

Figure S1: Field photographs of the 4 monitored sites on sandy soils, taken during the dry (left) and the wet (right) seasons, from the same location, at the starting point of the sampling transect: a) *Agoufou* (#17, Ag), b) *Timbadior* (#18, Ti), c) *Hombori Hondo* (#19, Ho), d) *Tara* (#31, Ta).

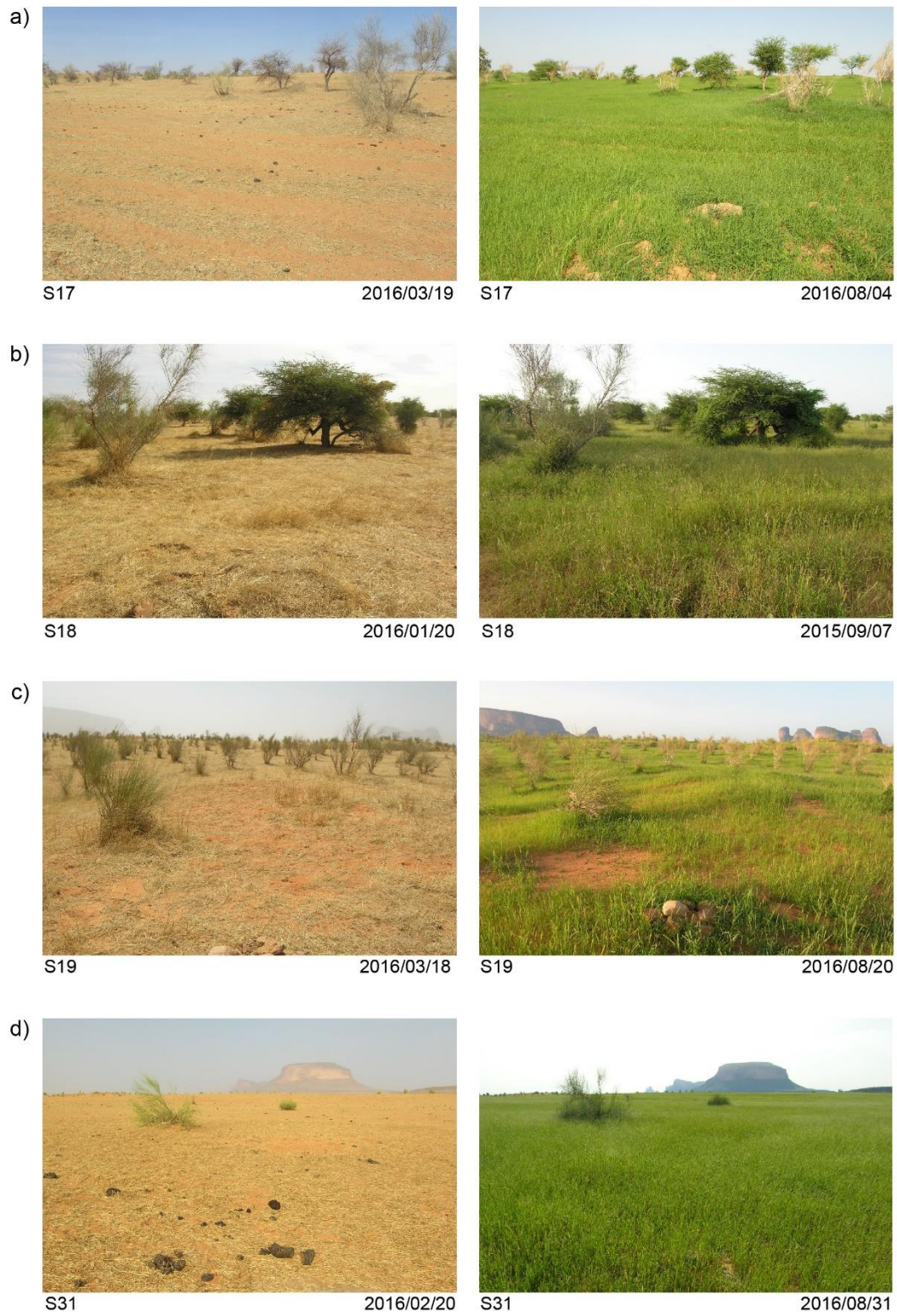


Figure S2: Field photographs of the monitored sites on loamy-clayed soils a) *Kelma* forest (#21, Kf) and b) *Kelma* plain (# 21b, Kp); on erosion surface c) *Eguerit* (#40, Eg), and d) a millet field at *Bilantao* (#41, Bi), taken during the dry (left) and the wet (right) seasons from the same location, at the starting point of the sampling transect.

