

**OREGON AGRICULTURAL EXPERIMENT STATION  
OREGON STATE UNIVERSITY  
CORVALLIS, OR 97331  
June 12, 2006**

**Release of 'Maja' winter feed barley**

Maja is a six-row standard height selection with rough awns and a semi-compact spike. The grain has white aleurone. Maja is a doubled haploid developed from the F1 of the cross of Strider/ 88Ab536. Strider is a winter feed barley with a strong vernalization requirement. 88Ab536 is an experimental line developed by the USDA/ARS program at Aberdeen Idaho. Maja, like the 88Ab536 parent, is a facultative variety: it has a "winter" allele at the Vrn-H1 locus on chromosome 5H but lacks the repressor encoded by the Vrn-H2 locus on 4H. This configuration of vernalization genes can lead to early maturity under some environmental conditions, and this feature could be an advantage in terms of flexibility in planting date, irrigation savings, and drought avoidance. Maja showed promise as malting barley in repeated micro-malting tests, but it was ultimately not approved by the American Malting Barley Association (AMBA). Four hundred and thirteen head rows were harvested at Corvallis, Oregon in July, 2005. Off-type rows were removed prior to anthesis and the remaining rows harvested in bulk. This seed was tagged as "Breeder Class" and sent to Mike Allen, AgriSource Inc. (with a Materials Transfer Agreement) for planting in the Fall of 2005 at Burley, Idaho.

**Performance data**

Maja has been tested for yield, malting quality, and disease resistance over years and at multiple locations in Oregon, Washington, Idaho, and California. Because there is not a Uniform Regional Nursery for winter barley it is not possible to present a simple multi-location data summary. Instead, the multiple station years of data are "imbalanced" in that they do not all include the same check varieties. Furthermore, the data were generated by various cooperators and not all the same environments were used each year. Accordingly, only samples of representative data are provided.

Tables 1 and 2 are excerpted from the University of California (Davis) and University of Idaho (Southwest) data summaries. The full data sets are available at <http://agric.ucdavis.edu/crops/cereals/cereal.htm> and <http://www.ag.uidaho.edu/swidaho/>, respectively. Tables 3 – 7 are excerpted from the University of Idaho (Southeast) data summaries available at <http://www.ag.uidaho.edu/scseidaho/>. Tables 8 and 9 include data from the OSU Breeding program, and these data are excerpted from the Oregon Barley Project Annual Reports available at <http://www.barleyworld.org/osubreeding.php>.

Cumulatively, these data show that Maja is a high test weight selection competitive with commercially available varieties in many environments. In the environments where Maja has been lower yielding, it is much earlier to mature than Sunstar Pride, which is the most widely-grown of the commercially available varieties. This earliness could be an advantage in terms requiring less irrigation, drought avoidance, and perhaps allowing double cropping. Maja has shown excellent

quantitative resistance to barley stripe rust (incited by *Puccinia striiformis* f.sp. *hordei*) in environments where there has been severe disease pressure. This disease is relatively new to the Pacific Northwest, and thus epidemics have been sporadic and not all check varieties are grown at all locations. Maja, and all check varieties except Strider, are susceptible to scald (incited by *Rhynchosporium secalis*). At Corvallis, Oregon (an environment conducive for scald but not a commercial barley production area) these susceptible varieties receive ratings of 7, 8, or 9 on a 1 - 9 scale, where 1 is resistant and 9 indicates scald on the flag leaf. Scald is not usually as severe in the commercial barley production areas of the Pacific Northwest. Maja had a promising malting profile in extensive micro malting tests but after two years of testing the selection was approved by the American Malting Barley Association. The variety has a lower grain protein and enzyme level than is desired for production of lighter beers. With appropriate nitrogen management, it may be possible to increase the grain protein and enzyme levels to meet these requirements.

OSU will not submit Maja for Plant Variety Protection at this time but will do so within the first year of any sale of seed if AgriSource determines that they will proceed with marketing of the variety and PVP is needed. Maja will be exclusively licensed to AgriSource Inc. for a period of five-years. OSU will maintain head row seed stocks. AgriSource will produce breeder, foundation, registered and certified seed stock classes. Seed stocks that fail to meet certification standards cannot be sold as seed, nor used as seed.

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Approved:

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Dean, College of Agricultural Sciences  
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Date