1</sup>) was higher than Rod (752.2 g L<sup>-1</sup>) and slightly less than Madsen (766.4 g L<sup>-1</sup>) and Eltan (767.7 g L<sup>-1</sup>). The average thousand-kernel weight of Masami (35.9 g) is less than Madsen (42.2 g), Eltan (40.1 g), and Rod (42.7 g). The average plant height of Masami is 85 cm, which is equal to Madsen (85cm), 2 cm shorter than Eltan (87cm), and 2 cm taller than Rod (83cm). Masami [157 d of year (DOY)] headed similar to

Madsen and Rod (157 DOY) and 2 d earlier than Eltan (159 DOY). Growth chamber cold-hardiness tests showed the LD<sub>50</sub> temperature of Masami to be -15.41°C, while Madsen was -12.68°C, Eltan -14.89°C, and Rod -11.34°C.

In tests conducted by the USDA-ARS Western Wheat Quality Lab in Pullman, WA using grain produced in rainfed breeding and commercial variety testing trials in Washington state from 1998 through 2003, composite samples of Masami as compared to 'Stephens' (Kronstad et al., 1978) were: flour protein (8.0 vs. 8.9 %, by volume), near-infrared (NIR) hardness value (33.5 vs. 27.1), break flour yield (49.8 vs. 46.7%, by weight), flour yield (68.2 vs. 67.9 %), flour ash (0.39 vs. 0.40%), sugar snap cookie diameter (9.4 vs. 9.3 cm), and sponge cake volume (1320 vs. 1244 cm<sup>3</sup>). Masami was evaluated by the Pacific Northwest Quality Council in 2004 and found to have acceptable quality for domestic soft white winter wheat uses.

Masami will be protected by US plant variety protection. Seed of Masami will be maintained by the Washington State Crop Improvement Association, under supervision of the Department of Crop and Soil Sciences and the Washington State Agricultural Research Center, and may be obtained by contacting the corresponding author or through the National Plant Germplasm System ([http://www.ars-grin.gov/npgs/\[homepage\]](http://www.ars-grin.gov/npgs/[homepage])).

## REFERENCES

- Allan, R.E., C.J. Peterson, G.L. Rubenthaler, R.F. Line, D.E. Roberts. 1989. Registration of 'Madsen' wheat. *Crop Sci.* 29:1575.
- Kronstad, W.E., C.R. Rhode, M.F. Kolding, and R.J. Metzger. 1978. Registration of 'Stephens' wheat. *Crop Sci.* 18:1097.
- Peterson, Jr., C.J., R.E. Allen, C.F. Morris, B.C. Miller, D.F. Moser, and R.F. Line. 1995. Registration of 'Rod' wheat. *Crop Sci.* 35:593.
- Peterson, Jr., C.J., R.E. Allen, G.L. Rubenthaler, and R.F. Line. 1991. Registration of 'Eltan' wheat. *Crop Sci.* 31:1704.

*Ralph P. Cavalieri*

Director, Washington Agricultural Research Center  
Washington State University

*July 22, 2005*

Date

Yes, the Idaho Agricultural Experiment Station wishes to join in the release of 'Masami' and has signed below.

  
\_\_\_\_\_  
Director, Idaho Agricultural Experiment Station  
University of Idaho  
Moscow, ID 83844

12/12/04  
Date

Yes, the USDA-ARS wishes to join in the release of 'Masami' and has signed below.

  
\_\_\_\_\_  
Administrator, USDA Agricultural Research Service  
Washington, D.C.

3-29-04  
Date

August 30, 2005

**Variance Statement for Masami**

WSCIA

WSU Seedhouse  
Pullman, WA 99164-6420

To Whom It May Concern:

Masami may contain up to a total of 1 in 10,000 (combined) of the following naturally occurring variants:

- Awnless common head
- Red seed
- Leaf color, usually pale green
- reaction to physiological leaf spot (more or less severe)

In addition to the above variants the following observations may be made:

- Height variation (2" to 10 " taller) may occur at the rate of 1 in 10,000 for heads that are otherwise typical for of these varieties. Height variation will be noticeable under higher yielding environments.
- Awn length may be variable: awnletted (short tip awns) to normal.
- Red or tan chaff or awns

These variants described are distinct within the variety and are stable and predictable with a degree of reliability comparable to other varieties of the same kind, and within recognized tolerances, when the variety is reproduced or reconstructed and was originally part of the variety when released.

Sincerely,



Stephen Jones  
Winter Wheat Breeder

PO Box 646420, Pullman, WA 99164-6420  
509-335-3475 • Fax: 509-335-8674 • <http://css.wsu.edu>