

Table S1. Land Suitability criteria for Sugarcane

Conditions	Land Suitability class			
	S1	S2	S3	N
Temperature				
MAT (°C)	24 – 28	>28 – 31 22 – <24	>31 – 33 21 – <22	>33 <21
Water availability (wa)				
MAP (mm/year)	1200 – 2500	>1300 – 1500 -	1000 – <1300 >2500 – 3000	<1000 >3000
No. dry months (<60 mm/month)	3 – 4	2 – <3	>4 – 5 -	<2 >5
Oxygen availability (oa)				
Drainage	good , slightly good	Slightly inhibited	inhibited, slightly fast	Very slow, fast
Rooting condition (rc)				
Texture	Light- medium	light	Medium- coarse	coarse
Coarse fragments (%)	< 15	15 - 35	35 – 55	> 55
Solum thickenss (cm)	> 100	75 - 100	50 – 75	< 50
Peat:				
Thickness (cm)	-	< 50	50 – 100	>100
Maturity	-	saprik	Saprik, hemik	Hemik, fibrik
Nutrient Retention (nr)				
CEC (cmol/kg)	> 16	5 - 16	< 5	-
Base saturation (%)	> 50	35 - 50	< 35	
pH H ₂ O	5.5 – 7.5	5.0 – 5.5 7.5 – 8.0	< 5.0 > 8.0	
C-organic (%)	> 1.2	0.8 – 1.2	< 0.8	
Nurient availability (na)				
N total (%)	Low	Low	Very low	-
P ₂ O ₅ (mg/100 g)	High	medium	low	-
K ₂ O (mg/100 g)	High	medium	low	-
Toxicity (xc)				
Salinity (dS/m)	< 5	5 - 8	8 – 10	> 10
Sodicity (xn)				
Alkalinity/ESP (%)	< 10	10 - 15	15 – 20	> 20
Sulfidic (xs)				
Sulfidic depth (cm)	> 125	100 - 125	60 – 100	< 60
Erosion hazard (eh)				
slope (%)	< 3	3 - 8	8 – 15	> 15
Erosion risk	Very low	Very low	Low-medium	High
Flooding hazard (fh)				
- Depth (cm)	-	-	25	> 25
- Duration (days)	-	-	<7	≥7
Land preparation (lp)				
Surface stoniness (%)	< 5	5 - 15	15 – 40	> 40
Stone exposure (%)	< 5	5 - 15	15 – 25	> 25

Tabel S2. Suitable land for sugarcane in selected regencies in Indonesia based on forest status

Name of regency/municipality	Coverage (ha)				
	APL	HP	HPK	HPT	Total
West KALIMANTAN PROVINCE					
Bengkayang	239,337	33,512	5,161	18,634	296,643
Kapuas Hulu	616,724	132,537	25,113	128,757	903,132
Ketapang	777,263	217,666	17,843	214,892	1,227,663
Kubu Raya	169,373	12,246	677	42,612	224,908
Landak	175,693	19,350		2,203	197,245
Melawi	145,197	65,015	293	30,587	241,093
Sanggau	468,890	192,534	1,010	22,174	684,607
Sekadau	252,432	42,351			294,783
Sintang	655,478	83,618	15,152	51,803	806,051
SOUTH KALIMANTAN PROVINCE					
Balangan	75,781	9,787			85,569
Banjar	111,532	20,886	1,680	2,623	136,721
Barito Kuala	128,936		1,935		130,871
Hulu Sungai Tengah	72,745	1,905		363	75,014
Hulu Sungai Utara	25,921	278	22,677		48,876
Tabalong	94,217	26,115	4,774	2,634	127,740
Tanah Bumbu	26,818	27,127	3,571	5,189	62,705
Tanah Laut	133,366	41,273	6,719	2,159	183,517
Tapin	115,612	2,699		744	119,055
Kalimantan Utara					
Bulungan	152,460	71,640	2,089	33,965	260,153
Malinau	73,895	38,634	13,209	36,935	162,673
Tana Tidung	23,069	45,260	3,574	5,747	77,651
CENTRAL KALIMANTAN PROVINCE					
Barito Selatan	42,005	30,887	6,271	236	79,400
Barito Timur	139,345	15,340	22,694		177,380
Barito Utara	78,724	165,244	132,729	87,722	464,420
Gunung Mas	69,805	258,890	159,054	222,089	709,839
Kapuas	190,559	163,945	42,160	69,735	466,400
Katingan	134,989	404,230	219,299	326,511	1,085,029
Kotawaringin Barat	186,023	160,438	81,029		427,490
Kotawaringin Timur	290,436	263,155	326,332	13,490	893,414
Lamandau	119,938	49,229	95,809	55,416	320,392
Pulang Pisau	141,701	198,667	29,116	12,545	382,029
Sukamara	38,567	32,688	38,900	2,401	112,556
EAST KALIMANTAN PROVINCE					
Berau	247,506	192,609	18,165	117,108	575,388
Kota Samarinda	24,925	106			25,031
Kutai Barat	443,367	176,354	9,397	74,373	703,491
Kutai Kartanegara	584,858	320,126	12,005	41,007	957,997
Kutai Timur	498,437	367,434	25,226	175,880	1,066,976
Paser	262,859	61,205	2,826	18,881	345,770
Penajam Paser Utara	109,143	41,771		5,672	156,586
GORONTALO PROVINCE					
Boalemo	49,669	1,395	221	1,386	52,671
Gorontalo	78,914	6,950	879	4,957	91,700
WEST SULAWESI PROVINCE					
Majene	5,252			70	5,322
Mamasa	16,055			1,255	17,310
Mamuju Tengah	384			1,022	1,406
Polewali Mandar	37,119			1,660	38,778
SOUTH SULAWESI PROVINCE					
Bantaeng	18,420				18,420
Bulukumba	80,319	929			81,248
Gowa	50,436	5,281	246	2,350	58,314
Jeneponto	61,017	90		42	61,149

