

INTISARI

Reklamasi *bioengineering* di kawasan pesisir Kecamatan Srandakan, Kabupaten Bantul, Daerah Istimewa Yogyakarta dilakukan dengan menanam Cemara Udang di sepanjang pantai. Hasilnya, saat ini iklim mikro di area tersebut menjadi lebih nyaman sehingga dapat dimanfaatkan PT.Indmira serta warga untuk pertanian. Komponen utama pendukung reklamasi ini adalah ketersediaan air. Menurut warga, saat musim kemarau elevasi air tanah menurun dan salinitasnya meningkat. Cemara Udang dapat tumbuh optimum jika sistem perakarannya mampu memperoleh air tawar sesuai kebutuhan. Oleh karena itu analisaimbangan air, analisa kualitas air dan upaya mengurangi defisit air perlu dilakukan.

Penelitian dilakukan selama 18 Juni – 31 Agustus 2013. Imbangan air tanah dilakukan untuk mengetahui ketersediaan air tanah di kawasan pesisir. *Inflow* berupa aliran air tanah masuk ke sistem dan infiltrasi sedangkan *outflow* berupa pengambilan air tanah dan aliran air tanah keluar dari sistem. Analisa kualitas air bertujuan untuk mengetahui pengaruh air laut dan kelayakan air untuk irigasi berdasarkan pH, DHL dan salinitas pada 7 titik sampel. Terakhir, alternatif desain I (optimasi *recharge* saluran), II (optimasi *recharge* dan mengurangi pengambilan air tanah) dan III (optimasi *recharge*, mengurangi pengambilan air tanah dan pengaturan jadwal tanam) disimulasikan untuk mengurangi defisit air dan mempertahankan elevasi air tanah supaya Cemara Udang mampu mendapatkan air tawar.

Imbangan air tanah mengalami defisit sebesar 11.656 m^3 . Salinitas dan DHL pada saat *spring tide* lebih tinggi daripada saat *neap tide*. Saat musim kemarau, DHL dan salinitas meningkat. Sebagai air irigasi, air di titik 1 buruk sedangkan 6 titik lainnya masih layak. Cemara Udang mampu mendapat air tawar jika muka air tanah berada pada elevasi + 4,00 m atau lebih. Selama penelitian, air tanah rerata berada pada elevasi +3,93 m. Alternatif desain I mengurangi defisit sebesar 9,12% dan muka air tanah rerata berada pada elevasi + 3,98 m. Alternatif desain II mengurangi defisit sebesar 69,91% dan muka air tanah rerata berada pada elevasi + 4,35 m. Alternatif desain III mengurangi defisit sebesar 75,21% dan muka air tanah rerata berada pada elevasi + 4,39 m. Desain III yang merupakan alternatif terbaik perlu tambahan air untuk setiap 170 m panjang saluran sebesar 4,94 l/s.

Kata kunci: Reklamasi, *Bioengineering*, Imbangan Air, Sistem Tata Air

ABSTRACT

Bioengineering reclamation in coastal area of Srandakan Village, Bantul Regency of Daerah Istimewa Yogyakarta conducted by planting pine along the coast. As a result, the current microclimate in the area has changed becoming more comfortable therefore such situation could be used by PT.Indmira and the farmers for agriculture. The main component of this reclamation is the water availability. According to the citizens, during the dry season ground water elevation decreased and salinity increased. Pine grow optimally if the root system is able to obtain fresh ground water as much as necessary. Therefore, the analysis of the water balance, water quality and reducing water deficit needs to be conducted.

The study was conducted since June 18 to August 31 2013. Groundwater balance analysis was purposed to determine the availability of groundwater in coastal areas covering 82,787 m². Input flow is the groundwater flow into the system and infiltration whereas the outflow is water out taken by pumping and ground water flow out of the system. Water quality analysis was conducted to determine the influence of the tides and the feasibility of water for irrigation by using pH, salinity, and EC. Samples were taken at 7 points. Lastly, some alternatives are simulated to reduce water deficit and maintain ground water elevation in order the root of pine could take fresh water. Those alternatives are alternative designs I (by optimizing water recharge), II (by optimizing recharge, and reduce ground water pumping) and III (by optimizing recharge, reduce ground water pumping and organizing cropping schedule).

Groundwater balance deficit is 11.656 m³. Changes of salinity and conductivity during the spring tide is higher than neap tide. On the dry season, EC and salinity increase. As irrigation water, the water in point 1 is bad water while six other water point are vary from less good to very good qualities. Roots of pine is able to obtain groundwater independently when the ground water level is at elevation + 4.00 m or higher . During the study period , the average ground water elevation was +3.93 m. Design alternatives I reduce the deficit by 9,12% and maintain average ground water level at elevation + 3,98 m. Design alternative II reduce the deficit uo to 69,91% and maintain average ground water level at elevation + 4,35 m. Design alternatives III reduce the deficit by 75,21 % and maintain average ground water level at elevation + 4,38 m. Design III is the best alternative need extra water for every 170 m long channel by 4,94 l/s.

Keywords: Reclamation, Bioengineering, Water Balance, Water system.