

Table 6 Evapotranspiration throughout 2002 year in Sukhothai paddy field.

Season/month	ET		Epan		Rain (mm)	Ta (°C)	WS (m/s)	pF (-)	RH (%)
	mm/day	mm/month	mm/day	mm/month					
Off planting season									
December	2.2	68.2	3.4	106.4	0.0	23.6	1.7	0.0	63.7
January	3.3	102.3	3.7	114.7	3.0	23.9	1.2	1.5	64.3
February	3.2	89.6	4.0	112.7	48.7	22.8	1.3	2.9	64.6
March	3.6	110.7	5.0	154.4	6.4	28.2	2.3	2.7	49.4
April	3.2	95.1	5.7	171.4	57.8	31.9	2.0	2.9	64.7
May	4.0	124.0	5.5	171.3	297.8	30.0	1.5	0.1	72.5
June	4.6	138.3	4.9	145.9	91.4	28.4	2.7	0.1	69.9
July	4.5	139.5	4.5	138.9	68.8	28.3	1.5	0.0	81.0
average	3.6	108.5	4.6	139.5	71.7	27.1	1.8	1.3	66.2
planting season									
August	3.5	109.4	4.5	139.4	173.7	25.5	1.6	0.0	76.8
September	4.9	146.1	4.0	119.2	245.7	28.0	2.6	0.0	78.3
October	4.1	126.2	3.7	114.7	328.8	26.1	1.9	0.0	78.4
November	2.3	68.4	3.8	113.9	9.1	26.1	1.6	0.0	67.1
avergae	3.7	112.5	4.0	121.8	189.3	26.4	1.9	0.0	75.1
average throughout year	3.6	109.8	4.4	133.6	110.9	26.9	1.8	0.9	69.2
summary	-	1317.8	-	1602.9	1331.2	-	-	-	-

Remarks : ET = actual evapotranspiration

RH = relative humidity (%)

pF = soil water tension

Ta = air tempearture (degree of celsius)

Epan = pan evaporation

WS = wind speed (m/s)

Table 7 Evapotranspiration throughout 2003 year in Sukhothai paddy field.

Season/month	ET		Epan		Rain (mm)	Ta (°C)	Ws (m/s)	pF (-)	RH (%)	
	mm/day	mm/month	mm/day	mm/month						
Off planting season										
December	2.9	89.9	3.5	106.4	0.0	22.7	0.8	0.0	72.0	
January	3.0	93.0	4.1	123.9	5.8	23.7	1.2	1.5	65.0	
February	3.0	93.0	5.9	175.7	7.5	27.1	2.2	2.9	52.0	
March	3.3	102.3	8.1	244.1	18.3	30.3	3.1	2.7	47.0	
April	4.8	148.8	8.7	262.4	34.1	31.6	4.0	2.9	52.0	
May	5.5	170.5	7.1	214.3	163.8	29.7	3.2	0.1	68.0	
June	5.0	155.0	4.9	147.4	120.6	28.3	2.8	0.1	74.0	
July	4.8	148.8	5.1	153.8	96.5	28.1	3.8	0.0	72.0	
average	4.0	125.2	6.0	178.5	55.8	27.7	2.6	1.3	62.8	
planting season										
August	4.5	139.5	4.8	144.8	121.9	27.7	3.4	0.0	75.0	
September	5.3	164.3	4.4	132.6	202.1	27.5	1.8	0.0	77.0	
October	4.8	148.8	3.6	108.8	198.7	26.5	0.7	0.0	82.0	
November	4.9	151.9	3.4	102.7	56.0	24.8	0.6	0.0	79.0	
avergae	4.9	151.1	4.1	122.2	144.7	26.6	1.6	0.0	78.3	
average throughout year	4.3	133.8	5.3	159.7	85.4	27.3	2.3	0.9	67.9	
summary	-	1605.8	-	1916.9	1025.3	-	-	-	-	

Remarks : ET = actual evapotranspiration

RH = relative humidity (%)

pF = soil water tension

Ta = air tempearture (degree of celsius)

