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Category	: International Rice Research Conference
Select Theme	: Sustainable and equitable farming systems
Endorsement email	:
Keyword 1	: Nutrient management
Keyword 2	: Sustainable intensification
Keyword 3	: Sustainable management practices
Title of Entry	: A sustainable approach to improving rice yields and milling quality – case studies from Southern Europe using the Harpin αβ biostimulant
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Select only one type of presentation	: 15 minute oral presentation
Abstract	: Inefficient nutrient use is a major factor limiting rice yields, despite the fact that this crop receives 14% of global fertiliser consumption. The challenge to growers is to increase yield and quality, in an environmentally and economically sustainable manner. To address this, farmers are increasing turning to biostimulants, with biostimulant usage increasing by 10% annually. Biostimulants are materials, other than fertilisers, that promote plant growth when applied in low quantities. Harpin αβ is a protein based biostimulant which activates plant growth and stress-defence pathways. Stimulation of these genes delivers quality improvements, while buffering against abiotic stresses including extreme temperature and the phytotoxic effect of pesticides. Harpin αβ has been tested on over 30 rice varieties across five countries in the Mediterranean region. The biostimulant is applied twice, with the grower selecting two of the following application timings: BBCH 12-14 (2-4 leaves unfolded), BBCH 21-23 (beginning of tillering – three tillers) and BBCH 32 (panicle formation). The particular combination choice is tailored to match the specific crop stresses. In the Iberian Peninsula between 2014 and 2017, there were 24 trials in rice: 14 on Japonica, 5 on Indica and 5 on Clearfield varieties. Trials were run under commercial conditions, using a split plot design. The average yield increase in Harpin αβ treated rice was 10% in Japonica (9402 v 8514 Kg/Ha, P = 0.01), 12% in Indica (8929 v 7989 Kg/Ha, P = 0.08), and 17% in Clearfield (8604 v 7325 Kg/Ha, P = 0.008). In trials at the Ministro da Agricultura, Florestas e Desenvolvimento Rural in Portugal (variety Ariete), two Harpin αβ applications increased yield and dry weight by 7%. Number of panicles were similar in Harpin αβ and control treatments (699 and 709 panicles /m2, respectively), but the biostimulant increased panicle weight by 9%. After processing, cracked grains were reduced by 30% in the Harpin αβ treatment (9.36 v 6.52%), while the percentage of whole grains increased by 8%. With the benefits of Harpin αβ on yield and grain quality extablished, future trials will focus on how Harpin αβ mitigates against the phytotoxic effect of pesticides and reduces crop Read Less»

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