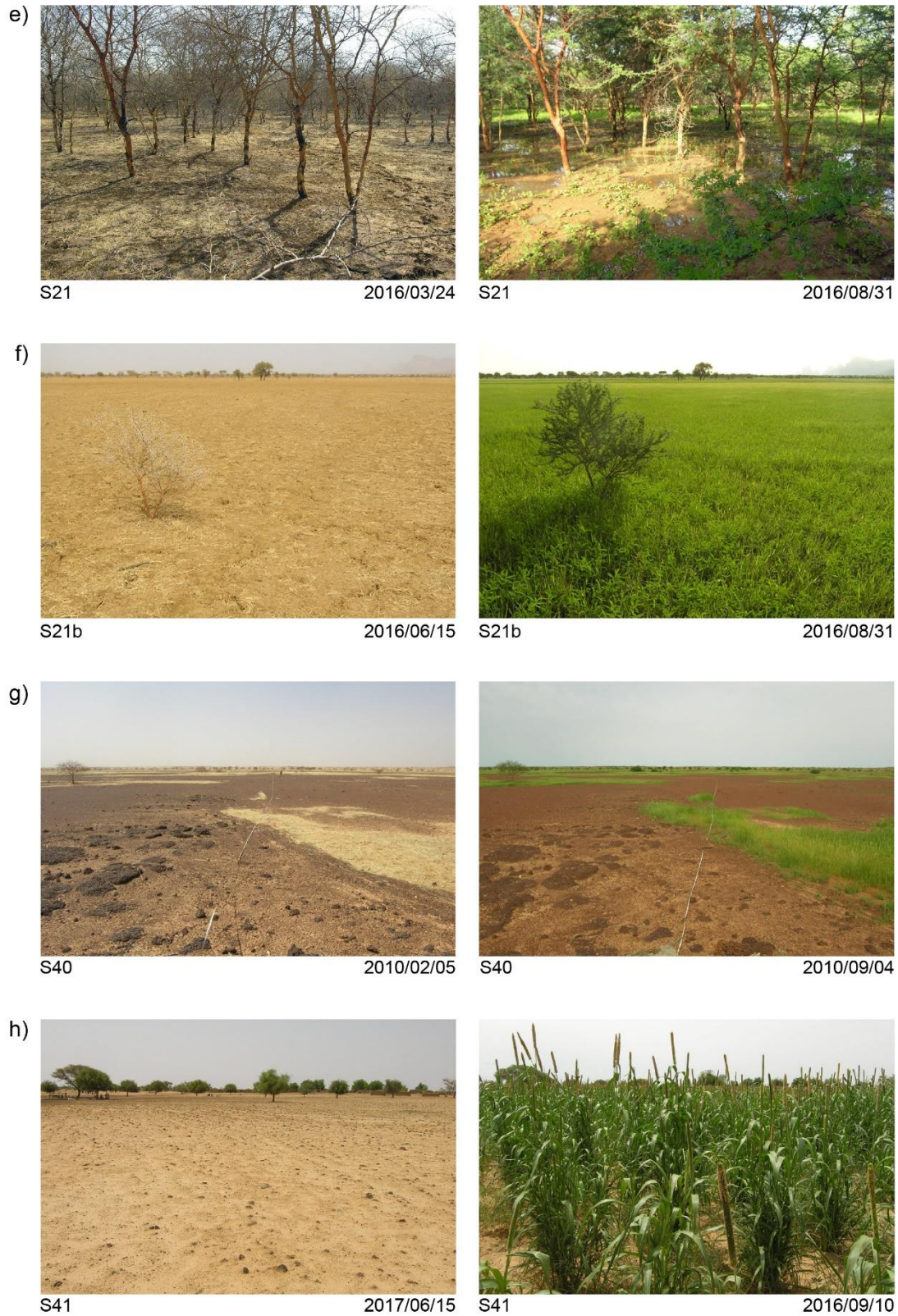


Table S1. General characteristics of the monitored sites.

Site name (code number ^a) Central coordinates (longitude, latitude)	Vegetation type	Dominant herbaceous species	Dominant woody species	Soil type	Grazing pressure
Agoufou (#17) (15.339°N, 1.484°W)	Open woody savannah	<i>Cenchrus biflorus</i> , <i>Aristida mutabilis</i> , <i>Zornia glochidiata</i> , <i>Tragus berteroniamus</i>	<i>Acacia raddiana</i> , <i>Combretum glutinosum</i> , <i>Balanites aegyptiaca</i> , <i>Acacia senegal</i> , <i>Leptadenia pyrotechnica</i>	Sand	High
Eguerit (#40) (15.504°N, 1.397°W)	Scattered shrubs, herbs on loamy deposits	<i>Schoenefeldia gracilis</i> , <i>Aristida adscentionis</i> , <i>Pennisetum violaceum</i> , <i>Panicum laetum</i>	<i>Acacia ehrenbergiana</i> , <i>Commiphora Africana</i> , <i>Maerua crassifolia</i> , <i>Ziziphus mauritiana</i>	Gravels and loamy patches	Low
Timbador (#18) (15.332°N, 1.546°W)	Open woody savannah	<i>Cenchrus biflorus</i> , <i>Aristida mutabilis</i> , <i>Zornia glochidiata</i> , <i>Tragus berteroniamus</i>	<i>Acacia raddiana</i> , <i>Combretum glutinosum</i> , <i>Balanites aegyptiaca</i> , <i>Acacia senegal</i> , <i>Leptadenia pyrotechnica</i>	Sand	Moderate
