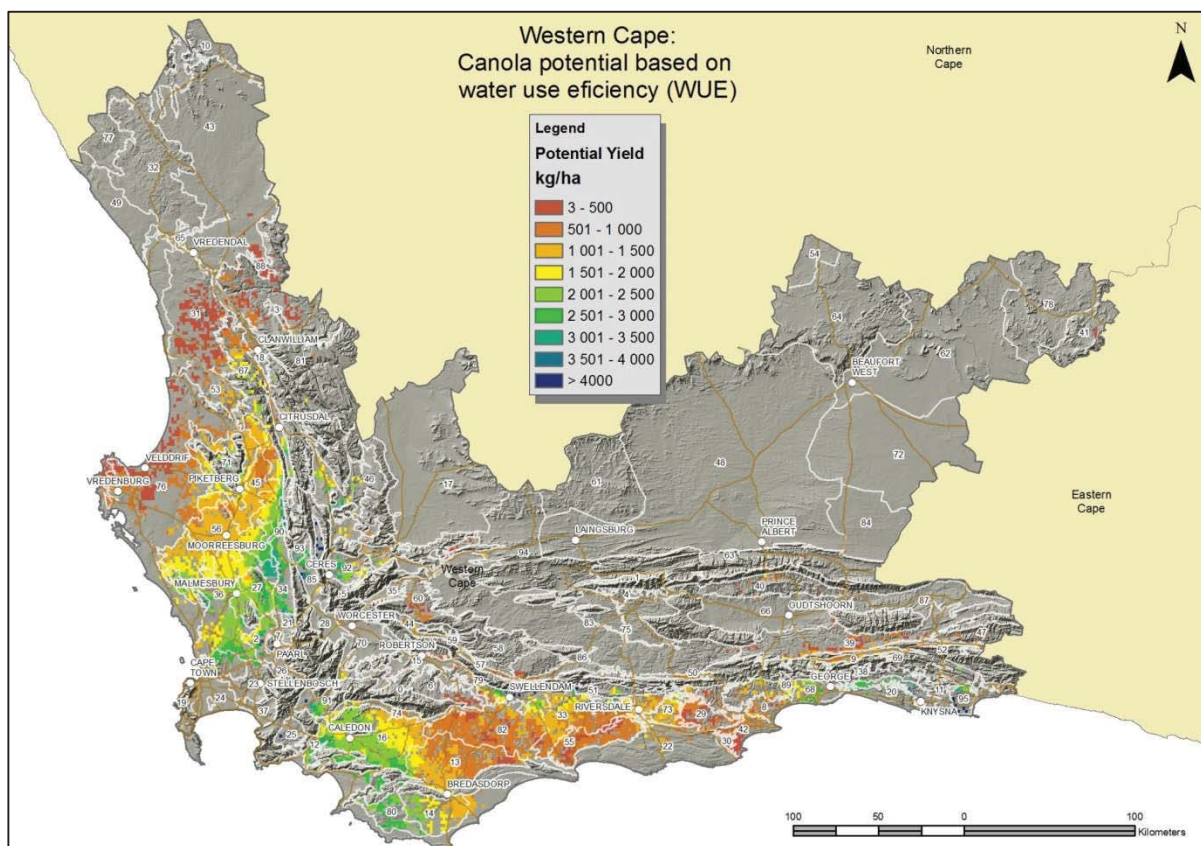


Determining the area of arable land suited to canola production in the Western Cape

Volume 2: TABLES AND FIGURES



Dr MB Hardy and Mr MG Wallace

Final Report

Determining the area of arable land suited to canola production in the Western Cape

VOLUME 2 – TABLES AND FIGURES

**Dr MB Hardy, Agri Services, 22 van Riebeeck Street, Montagu 6720
(Independent Agricultural Research Consultant)**

**Mr MG Wallace, Institute for Resources Utilization,
Department of Agriculture: Western Cape, P/Bag X1, Elsenburg 7607**