Kota Pare-Pare	3,881			37	3,918
Sinjai	56,049			7,472	63,522
Takalar	37,260	196			37,456
Wajo	194,101	6,450			200,551
Enrekang	21,459			766	22,225
Barru	25,342			274	25,616
Sidenreng Rappang	88,139	722		1,114	89,974
CENTRAL SULAWESI PROVINCE					
Banggai	207,593	12,131	16,001	89,357	325,083
Banggai Laut	19,119		13	1,674	20,806
Buol	68,250	2,444	6,332	4,499	81,525
Donggala	48,815	373		5,714	54,902
Morowali	24,352	344	18,012	5,164	47,872
Morowali Utara	111,105	15,673	13,968	4,579	145,325
Poso	150,001	21,505	7,029	84,073	262,608
Sigi	66,860	182	2,701	34,643	104,386
Tojo Una-Una	109,152	32,821	5,830	68,451	216,254
Tolitoli	82,529	574		10,449	93,551
SOUTH-EAST SULAWESI PROVINCE					
Buton Utara	30,566	23	4,423		35,011
Kolaka	50,902	12,660	9,311	7,611	80,483
Kolaka Utara	17,476		211	5,326	23,013
Konawe	123,535	30,771	8,220	90,343	252,869
Konawe Selatan	100,185	12,897		503	113,586
Konawe Utara	30,754	8,895	21,770	6,308	67,728
Muna	122,363	27,851	6,174	12	156,400
Konawe Kepulauan	7,393	371	6,189	302	14,255
NORTH SULAWESI PROVINCE					
Bolaang Mongondow	28,259	1,196		1,774	31,229
Bolaang Mongondow Selatan	19,211	1,920		479	21,610
Kota Bitung	7,467				7,467
Minahasa Selatan	10,315	865		932	12,112
Minahasa Utara	38,711			1,232	39,943
BALI PROVINCE					
Bangli	12,645				12,645
Jembrana	25,301	14		292	25,607
Karang Asem	43,030			14	43,043
Tabanan	34,417				34,417
WEST NUSA TENGGARA PROVINCE					
Bima	70,090	3,822		3,902	77,814
Dompu	45,092	4,945		1,964	52,001
Kota Bima	3,305	67		141	3,514
Kota Mataram	3,314				3,314
Lombok Barat	28,637	146		416	29,198
Lombok Tengah	66,082	1,222			67,304
Lombok Timur	83,842	1,953			85,795
Lombok Utara	24,836	2,051		504	27,391
Sumbawa	148,747	12,944		21,177	182,868
Sumbawa Barat	24,802	744		1,267	26,813
EAST NUSA TENGGARA PROVINCE					
Belu	661				661
Kupang	9,000	34		1,265	10,300
Malaka	37,520	43	627	1,482	39,673
Manggarai	20,175		1,010		21,185
Sumba Barat	23,437	2,103		1,090	26,630
Sumba Barat Daya	61,661	5,773			67,434
Sumba Tengah	32,443	378		2,828	35,649
Sumba Timur	50,941	3,812	2,834	317	57,904
Timor Tengah Selatan	69,836	10,432		2,992	83,260
Timor Tengah Utara	44,556	3,384	164	7,359	55,462
PAPUA PROVINCE					
Biak Numfor	3,951	1,660		4,096	9,706