Hombori Hondo (#19) (15.322°N, 1.698°W)	Open shrub savannah	<i>Aristida sieberiana</i> , <i>Chrozophora senegalensis</i> , <i>Heliotropium strigosum</i>	<i>Balanites aegyptiaca</i> , <i>Leptadenia pyrotechnica</i>	Sand	High
Kelma Forest (#21) and Kelma Herbs (#21) 15.219°N, 1.566°W	Seasonally inundated open <i>Acacia</i> forest	<i>Aeschynomene sensitive</i> , <i>Echinochloa colona</i> , <i>Sporobolus hevolvus</i>	<i>Acacia seyal</i> , <i>Acacia nilotica</i> , <i>Balanites aegyptiaca</i>	Clay, loam	High
Kelma Plain (#21b) (15.219°N, 1.573°W)	Seasonally inundated plain	<i>Aeschynomene sensitive</i> , <i>Echinochloa colona</i> , <i>Panicum laetum</i> , <i>Sporobolus hevolvus</i>	<i>Acacia seyal</i> , <i>Balanites aegyptiaca</i>	Clay, loam	High
Tara (#31) (15.230°N, 1.583°W)	Open woody savannah	<i>Cenchrus biflorus</i> , <i>Aristida sieberiana</i> , <i>Dactyloctenium aegyptium</i> , <i>Zornia glochidiata</i> , <i>Tragus berteroniamus</i> , <i>Schoenefeldia gracilis</i>	<i>Acacia raddiana</i> , <i>Balanites aegyptiaca</i> , <i>Combretum glutinosum</i> , <i>Leptadenia pyrotechnica</i>	Sand	High
Bilantao (#41) (15.285°N, 1.558°W)	Millet field (<i>Pennisetum glaucum</i>)	<i>Pennisetum glaucum</i>	<i>Acacia raddiana</i> , <i>Balanites aegyptiaca</i> , <i>Faidherbia albida</i>	Sand	Low

