# TRAVEL REPORT 2019

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| **Project No: USA219T** | **Project Title: Strategies to enhance the value of on-farm grain storage in South Australia** | |
| **Previous Project(s)** (If this project is on a similar theme to a previous funded project please provide code , title, years and investment details) | | |
| **Organisation: University of South Australia** | | |
| **ACN/ABN:** | | |
| **Start Date:** 1/4/2019 | **Completion Date:** 30/6/2020 | |
| **Address:** Room: J2-09, Building J, School of Engineering, University of South Australia, Mawson Lake Campus, Adelaide, South Australia 5095, Australia. | | |
| **Principal Investigator: Dr. Chandra Singh** | | **% Time** |
| **Location:** | | |
| **Telephone:** | **Mobile:** | |
| **Facsimile:** | **Email:** | |
| **Other Research Staff:** *(Please include name, qualifications, position, organization)* | | **% Time** |
| **Administrative Contact:** Mr. Andrew Beveridge | | |
| **Telephone:** | **Mobile:** | |

| Facsimile: | Email: |
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## CONFERENCE DETAILS

*Provide clear description of the following:*

**About**

The American Society of Agricultural and Biological Engineers (ASABE) is a top worldwide educational and scientific organization dedicated to present a forum to expand awareness of current Agriculture Industry trends, promote and acknowledge innovations in design and technology, and provide opportunities for professional development.

ASABE 2019 was held in Boston, USA (July 7-10) and presented a similar forum to expand awareness of professional development, all with a focus on the economic, political and societal impacts facing the industry. The 2019 Annual International Meeting received a total attendance of 1808, with people from 48 states, 8 provinces and 36 countries. The meeting comprised of 9 major Technical Communities as follows:

- APPLIED SCIENCE & ENGINEERING (ASE)
- EDUCATION, OUTREACH & PROFESSIONAL DEVELOPMENT (EOPD)
- ENERGY SYSTEMS (ES)
- ERGONOMICS, SAFETY & HEALTH (ESH)
- INFORMATION TECHNOLOGY, SENSORS & CONTROL SYSTEMS (ITSC)
- MACHINERY SYSTEMS (MS)
- NATURAL RESOURCES & ENVIRONMENTAL SYSTEMS (NRES)
- PLANT, ANIMAL AND FACILITY SYSTEMS (PAFS)
- PROCESSING SYSTEMS (PRS)

These communities further included different sessions based on the field of research which were progressed with both oral and poster presentations. In addition to the above, there were Young Professional Communities specifically for graduate student for getting more insights into their future carrier aspects.

**Proposed Research Communication**

As a part of the Ph.D., it is important to present the scientific results in front of the international grain storage engineers and scientists to get their feedbacks for further improvements.

Stored grain aeration experiments were conducted at a farm in Balaklava, South Australia for the 2017-18 and 2018-19 seasons and the results were articulated in the form of a scientific paper (attached with the report). The observed results provided a benchmark for developing a stored grain ecosystem model that will help in predicting the required number of fan hours to cool and condition the stored grain depending upon the type of storage volume which will eventually provide a better return value to the farmers. In addition, model optimization procedure can help in making proper decisions on opting best management practices as there will always remain a tradeoff between rapid cooling and economic viability.

Modelling has been proven as a state-of-art practice in the stored grain research area. It provides the basis for understanding the thermo-physical and biological phenomenon occurring within the ecosystem and or by the impact of external factors such as during aeration or analyzing the effect of solar radiation and wind on the silo wall.

A successful model is only possible with proper inputs by the engineers and scientists working solely in this area. A scientific gathering such as conferences provides the appropriate platform for interaction and obtaining diverse knowledge for the similar purpose.

During the meeting, I met different engineers from United States Department of Agriculture (USDA) and Professors from different universities who have at least 20 years of experience working in stored grain research area. And discussed about the intrinsic aspects of my working model to suit the Southern Australia's hot and dry grain conditions. The following were the key contacts made during the meeting:

- Dr. Mark Casada (USDA Research Agricultural Engineer)
- Dr. Michael Montross (Professor, University of Kentucky)
- Dr. Johnselvakumar Lawrence (AGI-IntelliFarms)
- Dr. R.P. Kingsly Ambrose (Associate Professor, Purdue University)
- Dr. Shahabaddine Sokhansanj (Adjunct Professor, University of British Columbia)
- Dr. Griffiths G. Atungulu (Associate Professor, University of Arkansas)

As my paper was more towards introducing the benefits of improvising the silo facility systems using sensors, I was involved in three panel discussions on further improvising the current scenario. My is paper is published in ASABE's Technical Library with the following title:

Panigrahi, S. S., Singh, C. B., & Fielke, J. M. (2019, July). Effect of Mediterranean climatic condition during aeration and silo wall coating in on-farm grain storage in South Australia. In *2019 ASABE Annual International Meeting* (p. 1). American Society of Agricultural and Biological Engineers.

I have also attached my presentation for farmers benefit.

Overall, the general impression I got from this conference was the further approach to take to elaborate my current model's applicability for the betterment of the farmers.

Finally, I would like to thank the South Australia Grain Industry Trust (SAGIT) for giving me the opportunity to attend the ASABE 2019 Conference via their travel funding which covered the part of my expenses. This conference is very interesting and enriched my experience with more information, knowledge and confidence. Also, many thanks should go to my primary and co-supervisor, Dr. Chandra B. Singh and Dr. John Fielke for their generous support and guidance. And looking forward to attend the ASABE 2020 to be held in Omaha, Nebraska.

Thanks

**Shubham Subrot Panigrahi**
Ph.D. Research Scholar: School of Engineering
University of South Australia, Mawson Lake Campus