



## INTISARI

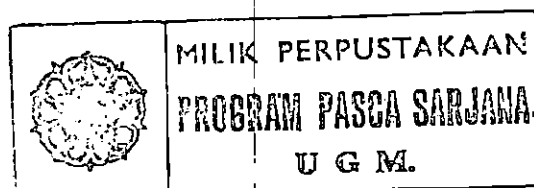
Penelitian pemanfaatan aliran air permukaan dan penerapan teknologi sistem konservasi terhadap faktor lingkungan di Sub DAS Keji dilaksanakan di Desa Keji Kecamatan Ungaran Kabupaten Semarang yang termasuk ke dalam Mikro Sub DAS Keji. Dalam penelitian ini ditempuh dua tahapan kegiatan penelitian yaitu : (1) pemanfaatan aliran air permukaan dengan cara pembuatan embung dan (2) memperbaiki kondisi biofisik sub DAS, kedua kegiatan tersebut mempunyai tujuan (a) meneliti besarnya pemanfaatan aliran air permukaan, dan penerapan teknologi sistem usahatani konservasi, (b) meneliti pemanfaatan aliran air permukaan terhadap optimalisasi sistem usahatani konservasi dan, (c) meneliti respon petani terhadap sistem usahatani konservasi serta tingkat pendapatan ekonomi rumah tangganya.

Metode yang digunakan berupa penelitian dimana tanaman buah-buahan (rambutan dan durian), tanaman semusim, pakan ternak ditata pada lahan yang telah dteras dengan sistem usahatani konservasi. Pada daerah atas dibuatkan embung secara permanen untuk menampung air hujan dan aliran permukaan dan dimanfaatkan sebagai pengairan untuk tanaman pada musim ketiga (kemarau). Kemudian hasil dari penerapan teknologi introduksi tersebut dimintai tanggapannya kepada petani peserta penelitian dan petani di sekitar lokasi penelitian.

Parameter yang diamati dan analisis yang dipakai meliputi sedimentasi dengan analisis sederhana; Banjir dengan analisis  $Q_{max}/Q_{min}$ ; kekeringan dengan analisis model Evaporasi Aktual / Evaporasi Tanaman (ETA/ET Crop); Tingkat produktivitas menggunakan peningkatan produksi pertanian permusim tanam, kelayakan teknologi introduksi dengan Margin Benefit Cost Ratio (MBCR), tingkat pendapatan B/C ratio dan persepsi petani dengan analisis difusi inovasi.

Hasil dari penelitian menunjukkan bahwa efektivitas embung dalam menampung aliran permukaan baru mencapai 0,153% sehingga untuk mencapai efektivitas 100% dibutuhkan jumlah embung sebanyak 626 buah. Tebal sedimen pada embung satu 32 cm dan pada embung dua 18 cm efektivitas embung dalam menampung sedimen baru mencapai 12,29%, debit maksimum ( $Q_{max}$ ) tertinggi terjadi pada tanggal 19 Desember 1999 dengan respon waktu selama 5 jam. Tingkat kekeringan (ETA/ET crop) pada komoditas yang ditanam berkisar dari 0,61 sampai 0,94; Hasil pilipan kering jagung dari 0,75-5,36 ton/ha/MT; biji kering kacang hijau 0,57 ton/ha/MT dan ubi segar ubi kayu dari 5,31 - 6,38 ton/ha/MT, dengan nilai MBCR terhadap teknologi introduksi pada lahan dengan kemiringan di bawah 15 % sebesar 1,28 dan B/C rasionya dari 1,03-1,67 per musim tanam serta persepsi petani terhadap komponen sistem usahatani konservasi berkisar dari 20,64 % - 93, 66%; Persepsi tertinggi pada teknologi konservasi vegetatif dan persepsi terendah pada teknologi embung.

Kata kunci : Aliran Air Permukaan - Teknologi Sistem Usahatani Konservasi - Faktor lingkungan



## ABSTRACT

A Sub River Basin (DAS) in an ecosystem with living organism and their environment that dynamically interact with each other and interdependence among the components that make up the environments. Sub DAS management is a development effort which includes a comprehensive protection of a DAS in such a way that ensures the productive use of all natural resources. The result of this effort reflects the existence of water composition along with its quality, sustainable productivity of and the necessities of life continuous productivity of plant.

When the capability of supporting power of Sub DAS, one form of damage that occurs is deterioration of the physical and chemical properties of soil, which later affects its productivity, causing drought as well as floods due to the soil's decreasing capacity, all of which will affect the environment in anticipation of this condition, it is necessary to adopt two research actions, namely: (1) utilization of the run-off flowly making embankments, and (2) improving the biophysical condition of Sub DAS by applying the conservation farming operation technology. The two strategies in to study (a) the extent to which the run-off flow is utilized and the application of conservation farming operation technology; (b) the utilization of run off flow towards the optimization of conservation farming system, and (c) the farmer's response to the conservation farming system as well as the household income levels.

The method used is research into the micro catchment area of Keji Sub DAS where fruit crops (rambutan dan durian), annuals, and animal feed are arranged on terraced soils. In the upper area, permanent embankment were built to store rainwater and run-off flow to supply crops with water in dry season. Afterwards the farmer who participated in the research and those in the surrounding site were asked to give their response to the introduced technology.

The parameter observed and the method applied were, sedimentation using weighing method; floods using the  $Q_{max}/Q_{min}$  analysis of run off; drought using SARRA method; level of productivity using agricultural production or planting season, feasibility of the introduced technology using MBCR method, income levels using B/C ratio and farmer's perceptions using Roger method.

The result of the research indicates that embankment effectiveness in run off intercept is 0,91%, for us 100% effectiveness will need 110 embankments. The sediment thickness is 32 cm at embankment one and 18 cm embankment effectiveness in sediment intercept is 12,29% at embankment two; highly maximum debit ( $Q_{max}$ ) in December, 19, 1999. 12.00 PM, with in five o'clock time response. The rate of drought ( $ETA/ET_{crop}$ ) on the crops ranges from 0,61 to 0,94; Yield of annual is 0,75 - 5,36 tons/ha/MT for dry shelled corn; 0,57 tons/ha/MT for dry mung bean seeds; 5,31 - 6,38 tons/ha/TM for fresh cassava. The MBCR value of the introduced technology on soil with a declivity of under 15% and its B/C ratio 1,03 - 1,67 per planting seasons; the farmer's perception of the components of the conservation farming operation system ranges from 20,64% to 93,66%; the highest perception is on the vegetative conservation technology and lowest perceptions is on the embankment technology.

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Keywords : Surface run off - Conservation on farming system conservation - Environment factors