^aSite code number refers to Hiernaux et al. (2009a)

Table S2. Top soil texture data in terms of sand, clay and silt contents (%) for the monitored sites: Agoufou, Bilantao, Eguerit, Hombori Hondo, Kelma forest, Kelma plain, Tara and Timbadior. Particles size are defined as clay (<0.002 mm), silt (<0.05 mm), and sand (<2 mm). Soil texture data were taken from Hiernaux et al. (1984), except for Bilantao, Kelma plain and Tara which soil texture was analysed in 2018 by the Laboratoire Sol-Eau-Plantes (Institut d’Economie Rurale, Sotuba, Mali).

Depth (cm)	Agoufou (#17 ^a) (15.339°N, 1.484°W)			Bilantao (#41) (15.°N, 1.4°W)			Eguerit (#40) (15.50°N, 1.40°W)			Kelma Forest (#21) (15.219°N, 1.566°W)		
	Sand	Silt	Clay	Sand	Silt	Clay	Sand	Silt	Clay	Sand	Silt	Clay
0-6	91.0	3.3	4.6	96.9	1.0	2.1	43.6	29.8	26.3	47.8	27.5	24.5
6-12	91.1	3.2	5.1	97.4	1.3	1.3	43.6	27.9	28.1	40.3	19.4	40.0
12-25	89.7	4.1	5.8	96.8	1.6	1.6	30.2	27.4	42.1	35.1	19.8	45.1
25-50	90.9	3.2	5.5	93.5	4.9	1.6	-	-	-	31.6	16.1	52.4
50-100	92.0	1.9	5.8	87.1	9.7	3.2	-	-	-	30.1	21	48.9

Depth (cm)	Kelma Plain (#21b) (15.219°N, 1.573°W)			Hombori Hondo (#19) (15.50°N, 1.40°W)			Tara (#31) (15.219°N, 1.566°W)			Timbadior (#18) (15.339°N, 1.484°W)		
	Sand	Silt	Clay	Sand	Silt	Clay	Sand	Silt	Clay	Sand	Silt	Clay
0-6	50	49	1	90.5	1.1	6.7	94.0	2.0	4.0	92.0	2.8	4.9
6-12	20	78	2	94.1	1.4	3.6	94.0	2.0	4.0	89.9	4.4	5.2
12-25	20	78	2	93.1	3.4	3.4	96.0	2.0	2.0	89.5	5.3	4.9
25-50	19	79	2	92.9	2.6	4.3	96.0	2.0	2.0	90.5	2.9	5.8
50-100	31	67	2	92.9	2.6	4.3	96.0	2.0	2.0	91.3	2.8	5.8

^aSite code number refers to Hiernaux et al. (2009a).

Table S3. Coordinates (latitude, longitude) of the starting, centre and ending points of the sampling transects. The directions of the transects are indicated by NS (North-South), EW (East-West), NE (North-East) and SW (South-West).

