AN EXPERIMENTAL STUDY OF MES (METHYL ESTER SULFONATES) SURFACTANT FROM JATROPHA (Jatropha curcas L.) FOR ENHANCED WATERFLOoding

1)2)Riztiara Nurfitri, 1)3)Erliza Hambali and 3)Dadang Rukmana

1) Department of Agroindustrial Technology, Faculty of Agricultural Technology, Bogor Agricultural University, IPB Darmaga Campus, PO Box 220, Bogor, West Java, Indonesia email : diademawinchester@yahoo.com
2) Surfactant and Bioenergy Research Centre, Bogor Agricultural University, IPB Baranang Siang Campus, Bogor, West Java, Indonesia
3) BP MIGAS, Wisma Mulia Building, PO Box 12710, Gatot Subroto, South Jakarta, Indonesia

ABSTRACT

Year by year, the production of petroleum decreases but its demand increases. The world will get the energy crisis if that condition happens continuously. The main cause of low production of petroleum in Indonesia is the majority Indonesia’s oil wells being mature field/brown field and the discovery of new oil field in small scale. Indonesia focuses on maximize oil recovery in brown field because its oil production decreases naturally up 15% in total production. In recent years, the field of enhanced oil recovery has grown become more popular due to a combination of stagnant oil production and low recoveries by conventional methods. Many fields use unconventional method like enhanced oil recovery (EOR) which is tertiary oil recovery phase. One way of EOR is chemical flooding which uses surfactant for injection. Surfactant is injected to water and it is known as enhanced waterflooding. Generally, surfactant of petroleum sulfonates is used for oil recovery. This surfactant has many weaknesses such as resistance to water hardness, susceptible detergency to high salinity and being imported with expensive price. Due to these weaknesses, therefore it trigger to get surfactant substitute like MES (methyl ester sulfonates) that is synthesized by biooil. One of biooil is Jatropha oil. The study was aimed to know experimental of surfactant formula for enhanced waterflooding in fluida sample of oil field and synthetic core sandstone. The result showed that injection of surfactant 0,2 PV gave the influence differently to oil recovery. The best condition was surfactant 0,2 PV with the soaking time of 12 hours. This formula gave the highest of incremental total oil recovery 61,07%. The number were resulted from 47,73% waterflooding and 13,34% surfactant injection. Surfactant formula gave the good performance of compatibility, thermal stability, phase behavior and filtration test.

Keywords : Jatropha, Surfactant, Methyl Ester Sulfonates, Enhanced Oil Recovery, Waterflooding