Epan = pan evaporation

WS = wind speed (m/s)

Table 8 Evapotranspiration throughout 2004 year in Sukhothai paddy field.

month	ET		Epan		Rain (mm)	Ta (°C)	Ws (m/s)	pF (-)	RH (%)
	mm/day	mm/month	mm/day	mm/month					
January	3.3	102.3	3.8	114.7	48.7	22.3	1.9	1.4	64.3
February	3.2	89.6	3.8	112.7	6.4	27.0	2.0	2.6	64.6
March	3.8	117.8	5.1	154.4	57.8	29.3	3.0	2.7	49.4
April	5.2	156.0	5.7	171.4	297.8	33.6	2.8	2.8	64.7
May	5.4	167.4	5.7	171.3	91.4	26.7	3.1	2.0	72.5
June	4.7	141.0	4.9	145.9	68.8	26.0	2.4	1.9	69.9
July	4.8	148.8	4.6	138.9	4.2	27.0	3.2	1.5	81.0
August	4.8	148.8	4.6	139.4	173.7	25.0	3.1	0.0	76.8
average throughout year	4.4	134.0	4.8	143.6	93.6	27.1	2.7	1.9	67.9
summary	-	1071.7	-	1148.7	748.8	-	-	-	-

Remarks : ET_a = actual evapotranspiration

RH = relative humidity (%)

pF = soil water tension

Ta = air tempearture (degree of celsius)

Epan = pan evaporation

WS = wind speed (m/s)

Ta = air temperature (degree of celcious)

Table 10 Average of energy balance throughout 2002 year in Lampung teak plantation.

Season/month	Rs	energy balance (MJ m-2 day-1)				Bowen ratio
	MJ/m ² /day	Rn	LE	H	Gs	
<i>dry season</i>						
November	20.1	10.7	7.5	2.7	0.5	0.4
December	19.1	12.9	9.0	3.3	0.6	0.4
January	23.2	12.5	8.8	3.1	0.6	0.4
February	21.7	12.9	9.0	3.3	0.6	0.4
March	23.3	17.7	11.4	5.4	0.9	0.5
April	25.1	18.9	11.2	6.8	0.9	0.6
average	22.1	14.3	9.5	4.1	0.7	0.4
% of Rs	100.0	64.6	-	-	-	-
% of Rn	-	100.0	66.5	28.7	4.8	3.0
<i>Rainy season</i>						
May	20.0	19.7	13.4	5.9	0.4	0.4
June	21.1	20.6	16.1	4.1	0.4	0.3
July	22.5	9.6	7.5	1.9	0.2	0.3
August	14.6	8.5	6.6	1.7	0.2	0.3
September	16.1	12.0	10.4	1.4	0.2	0.1
October	14.7	11.0	9.6	1.2	0.2	0.1
average	18.2	13.6	10.6	2.7	0.3	0.2
% of Rs	100.0	74.7	-	-	-	-
% of Rn		100.0	78.1	19.9	2.0	1.8
average throughout year	20.1	13.9	10.0	3.4	0.5	0.3
% of Rs	100.0	69.2	-	-	-	-
% of Rn	-	100.0	72.2	24.5	3.3	-
<u>Remarks</u> : Rs = solar radiation				Gs = heat storage in soil		
LE = latent heat of vaporization				Rn = net radiation		
Gw = heat storage in water						
H = sensible heat						

Table 11 Average of energy balance throughout 2003 year in Lampang teak plantation

