



# 20<sup>th</sup> ISMS CONGRESS

## Program and Abstract Book

26-27 February 2024, Las Vegas, USA



[mushrooms.canada](http://mushrooms.canada)



# Introduction

- Welcome from the ISMS President
- Comments from Scientific Committee Chair
- Conference Venue Map
- 20<sup>TH</sup> ISMS Congress Program
- 20<sup>th</sup> ISMS Congress Poster Gallery
- Keynote Precis & Presenter Bios

# Abstracts & Presenter Bios

Table of Contents .....	i-vii
Oral Abstracts & Bios .....	1-34
Poster Abstracts & Bios .....	35-68
Author Index.....	69-70

---

# How to Use This Book

Abstracts in this book have been divided into oral presentations and posters.

## **Oral Presentations**

Abstracts in this book are listed in the same order as they appear in the program - ie the number beside the presentation title in the program corresponds to the same number beside the title in the Book of Abstracts.

## **Posters**

Posters have been loosely grouped into topics and allocated a number primarily for pinning purposes. The number beside the poster title in the Book of Abstracts relates to the order the poster will appear in the poster gallery.

## **Author Index**

Abstracts can also be located via the author index at the end of the book.

# Welcome from the ISMS President

On behalf of the ISMS Executive Committee, it is a pleasure to welcome you to the 20th ISMS Congress (ISMSC) in Las Vegas, Nevada in the USA.

This Congress is being held in conjunction with the 26<sup>th</sup> North American Mushroom Conference (NAMC) to offer delegates a joint event with a seamless smorgasbord of information, inspiration, and networking to deliver a truly memorable experience that will last for years to come.

ISMS Congresses have been held once every four years or so since 1950. The combination of scientists, students, and research workers getting together with growers, traders, and suppliers from all parts of the globe to learn about and discuss the latest discoveries, new technologies, and where the industry is heading, has been a highly successful formula for over 70 years.

The 2024 ISMSC will continue that legacy in Las Vegas with a modern program of oral presentations and poster sessions surrounded by meal breaks and social functions that will provide the all-important delegate interaction opportunities. The diversity of experiences that Las Vegas has to offer will certainly enhance the event.

The Congress program will showcase the work of scientists from 22 countries delivering 60 cutting-edge oral presentations and posters. The *Book of Abstracts* will enable delegates to see what the Congress program has to offer and plan their daily activities. It will also be a handy reference compendium in the office and a practical memento of your time at this potentially life-changing event.

The Congress program includes three high profile and highly entertaining keynote speakers. Thank you in advance to Dr Shiuan Chen, Dr Eoin O'Connor and Dr Lynn Rothschild for giving their time and sharing their knowledge so we can have a greater insight into what is coming down the pipeline.

Planning, organizing and running an event like the ISMSC/ NAMC is a demanding task requiring lots of support from a large cast. ISMS wishes to thank all those who have helped in getting us this far. A special mention for Dr John Pecchia, the Scientific Committee, and Liz Bouzoudis (ISMS Secretariat) for their excellent work in putting the scientific program together. Also to the authors and presenters who have provided such worthy content.

A big shout-out to the American Mushroom Institute for hosting this joint event, particularly the office team of Rachel Roberts, Lori Harrison, and Amy Ducharme.

Thank you to our sponsors and exhibitors who financially underpin this event and provide another source of knowledge and experience for delegates. Make sure you spend plenty of time in the Expo each day. It is amazing who you will meet and what you will learn.

It is also important that I publicly acknowledge the tireless and talented efforts of Elizabeth Bouzoudis in managing the ISMS side of this joint event. Liz is the engine room of the ISMS Secretariat and has put in a truly herculean performance since planning began several years ago.

Before closing, I'd like to take a few moments to reflect on what we as delegates can do to leverage all the hard work that has gone into getting us here today.

No matter where you are from, how long you have been in the industry, or whether you are an ISMS veteran or a first time Congress delegate, you will have the opportunity to be part of a very special "family" experience during your time in Las Vegas and beyond.

The 'international mushroom family' will be important as times become more turbulent - globally and in our worlds at home. Cherish it, nourish it, and respect it and this family will support you for the rest of your life in the industry and even afterwards if you happen to move on.

Experience tells me you will get the most out of your attendance in Las Vegas if you actively participate in all aspects of the program day and night. Attend as many sessions as you can, visit the poster area during the breaks, say hello to as many of your fellow delegates as possible and celebrate the joy of being part of a unique industry at the functions and after parties.

Learn, laugh, and have fun! It's a privilege to be able to do so!



Greg Seymour  
President ISMS  
26 February 2024

---

## Comments from Scientific Committee Chair

On behalf of the ISMS scientific committee, I am pleased to welcome everybody back, in-person, for the 20<sup>th</sup> ISMS Congress being held this year in Las Vegas, Nevada, USA.

