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PRESS RELEASE

Avesthagen granted US Patent for Environmentally Adjusted Crops (EAC)<sup>®</sup> technology for oxidative stress-tolerant Rice

**Bangalore, September 12, 2011:** Avesthagen announced that it has received a patent (Number7994406) by the U.S. Patent and Trademark Office for Rice conferring resistance to environment stress by targeting the Manganese Super-Oxidase Dismutase (MnSOD) gene to the chloroplasts, the site of photosynthesis in plants.

Going forward, the surest solution for increasing productivity in the face of declining water availability and cultivable area and climate change is the use of biotechnological traits that will allow rice and other crops to grow and provide satisfactory yields under stressed conditions like drought, salinity and temperature extremes. At 450 million metric tonnes, Rice is one of the most important cereal crops in the world especially in the densely populated Asian region. Rice normally requires heavy irrigation. By 2050, the global cereal supplies need to increase by 70% from 2250 million MT presently to about 4000 million MT to feed the 9 billion population. Biotech traits normally take 7 to 8 years to be introgressed into commercial varieties and offer an effective method to mitigate specific problems.

The landmark technology involved over-expressing MnSOD gene in rice targeted to the chloroplasts. The research was supported by a Rockefeller Foundation grant during Dr.Villoo Patell's post-doctoral research at NCBS-TIFR and was done in collaboration with VIB (Ghent). Further work was done at Avesthagen.

Normal growth and development of rice plants is affected significantly by environmental stress conditions like high and low temperature, salinity, drought and ultra violet light. Reactive oxygen species are essential to plant cells during biosynthesis, cell defense and cellular signaling, but at the same time the high concentrations of these reactive oxygen species (super oxides) are detrimental to plant growth. These radicals are scavenged by the MnSOD enzyme.

This patent gives Avesthagen significant freedom to operate in the global Agricultural Biotech Industry. According to Dr. Villoo Morawala Patell, the Founder and CMD of Avesthagen, "We constantly aim to provide breakthrough solutions that are advantageous to the farmers and consumers. This new patent therefore, reinforces our commitment to develop novel biotech crops that are eco-friendly and helpful for human health. I acknowledge the Rockefeller Foundation, NCBS-TIFR and VIB for their help and support."

### **About Avesthagen Limited:**

Avesthagen is India's leading integrated systems biology platform company that focuses on achieving convergence of food, pharma and population genetics leading to predictive preventive and personalized healthcare. Avesthagen partners include multiple top 10 global companies in each of its fields of research. Since its inception Avesthagen has grown into one of India's leading healthcare biotech companies. In addition to its agri-biotechnologies product pipeline, it has developed clinically validated botanical bioactives and a strong pipeline of bio-similars.

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