Season/month	Rs	energy balance (MJ m ⁻² day ⁻¹)				Bowen ratio
	MJ/m ² /day	Rn	LE	H	Gs	
<i>Dry season</i>						
November	20.1	17.4	12.7	3.5	1.2	0.2
December	17.1	16.4	12.0	3.3	1.1	0.2
January	23.2	16.6	12.1	3.3	1.2	0.2
February	17.7	14.2	9.1	4.1	1.0	0.3
March	23.3	17.3	11.2	4.8	1.2	0.6
April	27.1	18.2	10.6	6.4	1.3	0.3
average	21.4	16.7	11.3	4.2	1.2	0.3
% of Rs	100.0	77.9	-	-	-	-
% of Rn	-	100.0	67.6	25.4	7.0	1.8
<i>Rainy season</i>						
May	22.0	18.6	13.2	4.3	1.1	0.2
June	21.0	16.4	11.6	3.8	1.0	0.2
July	19.1	18.1	12.9	4.2	1.1	0.3
August	18.3	17.7	12.6	4.1	1.1	0.2
September	18.0	15.6	12.5	2.2	0.9	0.2
October	18.0	17.5	14.9	1.6	1.1	0.3
average	19.4	17.3	12.9	3.3	1.0	0.2
% of Rs	100.0	89.3	-	-	-	-
% of Rn	-	100.0	74.8	19.1	6.1	1.3
average throughout year	20.4	17.0	12.1	3.8	1.1	0.3
% of Rs	100.0	83.3	-	-	-	-
% of Rn	-	100.0	72.5	22.7	6.6	-
<u>Remarks</u> : Rs = solar radiation				Gs = heat storage in soil		
LE = latent heat of vaporization				Rn = net radiation		
Gw = heat storage in water						
H = sensible heat						

Table 12 Average of energy balance throughout 2004 year in Sukhothai paddy field.

Season/month	Rs MJ/m ² /day	energy balance (MJ m ⁻² day ⁻¹)				Bowen ratio
		Rn	LE	H	Gs	
January	15.8	12.9	9.4	2.6	0.9	0.3
February	16.3	13.3	8.5	3.9	0.9	0.5
March	15.7	12.8	8.3	3.6	0.9	0.4
April	21.5	17.7	10.2	6.2	1.2	0.6
May	16.6	13.6	9.7	3.1	0.8	0.3
June	18.2	15.0	10.6	3.4	0.9	0.3
July	15.0	12.3	8.7	2.8	0.7	0.3
August	15.1	12.3	8.8	2.8	0.7	0.3
average	16.8	13.7	9.3	3.6	0.9	0.4
% of RS	100.0	82.0	-	-	-	-
% of Rn	-	100.0	68.8	26.4	4.8	-

Remarks : Rs = solar radiation

LE = latent heat of vaporization

Gw = heat storage in water

H = sensible heat

Gs = heat storage in soil

Rn = net radiation

Table 13 Evapotranspiration throughout 2002 year in Lampang teak plantation

Season/month	ET		Epan		Rain (mm)	Ta (^o C)	WS (m/s)	pF (-)	RH (%)
	mm/day	mm/month	mm/day	mm/month					
dry season									
November	3.4	102.0	3.1	93.0	33.7	23.3	1.4	2.5	77.7
December	2.9	89.9	2.6	80.6	8.8	22.4	1.4	2.6	75.8
January	3.0	93.0	2.7	83.7	6.4	22.1	1.5	2.8	68.3
February	4.0	112.0	3.6	100.8	5.8	25.9	1.6	2.7	69.0
March	3.7	114.7	3.7	114.7	20.1	27.7	1.7	2.8	72.9
April	5.7	171.0	5.7	171.0	65.2	27.2	1.9	2.6	78.5
average	3.8	113.8	3.6	107.3	23.3	24.8	1.6	2.7	73.7
Rainy season									
May	4.8	148.8	4.8	148.8	158.5	25.0	1.4	2.5	80.6
June	5.0	150.0	5.0	150.0	119.0	24.3	0.9	2.2	78.4
July	2.6	80.6	5.6	173.0	142.5	27.5	1.4	2.0	79.8
August	2.1	65.1	4.6	143.8	199.1	24.3	1.2	1.6	85.3
September	3.3	99.0	4.1	123.0	216.0	24.7	1.2	1.6	80.2
October	4.0	124.0	3.9	120.0	107.1	25.0	2.9	0.5	75.3
average	3.6	111.3	4.7	143.1	157.0	25.1	1.5	1.7	79.9
average throughout year	3.7	112.5	4.1	125.2	90.2	25.0	1.5	2.2	76.8
summary	-	1350.1	-	1502.4	1082.2	-	-	-	-