Site (#, transect)	Starting Point (°N, °W)	Centre point (°N, °W)	Ending Point (°N, °W)
Agoufou NS (#17)	15.34347, 1.48475	15.33927, 1.48413	15.33447, 1.48320
Agoufou EW (#17)	15.34005, 1.47950	15.33927, 1.48413	15.33952, 1.48885
Bilantao NE-SW (#41)	15.28956, 1.55867	15.28524, 1.55867	15.28091, 1.55867
Eguerit EW (#40)	15.50522, 1.39240	15.50409, 1.39756	15.50297, 1.40272
Hombori_Hondo NS (#19)	15.32692, 1.69835	15.32240, 1.69828	15.31788, 1.69821
Hombori Hondo EW (#19)	15.32222, 1.69333	15.32240, 1.69828	15.32177, 1.70277
Kelma Forest EW (#21)	15.21877, 1.56806	15.21887, 1.56574	15.21897, 1.56342
Kelma Herbs EW (#21)	15.21877, 1.56806	15.21887, 1.56690	15.21887, 1.56574
Kelma Plain EW (#21b)	15.21777, 1.56972	15.21749, 1.57154	15.21722, 1.57333
Tara NE-SW (#31)	15.23260, 1.57943	15.23013, 1.58335	15.22824, 1.58757
Tara NW-SE (#31)	15.22985, 1.57872	15.23013, 1.58335	15.23008, 1.58802
Timbador NS (#18)	15.33680, 1.54683	15.33231, 1.54627	15.32782, 1.54570
Timbador EW (#18)	15.33382, 1.54187	15.33231, 1.54627	15.33091, 1.55067

^aSite code number refers to Hiernaux et al. (2009a)

Table S4. Dates of hemispheric photograph acquisition over the 2005-2017 period.

Agoufou EW (#17)	2005	2006	2007	2008	2009	2010	2011
	2005/06/06	2006/07/14	2007/07/16	2008/07/05	2009/07/06	2010/07/06	2011/07/08
	2005/06/17	2006/07/29	2007/07/26	2008/07/15	2009/07/16	2010/08/05	2011/07/14
	2005/06/24	2006/08/10	2007/07/29	2008/07/25	2009/07/28	2010/08/17	2011/07/18
	2005/07/04	2006/08/20	2007/07/30	2008/08/08	2009/08/06	2010/09/03	2011/07/24
	2005/07/17	2006/08/29	2007/08/05	2008/08/14	2009/08/16	2010/09/04	2011/08/10
	2005/07/24	2006/09/10	2007/08/13	2008/08/18	2009/08/26	2010/09/13	2011/08/21
	2005/07/30	2006/09/20	2007/08/14	2008/08/24	2009/08/31	2010/09/30	2011/08/26
	2005/08/03	2006/09/30	2007/08/23	2008/08/31	2009/09/03		2011/09/03
	2005/08/13		2007/08/27	2008/09/07	2009/09/05		2011/09/09
	2005/08/20		2007/09/06	2008/09/20	2009/09/15		
	2005/08/24		2007/09/16				
	2005/08/28		2007/09/26				
	2005/09/28						
	2012	2013	2014	2015	2016	2017	
	2012/06/26	2013/06/05	2014/07/05	2015/07/11	2016/06/24	2017/07/15	
	2012/07/10	2013/07/07	2014/08/16	2015/07/20	2016/07/08	2017/07/23	
	2012/07/24	2013/07/16	2014/08/27	2015/07/30	2016/07/18	2017/08/03	
	2012/08/04	2013/07/31	2014/09/05	2015/08/10	2016/07/28	2017/08/13	
	2012/08/14	2013/08/19	2014/09/15	2015/08/20	2016/08/11	2017/08/22	
	2012/08/25	2013/08/29	2014/09/25	2015/08/29	2016/08/27	2017/09/03	
	2012/09/04	2013/09/09		2015/09/09	2016/09/10	2017/09/14	
	2012/09/18	2013/09/19		2015/09/16	2016/09/28	2017/09/25	
	2012/09/29	2013/09/29		2015/09/27			
		2013/10/09					
Agoufou NS (#17)	2005	2006	2007	2008	2009	2010	2011