Boven Digoel	13,387	160,553	17,663	96,100	287,703
Jayapura	121,064	14,368	70,429	87,397	293,259
Keerom	69,868	75,511	50,918	33,483	229,780
Kota Jayapura	9,961	7,766	2,259	1,552	21,537
Merauke	232,223	566,891	398,642	59,628	1,257,383
Sarmi	76,868	142,021	195,894	251,671	666,454
Supiori	10,466	487			10,952
WEST PAPUA PROVINCE					
Fakfak	64,325	340,376	196,718	89,100	690,519
Manokwari	48,892	727	13,760	6,787	70,167
Tambrauw	947		3,897	555	5,399
Teluk Bintuni	37,448	214,861	192,926	145,467	590,702
NORTH MALUKU PROVINCE					
Halmahera Barat	23,988	426	8,856	1,782	35,052
Halmahera Timur	50,990	11,087	13,216	17,603	92,896
Halmahera Utara	66,490	10,385	40,545	26,111	143,531
Kota Tidore Kepulauan	16,722		3,832	5,279	25,832
Pulau Morotai	34,254		19,010	8,048	61,312
MALUKU PROVINCE					
Kepulauan Aru	18,269	112,866	327,698		458,833
Seram Bagian Barat	22,543	1,417	7,082	4,709	35,751
Seram Bagian Timur	22,067	10,959	38,282	25,998	97,306
ACEH PROVINCE					
Aceh Barat	95,759	1,347			97,106
Pidie Jaya	20,746			11	20,757
BENGKULU PROVINCE					
Bengkulu Tengah	50,650				50,651
Kepahiang	21,033				21,033
Lebong	20,471				20,471
Mukomuko	142,106	6,807	1,958	22,491	173,362
JAMBI PROVINCE					
Batanghari	257,814	124,689	141	49,542	432,185
Bungo	239,241	40,536	4,681		284,458
Kerinci	43,060	10,836			53,896
Kota Sungai Penuh	5,122				5,122
Muaro Jambi	178,840	11,279	3,040		193,159
Sarolangun	290,115	81,230		35,544	406,888
LAMPUNG PROVINCE					
Lampung Barat	91,705				91,705
Pesisir Barat	64,446			15,424	79,870
Pringsewu	38,773				38,773
Tanggamus	73,893				73,893
Way Kanan	231,764	48,583		481	280,828
RIAU PROVINCE					
Bengkalis	39,408	77,006	38,076	18,881	173,371
Kampar	225,904	45,795	241,060	96,744	609,504
Kota Dumai	2,871	16,050	23,812	5,970	48,703
Pelalawan	162,004	38,198	158,154	152,601	510,957
Rokan Hilir	82,395	93,119	215,238	50,612	441,364
Rokan Hulu	214,193	17,396	182,483	57,139	471,211
Siak	127,788	58,999	61,897	60,517	309,201
WEST SUMATERA PROVINCE					
Agam	55,450	688	4,562	311	61,011
Dharmasraya	181,236	19,065	13,043	22,774	236,117
Kota Padang	18,777				18,777
Kota Pariaman	4,315				4,315
Lima Puluh Kota	64,233	156	80	336	64,804
Padang Pariaman	84,096				84,096
Pasaman	32,356		354	162	32,872
Sijunjung	32,587	942	4,243	283	38,054
Solok	36,051	388	473	934	37,846
Tanah Datar	44,567	774	54		45,395
SOUTH SUMATERA PROVINCE					

Empat Lawang	94,835	583			95,418
Kota Pagar Alam	29,762				29,762
Kota Prabumulih	36,303			954	37,257
Lahat	198,574	26,661			225,235
NORTH SUMATERA PROVINCE					
Dairi		56,738		28,532	85,270
Karo	1,895	157,937		8,110	167,941

After BBSDLP (2018)