We've received over 75 abstracts from 23 countries from authors presenting their most recent research findings from traditional topics centered around substrate utilization and disease control to more current and interdisciplinary fields ranging from mycomaterials to the use of biotechnology to better understand fungal growth and utilization.

With the ever-growing number of challenges being faced by mushroom growers, it is imperative that we continue to improve our understanding of the science behind mushroom cultivation. Growers are facing mounting issues ranging from labor shortages, increased costs, new diseases and an increased scrutiny surrounding sustainability topics.

We hope participants take this opportunity to highlight their research, as well as network and develop potential collaborations that will strengthen our field moving forward, and build upon the framework laid out by previous scientists as well as our current colleagues.

I'd like to thank members of the scientific committee that helped make this Congress possible: Dr. David Beyer, Dr. Benay Gursoy, Dr. Helen Grogan, Dr. Michael Kertesz, Dr. Carlo Nicoletto, Dr. Eoin O'Connor, Dr. Nancy Pyck and Dr. Fabricio Vieira.

John Pecchia Ph.D.  
Scientific Committee Chair

## 11. Beneficial microorganisms joining forces to fight green mold in mushrooms

Poster

***Dr. Svetlana Milijasevic-Marcic*<sup>1</sup>, *Ms. Jelena Lukovic*<sup>1</sup>, *Dr. Ljiljana Santric*<sup>1</sup>, *Mr. Nikola Andjelkovic*<sup>2</sup>, *Dr. Nikola Grujic*<sup>2</sup>, *Dr. Tanja Drobnjakovic*<sup>1</sup>, *Dr. Dejan Marcic*<sup>1</sup>, *Dr. Ivana Potocnik*<sup>1</sup>**

*1. Institute of Pesticides and Environmental Protection, 2. Faculty of Agriculture - University of Belgrade*

The mushroom industry in Serbia is growing rapidly, producing fresh mushrooms of different quality for consumption, processing or export. A lack of effective chemicals for disease control, and pathogen resistance to pesticides, consequentially lead to unsuccessful control of the green mold agent, *Trichoderma aggressivum*. The principles of sustainable use of pesticides require a change in the attitude of composters and mushroom growers towards biological disease control. Altering the microbial communities in compost and casing soil to stimulate the growth of healthy button mushrooms will hopefully increase mushroom yield and green mold control, and provide a practice-based understanding of the microbial community-pathogen relationships. The objective of the study was to implement two indigenous beneficial microorganisms in the cultivation of button mushroom *Agaricus bisporus*: *Bacillus amyloliquefaciens*, strain B-241, a bacterium with fungicidal activity against *T. aggressivum*, and *Streptomyces flavovirens*, strain A06, an actinobacterium which stimulates mushroom yield. Interrelationship between the two beneficial microorganisms was investigated in an experimental mushroom growing room after inoculation with compost green mold, *T. aggressivum* f. *europaeum*, which was added one day after the spawned compost was placed in boxes ( $10^6$  conidia/mL per m<sup>2</sup>). The concentration of beneficial bacterial and actinobacterial suspension was adjusted to  $10^8$  CFU/mL per m<sup>2</sup> and applied at seven-day intervals. The synergy factor (SF) was calculated as a ratio between the observed and expected impact on yield or effectiveness in suppression of disease symptoms. The results indicated strong synergism in promoting *A. bisporus* productivity in both uninoculated (SF=1.56) and inoculated plots (SF=1.62) after combined application of the two beneficial microorganisms. Regarding efficacy in preventing green mold symptoms, the beneficial bacterium and actinobacterium displayed an additive effect (SF=1.05). Further investigation is expected to reveal adequate simultaneous application procedure of the beneficial organisms in order to maximize biopesticidal/stimulatory effects, and reduce environmental pollution. This research was supported by the the Science Fund of the Republic of Serbia: Green program of cooperation between science and industry #GRANT No 3/4848 (2023-25) Microbial recipe for edible mushroom production - MICRO-MUSH, and the Ministry of Science, Technological Development and Innovations of the Republic of Serbia: project No 451-03-47/2023-01/ 200214.

### **Presenting Author Biography - Svetlana Milijasevic-Marcic:**

Svetlana is a principal research fellow, bacteriologist, at the Laboratory of Applied Phytopathology, Institute of Pesticides and Environmental Protection, Belgrade, Serbia. Svetlana has been conducting and developing research on plant and mushroom pathogenic bacteria. More recently, her research program has focused on beneficial bacteria as potential biocontrol agents as an alternative to chemical fungicides, especially in *Agaricus bisporus* and other edible mushroom crops. She participated in several scientific and industrial projects aimed at sustainable crop protection as a work package leader. Svetlana also supervised several masters and one PhD student. In addition to numerous scientific papers, she published two technological solutions regarding substrate disinfection and biopesticide application in the production of edible mushrooms.