	-	-	2007/07/30 2007/08/14 2007/08/27	2008/07/25 2008/08/18 2008/08/24 2008/08/31 2008/09/07	2009/07/06 2009/07/16 2009/07/28 2009/08/06 2009/08/16 2009/08/26 2009/08/31 2009/09/05	2010/07/06	2011/07/18 2011/07/24 2011/08/10 2011/08/21 2011/08/26 2011/09/09
	2012	2013	2014	2015	2016	2017	
	-	-	-	-	-	-	
Timbador EW (#18)	2005	2006	2007	2008	2009	2010	2011
	-	-	2007/08/01 2007/08/16	2008/08/12 2008/08/18 2008/08/23 2008/09/02	2009/07/11 2009/07/30 2009/08/08 2009/08/27	-	-
	2012	2013	2014	2015	2016	2017	
	-	-	-	-	-	-	
Timbador NS (#18)	2005	2006	2007	2008	2009	2010	2011
			2007/07/18 2007/07/30 2007/08/01 2007/08/16 2007/09/08	2008/07/22 2008/07/26 2008/08/12 2008/08/18 2008/09/02	2009/07/11 2009/07/30 2009/08/08 2009/08/18 2009/08/27	2010/07/05 2010/08/05	2011/07/18 2011/08/10 2011/08/21 2011/09/09
	2012	2013	2014	2015	2016	2017	
	-	-	2014/08/27	-	-	-	
Hombori Hondo EW (#19)	2005	2006	2007	2008	2009	2010	2011
	-	-	2007/08/01 2007/08/16	2008/08/12 2008/08/24 2008/09/04	2009/07/05 2009/07/30 2009/08/08 2009/08/28	-	-

					2009/09/30		
	2012	2013	2014	2015	2016	2017	
	-	-	-	-	-	-	
Hombori Hondo NS (#19)	2005	2006	2007	2008	2009	2010	2011
	-	-	2007/07/18	2008/08/12	2009/07/05	2010/07/08	2011/08/11
			2007/08/01	2008/08/24	2009/07/30	2010/08/04	2011/09/10
			2007/08/16	2008/09/04	2009/08/08		
			2007/09/09	2008/09/26	2009/08/18		
					2009/08/28		
	2012	2013	2014	2015	2016	2017	
	2012/09/06	2013/06/06	2014/07/06	2015/07/08	2016/07/03	2017/06/14	
	2012/09/14	2013/07/08	2014/08/06	2015/07/18	2016/07/20	2017/06/24	
	2012/09/24	2013/07/20	2014/08/21	2015/07/29	2016/07/30	2017/07/04	
		2013/08/01	2014/08/26	2015/08/09	2016/08/10	2017/07/13	
		2013/08/12	2014/09/05	2015/08/19	2016/08/20	2017/07/22	
		2013/08/22	2014/09/16	2015/08/30	2016/08/31	2017/08/02	
		2013/08/31	2014/09/27	2015/09/07	2016/09/09	2017/08/11	
		2013/09/13		2015/09/17	2016/09/18	2017/08/21	
					2016/09/26	2017/09/02	
						2017/09/13	
						2017/09/22	
Kelma Forest EW (#21)	2005	2006	2007	2008	2009	2010	2011
	2005/04/16	2006/03/07	2007/01/20	2008/01/13	2009/03/14	2010/02/03	2011/06/06
	2005/04/21	2006/04/06	2007/02/19	2008/02/15	2009/06/06	2010/04/19	2011/07/07
	2005/05/17	2006/06/23	2007/03/31	2008/03/20	2009/07/08	2010/07/09	2011/07/22
	2005/06/03	2006/07/03	2007/05/10	2008/04/15	2009/07/17	2010/08/09	2011/08/09
	2005/06/26	2006/07/15	2007/06/07	2008/06/03	2009/07/29	2010/09/08	2011/08/19
	2005/07/03	2006/07/24	2007/06/23	2008/06/20	2009/08/07	2010/09/29	2011/09/08
	2005/07/22	2006/08/12	2007/07/05	2008/07/08	2009/08/17		
	2005/08/02	2006/08/26	2007/07/15	2008/07/16	2009/08/27		
	2005/08/18	2006/09/12	2007/07/28	2008/07/26	2009/10/07		
	2005/08/30	2006/09/20	2007/08/03	2008/08/10	2009/04/11		

