



Development and licensing of OWCF-10, a new OSU Clearfield™ SWW variety



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Oregon State University Goals

1. Ensure that Clearfield™ varieties and technologies are available and accessible by Oregon growers at a reasonable cost.
2. Develop a commercialization and licensing approach that can effectively manage intellectual property rights and stewardship requirements of Clearfield™ technologies and BASF and that is usable for other value-added technologies and public-private partnerships.
3. Recoup costs of licensing, PVP, stewardship, and enforcement to ensure viability of the OSU Technology Transfer program.
4. Maintain viability of Oregon's public cereal breeding programs and involve the Oregon wheat industry in decision-making processes, as appropriate and possible.

General conditions and terms for release

1. OSU Clearfield™ varieties will be released under non-exclusive licenses that grant permission to eligible seed dealers to produce, sell, and promote seed of the variety.
2. License applicants will be approved as 'Seed Associates' based on their ability to meet minimum conditions and performance requirements established by OSU and BASF, and their commitment to pay license and royalty fees.
3. Seed dealers interested in a license must submit application with supporting information and \$100 application fee to OSU Office of Technology Transfer. Upon approval, the Seed Associate will pay a one-time license fee of \$2,000. An annual license renewal of \$100 will be charged. A royalty of \$0.02 per pound will be collected on sale of all classes of certified seed.
4. Fees and royalties will be used to offset OSU costs of licensing, stewardship, Plant Variety Protection (PVP), enforcement of PVP and licenses, and provide some funds for research and technology development.
5. Varieties will be protected under title 5 of the Plant Variety Protection Act. Foundation and Registered seed stocks may be sold only to those granted licenses by OSU. Furthermore, all seed sales to growers are to be of Certified seed class. Certified seed may be used to plant a single commercial crop and may not be used to generate seed stocks for replanting. Seed stocks that fail to meet certification standards cannot be sold as seed, nor used as seed.



Grain yields Pendleton	Untrt	4 oz Spring	6 oz Spring	12 oz Spring
ORCF-101	69.9	88.6	93.7	90.8
OR2010007	78.6	93.6	84.6	83.5
FS-4	82.7	89.8	90.4	85.7
ID587	83.7	82.7	79.2	72.8
Stephens	77.6	0	0	0

ORCF-101 Soft White Winter Wheat

- **Pedigree:** FS-4/Malcolm/Spn/Madsen
-F2-derived plant selection from 3-way cross combination
- **Performance**
 - Adapted to NC, NE Oregon; SE Washington; Idaho
 - Grain yield, agronomic characteristics similar to Madsen
 - Grain yield => Stephens; 2-3 days later maturing
 - Resistant to Strawbreaker Footrot, Stripe rust
 - M.Susc. to Ceph stripe, Septoria, Crown rot, Leaf rust
 - End-use quality Similar to Madsen and/or Stephens
- **Resistant to Beyond™ herbicide**
 - Acetohydroxyacid synthetase mutant gene
 - Beyond™ is an Imidazolinone - ALS inhibiting

OSU Seed Associates - Criteria and Performance Requirements

1. An OSU Seed Associate must have produced and sold a certified generation of cereal seed in each of the last three years, is in good standing with state certification agencies, and has not been convicted of any state or federal seed law violations. Seed Associate must carry liability insurance policy.
2. Seed Associate must be capable of timely electronic reporting of sales and inventories through the Internet to the BASF-sponsored database.
3. Seed Associate has signed and is willing to support BASF Clearfield™ Wheat Stewardship Grower Agreement. Seed Associate will be able to explain conditions and purpose of the BASF Stewardship Agreement and, prior to any seed sale, Seed Associate will confirm grower's signature of the Agreement.
4. Seed is to be produced, conditioned, and stored according to applicable rules, regulations, and requirements of ASOCA and state seed certification agencies. Beyond™ herbicide will be applied to all seed production fields. A minimum of 95% of seed must be rated as herbicide tolerant, based on tests by a BASF approved laboratory, to be sold as a class of certified seed.
5. Seed stocks which cannot be sold as a certified class of seed must either be sold into commercial grain channels or destroyed. Documentation of disposition must be provided.
6. Seed Associate shall use due diligence and all reasonable efforts to support the enforcement of PVP, licenses, applicable patents, and BASF Grower Stewardship Agreement by reporting violations to BASF, OSU, or the appropriate state regulatory agency.

