Water Resources Conservation for Sustainable Agricultural Development

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1.INTRODUCTION

1.1.Water resources consumption

Increase of population and insufficient water resources has led to environmental pollution has reached substantial levels with use of synthetic and chemical inputs as a result of the increase in production. Decreasing available water resources brings on a serious water shortage problem. Allliving things are negative affected by theenvironmentalpollution. The loss of speciesin nature, instead of use of biological control use chemical control, thehormonesto increasefood production have a verynegativeforecology. The main reason for environmental pollution and degradation of the natural balance in ecosystem, consumption increased rapidly due to increasing population and increased use of fossil proliferation of products.

1.2.Water resources conservation

One of themostimportantaim of sustainableagricultureandruraldevelopment is toprotectandconservethecapacity of thenaturalresourcebasetocontinuetoprovideproduction, environmentalandculturalservices.

Turkey Land and Water Resources

LAND RESOURCES

Mha (millionhectares)

Arable Land	:	28.05	
Irrigable Land	:	25.75	
RainfedAgriculture	:	17.25	Land Resources
EconomicallyIrrigable	:	8.50	
PresentlyIrrigated	: 4.90		

Turkey's total landarea is 78 Mha. Almostonethird of this, 28 Mha, can be classified as cultivableland. Recentstudiesindicatethat an area of about8.5million ha is economicallyirrigableundertheavailabletechnology. Untilnow, an area of about2.8million ha has beenequippedwithirrigationinfrastructuresby DSİ.

WaterResources

MeanPrecipitation	643 mm/m2
Turkey'sSurfaceArea	780,000 km 2
AnnualWaterResourcesPotentialBm ³ (billion m ³)	
A Precipitation Volume	501
B Evaporation	274
C LeakageintoGroundwater	69
D Springs FeedingSurfaceWater	28
E SurfaceWaterfromNeighboringCountries	7
F=A-B-C+D+E	
F Total SurfaceRunoff (gross)	193
G ExploitableSurfaceRunoff	98
H GroundwaterSafeYield	14
I=G+H	
I Total Potential (net)	112

The total watervolume in theworldamountsto1.4billion km3, 97.5% of which is salinewater in theoceansandseas, 2.5% of which is freshwater in theriversandlakes. Duetofactthat 90% of

freshwaterexists in the South Poleand North Pole, humanbeingshaveverylimitedreadilyexploitablefreshwaterresources.

Annualmeanprecipitation in Turkey is 643 mm, whichcorrespondsto 501 Bm3 (billion m3) of annualwatervolume in thecountry. A volume of 274 Bm3waterevaporatesfromwaterbodiesandsoilstoatmosphere. 69 Bm 3 of volume of waterleaksintogroundwater, whereas 28 Bm3 is retrievedbyspringsfromgroundwatercontributingtosurfacewater. Also, thereare 7 billion m3volume of watercomingfromneighboringcountries. Thus, total annualsurfacerunoffamountsto a volume of 193 Bm3 of water.

Turkey is not a richcountry in terms of existingwaterpotential. Turkey is a waterstresscountryaccordingtoannualvolume of wateravailablepercapita. Theannualexploitableamount of water has recentlybeenapproximately 1,500 m3percapita.

Development of Irrigation, Hydropower, andWaterSupplySectors in Turkey

	IN OPERATION AS OF 2005	ULTIMATE GOALS BY 2030	EACH SECTOR'S DEVELOPMENT RATES
DEVELOPMENT OF IRRIGATION	4.9 million ha	8.5 million ha	58%
DEVELOPMENT OF HYDROELECTRIC ENERGY	45.3 billionkWh	127.3 billionkWh	36%
DEVELOPMENT OF WATER SUPPLY FOR DOMESTIC AND INDUSTRIAL USE	10.5 billion m 3	38.5 billion m 3	27%

1.3.Orientationtoecotourism

Peopleturned toecotourismareas because of environmental pollution, increase in population, global warming. Ecotourism increased because of peoplemove away fromcity life, increasedconsumption of products ofagriculturalorigin and increase of environmental pollution.Because of reduction of water resources, production activities also reduced. Difficulties which are encountered in production activities because of water resources are deficit in our country. Decreasing available water resources brings a serious water shortage problem. In order to deal with this problem, the studies for the efficient use of irrigation water by providing water saving gain importance. Irrigationtechniques have been developed for efficient use of water resources. Withthe effective useof water resources, boththewater resourceswill be protected and high yieldwill be obtained per unit area. So, peoplecan cometo workforecotourismactivities. Thus, environment, social life, cultural environment and public health develop positive because of ecotourism. Everykind of tourismmade in virginnature is withinthescope of ecotourism. Theprinciple of "sustainability of naturalenvironment", which is one of thetwoimportantcriteria of ecotourism in thesenaturetrips, has to be obeyedclosely.Thesecondimportantcriterion of ecotourismis "thesustainability of

localculturesandthatthepeopleshouldbenefitfromthistourismactivity". When eco-tourists make tourism activities, they can do agricultural activities. Such water resources, environmental pollution and global warming factors can provide with conservation ofwater quality. This also provides that effectivefertilizerin agricultural areas, efficient use ofpesticides and efficient useof water resources.

2.RESULT

Therichgeographyandnaturalpotential of ourcountry is a bigchanceforthetypes of naturetourisms. However, if it is behavedunconsciously, theruin of environmentalvalueswillrapidly be inevitable.Sustainableagriculturemay be defined as consisting of environmentally-friendlymethodsof farmingthatallowtheproduction of cropsorlivestockwithoutdamagetohumanornaturalsystems.Recently, orientationtoecotourismstudyingshouldincreaseandthus, agriculturalenviromentalandglobalwarmingproblemsshould be solved.Theuse of agriculturalproducts ratherthan theuse of syntheticproductsshouldbe increase. Not onlyenvironmentalandtourismpurposesanndeclining waterresources, increase of population and in ordertomeet growing consumer needsshould be provided in thedevelopment of ecotourism.

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