Remarks : ET = actual evapotranspiration

RH = relative humidity (%)

pF = soil water tension

Ta = air tempearture (degree of celsius)

Epan = pan evaporation

WS = wind speed (m/s)

Table 14 Evapotranspiration throughout 2003 year in Lampang teak plantation

Season/month	ET _a		Epan		Rain (mm)	Ta (°C)	WS (m/s)	pF (-)	RH (%)	
	mm/day	mm/month	mm/day	mm/month						
Dry season										
November	3.0	90.0	3.3	98.0	33.7	23.6	0.6	2.5	80.0	
December	2.7	80.0	3.3	98.0	8.8	20.9	0.6	2.6	76.0	
January	2.6	79.0	3.2	96.0	6.4	21.3	0.8	2.8	72.0	
February	3.8	112.5	4.1	122.5	5.8	23.7	1.0	2.7	64.0	
March	5.2	157.4	5.3	160.0	20.1	27.3	1.4	2.8	58.0	
April	6.1	183.5	5.7	171.0	65.2	29.5	1.8	2.6	60.0	
average	4.1	117.1	4.1	124.3	23.3	24.4	1.0	2.7	68.3	
Rainy season										
May	5.5	166.2	4.8	148.8	158.5	28.6	1.6	2.5	73.0	
June	4.5	135.7	5.0	150.0	119.0	28.0	1.8	2.2	77.0	
July	4.3	127.7	5.6	173.0	142.5	27.5	1.8	2.0	78.0	
August	4.0	118.7	4.6	143.8	199.1	27.0	1.4	1.6	82.0	
September	3.6	108.6	4.1	123.0	216.0	26.7	0.8	1.6	84.0	
October	3.3	99.8	3.9	120.0	107.1	25.8	0.7	0.5	83.0	
average	4.2	126.1	4.7	143.1	157.0	27.3	1.4	1.7	79.5	
average throughout year	4.2	121.6	4.4	133.7	90.2	25.8	1.2	2.2	73.9	
summary	-	1459.1	-	1604.1	1082.2	-	-	-	-	

Remarks : ET = actual evapotranspiration

RH = relative humidity (%)

pF = soil water tension

Ta = air tempearture (degree of celsius)

Epan = pan evaporation

WS = wind speed (m/s)

Table 15. Evapotranspiration throughout 2004 year in Lampang teak plantation.

month	ET _a		Epan		Rain (mm)	Ta (°C)	WS (m/s)	pF (-)	RH (%)
	mm/day	mm/month	mm/day	mm/month					
January	3.3	99.3	4.0	120.8	0.0	22.3	1.0	2.8	61.8
February	3.0	90.8	3.5	106.3	96.1	24.7	1.5	2.7	69.0
March	3.5	103.7	4.9	147.6	0.0	25.7	1.9	2.8	52.2
April	4.8	144.7	5.7	155.2	61.0	28.9	1.6	2.6	69.9
May	5.3	160.4	4.8	165.1	185.9	27.0	1.4	1.8	77.1
June	4.7	140.0	5.0	144.6	84.7	26.0	0.9	1.2	82.2
July	4.8	144.0	5.6	137.5	66.9	26.5	1.7	1.1	90.8
August	5.3	158.1	4.6	150.5	155.1	28.0	1.9	0.9	76.3
average throughout year	4.3	130.1	4.8	141.0	81.2	26.1	1.5	2.0	72.4
summary	-	1041.0	-	1127.6	649.7	-	-	-	-

Remarks : ET_a = actual evapotranspiration

RH = relative humidity (%)

pF = soil water tension

Ta = air tempearture (degree of celsius)

Epan = pan evaporation

WS = wind speed (m/s)

Ta = air temperature (degree of celcious)