	2005/09/18 2005/09/29	2006/10/01 2006/10/17 2006/11/22 2006/12/06 2006/12/14	2007/08/13 2007/08/26 2007/09/08 2007/09/19 2007/09/29 2007/11/17	2008/08/19 2008/08/29 2008/09/05 2008/09/21 2008/09/29 2008/11/01 2008/12/17			
	2012	2013	2014	2015	2016	2017	
	-	2013/03/04 2013/04/13 2013/05/04 2013/06/05 2013/07/07 2013/07/18 2013/08/01 2013/08/10 2013/08/20 2013/08/30 2013/09/12 2013/09/21 2013/09/30 2013/10/11	2014/01/09 2014/02/15 2014/03/09 2014/04/09 2014/05/08 2014/06/07 2014/07/06 2014/08/05 2014/08/21 2014/08/28 2014/09/06 2014/09/15 2014/09/26 2014/10/07 2014/10/17 2014/11/15 2014/12/29	2015/01/25 2015/02/18 2015/03/29 2015/04/20 2015/05/25 2015/06/22 2015/07/30 2015/08/12 2015/08/22 2015/08/31 2015/09/10 2015/09/18 2015/09/28 2015/10/08 2015/10/23 2015/11/02 2015/11/13 2015/11/20 2015/11/30 2015/12/10 2015/12/20 2015/12/30	2016/01/11 2016/01/21 2016/01/29 2016/02/14 2016/02/29 2016/03/28 2016/04/29 2016/05/30 2016/06/29 2016/07/29 2016/08/17 2016/08/31 2016/09/19 2016/09/29 2016/10/13 2016/10/20 2016/10/27 2016/11/07 2016/11/18 2016/11/28 2016/12/17 2016/12/29	2017/01/14 2017/01/25 2017/02/18 2017/02/28 2017/03/17 2017/03/30 2017/04/27 2017/05/18 2017/05/28 2017/06/19 2017/06/28 2017/07/05 2017/07/16 2017/07/24 2017/08/04 2017/08/14 2017/08/23 2017/09/06 2017/09/17 2017/09/27 2017/10/07 2017/10/17 2017/10/28 2017/11/09	

						2017/11/19 2017/11/29 2017/12/08 2017/12/17 2017/12/30		
Kelma Herbs EW (#21)	2005	2006	2007	2008	2009	2010	2011	
	2005/06/26	2006/07/24	2007/07/15	2008/07/08	2009/08/17	2010/07/09	2011/07/22	
	2005/07/03	2006/08/12	2007/07/28	2008/07/16	2009/08/27	2010/08/09	2011/08/09	
	2005/07/22	2006/08/26	2007/08/03	2008/07/26	2009/10/07		2011/08/19	
	2005/08/18	2006/09/12	2007/08/13	2008/08/10	2009/11/04			
	2005/08/30	2006/09/20	2007/08/26	2008/08/19				
	2005/09/18	2006/10/01	2007/09/08	2008/08/29				
		2006/10/17	2007/09/19	2008/09/05				
		2006/11/22	2007/09/29	2008/09/21				
			2007/11/17	2008/09/29				
		2012	2013	2014	2015	2016	2017	
		2012/07/25	2013/08/30	2014/08/21	2015/07/20	2016/08/17	2017/08/04	
		2012/08/06	2013/09/12	2014/08/28	2015/07/30	2016/08/31	2017/08/14	
	2012/08/17	2013/09/21	2014/09/06	2015/08/12	2016/09/19	2017/08/23		
	2012/08/26	2013/09/30	2014/09/15	2015/08/22	2016/09/29	2017/09/06		
	2012/09/07	2013/10/11	2014/09/26	2015/08/31	2016/10/13	2017/09/17		
	2012/09/19		2014/10/07	2015/09/10	2016/10/20	2017/09/27		
	2012/09/30		2014/10/17	2015/09/18	2016/10/27	2017/10/07		
	2012/10/13			2015/09/28	2016/11/07	2017/10/17		
	2012/10/24			2015/10/08	2016/11/18	2017/10/28		
	2012/10/30			2015/10/23	2016/11/28			
	2012/11/10			2015/11/02				
Kelma Plain EW (#21b)	2005	2006	2007	2008	2009	2010	2011	
	-	-	-	2008/08/10	2009/08/07	-	2011/07/22	
					2009/08/17		2011/08/09	
					2009/08/27		2011/08/19	
				2009/09/16				

