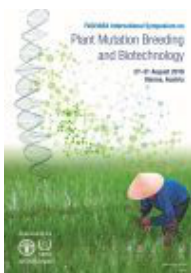


# FAO/IAEA International Symposium on Plant Mutation Breeding and Biotechnology



Contribution ID: 298

Type: Poster

## Development of a Functional Marker for Marker-Assisted Selection of 'Orange Lemma' Mutants to Improve Feed Quality in Barley

Barley is a major cereal crop for feed consumed by a wide range of animals including cows, pigs and poultry as green forage, hay, silage or grain. Multiple mutations exist in barley that can be exploited to develop specific forage barley varieties. Barley 'orange lemma' (rob1) mutants show similar reduced lignin content to mutants in maize or poplar. A range of barley 'orange lemma' varieties exist either as natural or induced mutants. Most genes in the lignin biosynthesis pathway have been well characterized opening perspectives to develop a functional marker for orange lemma using a candidate gene approach. Here we describe the molecular and genetic characterization of orange lemma in different spring barley accessions. Candidate causative mutations underlying the orange lemma phenotype were identified. An allele-specific assay was developed for rob1 in the 'Bowman' genetic background. Genetic and phenotypic analysis of the F1 derived from the rob1 mutant and its parental line showed that orange lemma is a monofactorial recessive trait. Using a segregating F2 population, trait and marker linkage could be demonstrated. Experiments have been initiated to validate the marker assay in additional barley genetic backgrounds to enable marker-assisted backcrossing of rob1 for feed barley improvement.

### Country or International Organization

**Primary authors:** INGELBRECHT, Ivan (IAEA); HOFINGER, Bernhard (Plant Breeding and Genetics Laboratory, Joint FAO/IAEA Division of Nuclear Techniques in Food and Agriculture, Department of Nuclear Sciences and Applications, International Atomic Energy Agency); AKGUN, Eda (Plant Breeding and Genetics Laboratory, Joint FAO/IAEA Division of Nuclear Techniques in Food and Agriculture); MATIJEVIC, Mirta (Plant Breeding and Genetics Laboratory, Joint FAO/IAEA Division of Nuclear Techniques in Food and Agriculture); ALI, Adel (Plant Breeding and Genetics Laboratory, Joint FAO/IAEA Division of Nuclear Techniques in Food and Agriculture, IAEA Laboratories Seibersdorf); JANKOWICZ-CIESLAK, Joanna (Plant Breeding and Genetics Laboratory, Joint FAO/IAEA Division of Nuclear Techniques in Food and Agriculture); JARC, Luka (Plant Breeding and Genetics Laboratory, Joint FAO/IAEA Division of Nuclear Techniques in Food and Agriculture); JANKULOSKI, Ljupcho (Plant Breeding and Genetics Section, Joint FAO/IAEA Division of Nuclear Techniques in Food and Agriculture, IAEA); MUKHTAR ALI GHANIM, Abdelbagi (Plant Breeding and Genetics Laboratory, Joint FAO/IAEA Division of Nuclear Application in Food and Agriculture); GRAUSGRUBER, Heinrich (Dept. Crop Sciences)

**Presenter:** INGELBRECHT, Ivan (IAEA)