CIGR 2018

XIX. World Congress of CIGR
(Commission Internationale du Génie Rural)

"Sustainable Life for Children"

22 - 25 April 2018

Antalya, Turkey

PROGRAM & ABSTRACTS' BOOK



www.cigr2018.org

CONTENTS

COMMITTEES 4

SCIENTIFIC COMMITTEE 5

SCIENTIFIC ROGRAMME 6

KEYNOTE SPEAKERS 19

ORAL PRESENTATIONS 21

POSTER PRESENTATIONS 186

SPONSORS & SUPPORTERS 292



25 April 2018

TIME	HALL A	HALL B	HALL C	HALLS FOR CIGR GOVERNANCE MEETINGS
16:30-17:00	**COFFEE BREAK & POSTER SESSION 9** **POSTERS OF "SECTION II - STRUCTURES AND ENVIRONMENT" / "SECTION IV - ENERGY IN AGRICULTURE" "SECTION VII - INFORMATION TECHNOLOGY"** P-077 / Design of a Nonlinear Fuzzy Control Algorithm For Greenhouse Conditions - **Nuri Caglayan, Turkey** P-015 / Pomegranate and Its Place in Landscape - **Sadiye Gozlekci, Turkey** P-079 / Cattle behavior monitoring and classification using inertial measurement unit - **Yingqi Peng, Japan** P-081 / A Research on Spatial Weed Mapping for Variable Rate Herbicide Application - **Ufuk Türker, Turkey** P-083 / Opportunity For The Using Of Nitrogen And Protein Sensors In Agriculture - **Uğur Yegül, Turkey** P-084 / Seeding performance comparison of three different prototypes of a seed singulator used in a precision vacuum seeder - **Hasan Yilmaz, Turkey** P-086 / Analysis of the Chemical Input Usage of Farmers in Pomegranate Production in Antalya Province - **Ibrahim Yılmaz, Turkey** P-096 / Comparison of Sieving Method and Image Processing Method Used to Determine the Size of Shredded Pruning Residues **Mete Yigit, Turkey**			
17:00-18:30	ORAL SESSION 28 SECTION IV - ENERGY IN AGRICULTURE Session Chairs: **Tadeusz Julizewski, Poland - Birol Kayışoğlu, Turkey** OP-063 / Assessment of Emissions and Combustion Efficiency of Palm Tree Pruning Residue Pellets **Hasan Yilmaz, Turkey** OP-064 / Performance of the valonia oak waste pellet production line **Oğulcan Esmer, Turkey** OP-066 / Investigation of Moisture Content, Particle Size and Pellet Die Geometry on Sawdust Pelletizing Characteristics By Means of The New Type Pelletizing Test Device **Sina Haghighat, Turkey**	ORAL SESSION 29 SECTION VII - INFORMATION TECHNOLOGY Session Chairs: Qin Zhang, United States - Bahattin **Akdemir, Turkey** OP-127 / A context change of agriculture in Japan **Sakae Shibusawa, Japan** OP-128 / Smart technologies as drivers for next generation agriculture **Leisa Armstrong, Australia** OP-111 / Prediction of Soluble Solids Content of Jackfruit Using Shortwave Near Infrared Spectroscopy **Nazmi Mat Nawi, Malaysia** OP-112 / An online DSS for optimisation of traffic in fields with controlled traffic farming (CTF) **Allan Leck Jensen, Denmark**		
18:30-19:00	CLOSING CEREMONY			
19:00-20:00	CIGR GENERAL ASSEMBLY			

26 April 2018

Technical Tour

Departure from the hotel - 09:30
Please do remember to bring your technical tour voucher which is delivered with your name badge

P-084 [Section VII: Information Technology]

SEEDING PERFORMANCE COMPARISON OF THREE DIFFERENT PROTOTYPES OF A SEED SINGULATOR USED IN A PRECISION VACUUM SEEDER

Emre Ozdemir[1], Gokhan Kunt[1], Hasan Yilmaz[1], Davut Karayel[1], Mehmet Topakci[1], Huseyin Kursat Celik[1], Ilker Unal[2]

[1]Department of Agricultural Machinery and Technology Engineering, Faculty of Agriculture, Akdeniz University, Antalya, Turkey
[2]Department of Mechatronic, Technical Science Vocational School, Akdeniz University Antalya, Turkey

Nowadays, the additive manufacturing technology is becoming a very popular prototyping and manufacturing method in various manufacturing industries. The technology promises many advantages when it is compared to traditional production methods specifically for the components which have complex structural features, however, it would not be wrong to say that this technology has not been actively utilised in the agricultural machinery design and manufacturing industry yet. In a mechanised seeding operation, pneumatic precision seeders have been commonly used in agricultural production. In the seeding process, seed singulator components are the key functional components of the seeders. The seed singulator is an equipment that is positioned in seed metering unit to hold single seed in each hole while the disc rotates. It is important to keep the seeds with negative air pressure on each hole on the seed disc during the seeding operation, however, due to the physical structure of the seeds and singulator design, seed singulator may not work efficiently and it may cause doubling the seeds on one hole or the seed can not be vacuumed on a hole of the disc. This significantly affects the seed uniformity and crop yield. In this study, three different seeding singulators were modelled and their prototypes were produced by additive manufacturing technique (FDM: fused deposition modelling). Physical experiments were conducted with corn seeds on the prototypes in order to observe their seeding performance. Physical prototypes produced through additive technology provided easy and deeper understanding of seeding performance. Quality of feed index and total of multiple and miss index of singulators mounted on the disc are determined by the video capturing technique. Finally the quality of feed indexes of the original (C) and newly generated (P1, P2, P3) seed singulator models have been compared. According to captured images from video for each singulator experience C, P1, P2 and P3 singulators performances (quality of feed index) have been found as 96.35%, 97.92%, 97.92% and 99.48%, respectively. The results showed that newly generated singulator prototypes performances were found higher than the original singulator. Besides, P3 singulator performance were found highest than the other prototypes. The results are presented in a format which can be used in future research and industry in design of seeders components.

Keywords: Precision vacuum seeder, seed simulators, seed metering, additive manufacturing, rapid prototyping

