



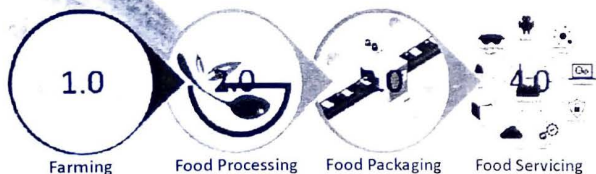
## Conference Programme & Abstract

# ASIC 2018

## AGRIFOOD SYSTEM INTERNATIONAL CONFERENCE

**"Agrifood system towards Agriculture 4.0 and delivery of Sustainable Developments Goals (SDGs)"**

Padang, West Sumatra, Indonesia, 4-6 September 2018



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SM-16

### Aggregate Stability Of Inceptisols Under Seasonal Crop Farming At Foot Slope Of Mount Singgalang, In West Sumatera Indonesia

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Soil aggregate stability can be affected by inmanagement given to a piece of land. For seasonal crop farming, the land is used to be intensively cultivated. This will affect soil OM content as well as the aggregate stability. A research on soil aggregate stability assessment was aimed to determine the effect of seasonal crop cultivation at different levels of slope on aggregate stability of Inceptisols. The research was conducted using survey method. Soil samples were taken in the field from 0-20 cm soil depth at three different slopes (0-8%, 8-15%, 15-25%) and also from secondary forest (8-15%) as a comparison in Koto Laweh and Pandai Sikek, foot slopes of mount Singgalang, West Sumatera Indonesia. The research was conducted from February to July 2018. The altitude of the research sites were  $\geq 900$  m asl with geographical position  $100^{\circ}19'52''$  E -  $100^{\circ}23'38''$  E and  $0^{\circ}23'32''$  S -  $0^{\circ}26'29''$  S in Koto Laweh, and  $100^{\circ}20'27''$  E -  $100^{\circ}23'41''$  E and  $0^{\circ}23'3''$  S -  $0^{\circ}24'38''$  S in Pandai Sikek. Parameters analyzed were soil texture (sieve and pipette method), SOM (wet oxidation method), soil aggregate stability (dry and wet sieve method), C/N ratio, and clay mineral (XRD method). Based on laboratory analyses, aggregate stability index of Inceptisols at three slope positions was unstable 35.53-46.23, even though the soil had high SOM content 5.13-9.55%. High SOM content did not much affected the soil aggregate stability. This seems to be affected by the soil texture. Since the texture was dominated by coarse size particles especially sand, the ability to floccul was very low. High OM content of the soil was also due to low decomposition process as affected by low temperature at high altitude area. This was proved by the C/N ratio between 8.80-29.27. Soil texture was dominated by clay particles (36.33-43.62%). Clay minerals dominating the soil were crystobalite and quartz or silica-oxides having less effect on soil aggregate stability. However, some amount of iron-oxide (Fe-oxides) found in the soil could improve cementation process and soil aggregate of the soil.

SM-17

### Run Off Prediction In Some Land Units Using SCS (Soil Conservation Service) Method In Tarusan Watershed Koto XI Tarusan District

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Conversion forest land to mix cropping were found in the Tarusan watershed. Continuous land clearing especially on steep slopes can increase run off and erosion on a land. This study aims to predict the volume of run off that occurs in the watershed Tarusan used Soil Conservation Service (SCS) method. Methods in the field used survey method and soil samples collected in 11 land units by purposive random sampling. Furthermore, texture, soil permeability organic matter was analyzed in the Laboratory of Soil Department Agriculture Faculty, Andalas University, Padang. Data analysis of soil samples is used as a variable to predict run off. The results showed that the highest run off volume found in SL 11 was 179.47 mm with the use of paddy fields, Ultisols, slope 0-15%, the lowest run off volume found at SL 1, SL 4 and SL 8, ie 0, 11 mm with forest land use, Inceptisols, slopes that vary (0-45%). Whereas changed in forest land to mixed cropping indicate an increase in run off to 66.57 mm. To minimize run off that occurs in rice fields should be made a good drainage, while for mix cropping for steep slopes should using by soil conservation practices.

Keywords: Run Off, Soil Conservation Service, Land Unit

ASIC 2018 ABSTRACT