Verification, Enforcement, and Penalties

1. Seed and herbicide sales will be monitored through the BASF database to verify grower compliance with PVP and the BASF Grower Stewardship Agreement.

Timelines

1. 'ORCF-101' is a Clearfield™ soft white winter wheat currently proposed for release by OSU. ORCF-101 was tested in the 2002 Statewide Variety Trials and is derived from the cross 'CV-9804'/'Malcolm'/'Stephens'/'Madsen'. ORCF-101 has performed similarly to Madsen for grain yield, adaptation, and end-use quality.
2. We anticipate 4,500 to 5,000 bushels of Foundation Seed of ORCF-101 will be available in August of 2003, based on 50 acres currently under Foundation seed increase.
3. OSU will announce and solicit applications for seed licenses in spring of 2003. Appropriate documentation will be required to warrant that the applicant can meet all eligibility and performance criteria. Licenses will be executed prior to availability of seed in August, 2003. Stewardship training will be provided to Seed Associates during the summer.
4. Certified seed of ORCF-101 will be widely available to growers in fall, 2005. Limited quantities of Certified seed may be available for commercial plantings in fall, 2004.

Appreciation is extended to the Oregon Wheat Commission and BASF for their funding and ongoing support. Appreciation also is extended to members of the OSU Clearfield Wheat Advisory Committee for their help with licensing and variety release issues.

	Grain Yield 2001-02	Grain Yield 2002	Test wt.	Kernel Wt.	Plant Ht.	Heading date	Stripe rust	Straw-breaker Footrot
	15 sites Bu/a	13-site Bu/a	10 site lb/bu	5 site Gm	8 site inch	4 site From 1/1	Rxn	Rxn
ORCF-101	95.8	95.3	88.8	37.7	37	147	R	R
Stephens	88.5	93.7	59.7	37.6	35.5	145	R	S
Madsen	95.0	94.9	59.1	33.3	37.4	149	R	R
Tubbs	-	96.7	58.5	35.9	38	148	MR	R

N=6	Test wt.	Kernel Hard-ness	Flour Yield	Break Flour Yield	Flour Ash	Flour Prot.	Abs.	Cookie Diam.	Cake Vol.
ORCF-101	80.3	32.0	86.6	45.4	0.44	9.4	95.1	9.3	1386
Madsen	61.1	40.5	68.2	48.8	0.44	8.9	55.4	9.3	1248
N=9	Test wt.	Kernel Hard-ness	Flour Yield	Break Flour Yield	Flour Ash	Flour Prot.	Abs.	Cookie Diam.	Cake Vol.
ORCF-101	80.1	36.0	86.8	45.9	0.42	9.7	95.7	9.2	1394
Stephens	60.3	32.0	66.4	44.8	0.39	9.5	55.7	9.3	1228

Growers - Criteria and Stewardship Requirements

1. Growers must read, understand, sign, and abide by the BASF Grower Stewardship Agreement before seed of Clearfield varieties or Beyond™ herbicide can be purchased.
2. Growers must use and purchase Certified seed from an approved Seed Associate. Certified seed may be used to plant a single commercial crop and may not be used to generate additional seed stocks for replanting (i.e., there is no allowance for bin-run, brown bag, or grower-saved seed).
3. Growers are encouraged to follow BASF stewardship recommendations regarding crop rotation, management of fallow weed pressure, use of herbicides with different modes of action, apply herbicide over entire fields for jointed goatgrass control, and limit reliance over-years on ALS-inhibiting herbicides.