					2009/10/07		
	2012	2013	2014	2015	2016	2017	
	2012/06/17	2013/06/05	2014/08/05	2015/07/11	2016/07/20	2017/06/19	
	2012/06/30	2013/07/07	2014/08/21	2015/07/20	2016/07/29	2017/06/28	
	2012/07/07	2013/07/18	2014/08/28	2015/07/30	2016/08/10	2017/07/05	
	2012/07/25	2013/08/01	2014/09/06	2015/08/10	2016/08/31	2017/07/16	
	2012/08/06	2013/08/10	2014/09/15	2015/08/21	2016/09/19	2017/07/24	
	2012/08/17	2013/08/20	2014/10/26	2015/08/31	2016/09/29	2017/08/04	
	2012/08/26	2013/08/30		2015/09/10		2017/08/14	
	2012/09/07	2013/09/12		2015/09/18		2017/08/23	
	2012/09/19	2013/09/21		2015/09/28		2017/09/06	
	2012/09/30	2013/09/30				2017/09/17	
	2012/10/13	2013/10/11				2017/09/27	
Tara NESW (#31)	2005	2006	2007	2008	2009	2010	2011
	-	-	2007/08/02	2008/07/08	2009/07/09	2010/07/09	2011/07/22
			2007/08/16	2008/07/16	2009/07/17	2010/08/09	2011/08/09
				2008/07/23	2009/07/29		2011/08/19
				2008/07/26	2009/08/12		
				2008/08/11	2009/08/15		
				2008/08/18	2009/08/28		
	2012	2013	2014	2015	2016	2017	
	2012/09/07	2013/06/05	2014/08/16	2015/07/09	2016/07/03	2017/06/18	
	2012/09/18	2013/07/06	2014/08/28	2015/07/20	2016/07/20	2017/06/28	
	2012/09/29	2013/07/18	2014/09/06	2015/07/30	2016/07/29	2017/07/05	
		2013/08/01	2014/09/15	2015/08/10	2016/08/10	2017/07/16	
		2013/08/20	2014/09/26	2015/08/21	2016/08/31	2017/07/24	
		2013/08/30	2014/10/07	2015/08/31	2016/09/19	2017/08/04	
		2013/09/12	2014/10/17	2015/09/10	2016/09/29	2017/08/14	
		2013/09/21		2015/09/18		2017/08/23	
		2013/09/30		2015/09/28		2017/09/06	
						2017/09/17	
						2017/09/27	

						2017/10/07	
Tara NWSE (#31)	2005	2006	2007	2008	2009	2010	2011
	-	-	-	2008/08/18 2008/08/25 2008/09/05	2009/08/28	-	-
	2012	2013	2014	2015	2016	2017	
	-	-	-	-	-	-	
Eguerit EW (#40)	2005	2006	2007	2008	2009	2010	2011
	-	-	-	2008/08/20	-	-	-
	2012	2013	2014	2015	2016	2017	
	-	-	-	-	-	-	-
Bilantao NESW (#41)	2005	2006	2007	2008	2009	2010	2011
	-	-	2007/07/30	2008/08/17 2008/08/26	2009/09/01	-	-
	2012	2013	2014	2015	2016	2017	
	-	2013/07/13	-	-	-	-	