June 2013

LIST OF TABLES

Table 1	Calendar dates defining the start and end of each growth phase in each of two canola production regions
Table 2	Calendar dates defining the start and end of three periods used to estimate soil water supply in each of two crop production regions
Table 3	Name, number and area of each Relatively Homogeneous Farming Area (RHFA) identified for Region 1 (Swartland and Caledon Ruens), % of the total area under cultivation plus cultivated areas (ha) for rain-fed crop and pasture production
Table 4	Name, number and area of each Relatively Homogeneous Farming Area (RHFA) identified for Region 2 (southern Cape), % of the total area under cultivation plus cultivated areas (ha) for rain-fed crop and pasture production
Table 5.	Name and number of each Relatively Homogeneous Farming Area (RHFA) in Region 1 (Swartland including Caledon Ruens) and the accumulated monthly average growing degree days (GDD) for each of three growth phases. Phase 1 = planting to 50% flowering (1 May to 31 July), Phase 2 = 1st flower to end of flowering (1 August to 15 September), and Phase 3 = end of flowering to physiological maturity (16 September to 15 October)
Table 6.	Name and number of each Relatively Homogeneous Farming Area (RHFA) in Region 2 (Southern Cape excluding Caledon Ruens) and the accumulated monthly average growing degree days (GDD) for each of three growth phases. Phase 1 = planting to 50% flowering (16 April to 15 July), Phase 2 = 1st flower to end of flowering (16 July to 31 August), and Phase 3 = end of flowering to physiological maturity (1 September to 30 September)
Table 7.	Name and number of each Relatively Homogeneous Farming Area (RHFA) in Region 1 (Swartland including Caledon Ruens) and the accumulated monthly average photothermal units (PTU) for each of three growth phases. Phase 1 = planting to 50% flowering (1 May to 31 July), Phase 2 = 1st flower to end of flowering (1 August to 15 September), and Phase 3 = end of flowering to physiological maturity (16 September to 15 October)
Table 8.	Name and number of each Relatively Homogeneous Farming Area (RHFA) in Region 2 (Southern Cape excluding Caledon Ruens) and the accumulated monthly average photothermal units (PTU) for each of three growth phases. Phase 1 = planting to 50% flowering (16 April to 15 July), Phase 2 = 1st flower to end of flowering (16 July to 31 August), and Phase 3 = end of flowering to physiological maturity (1 September to 30 September)
Table 9.	Name and number of each Relatively Homogeneous Farming Area (RHFA) in Region 1 and average seasonal water supply (SWS) calculated for each RHFA – refer to methodology section for detail
Table 10.	Name and number of each Relatively Homogeneous Farming Area (RHFA) in Region 2 and average seasonal water supply (SWS) calculated for each RHFA – refer to methodology section for detail
Table 11.	Name and number of each Relatively Homogeneous Farming Area (RHFA) in Region 1 (Swartland), the area (ha) in each RHFA with estimated canola production potential in excess of 0kg/ha, and the average estimated canola production potential of each RHFA
Table 12.	Name and number of each Relatively Homogeneous Farming Area (RHFA) in Region 2 (Southern Cape), the area (ha) in each RHFA with estimated canola production potential in excess of 0kg/ha, and the average estimated canola production potential of each RHFA

- Table 13.** Estimates of cultivated areas and the crops and pastures recorded in A) the Western Cape Department of Agriculture's 1000 point surveys of the South Coast and Swartland in 2003 and 2004 respectively, and B) the PICES data set for wheat, barley and canola (averaged over the 2003 and 2004 seasons) and the 2012 PICES data sets including rain-fed small grain and pasture species
- Table 14.** Division of RHFAs into the South Coast and Swartland sub-Regions and PICES estimates of cultivated areas in each RHFA. RHFA No and Zone refer to the numbering given to RHFAs and allocation of RHFAs for the purposes of the current study
- Table 15.** Canola yield estimates for good, average and poor years in selected relatively homogenous farming areas (RHFA) according to Hoffmann (2011) and seasonal water supply (SWS) - based yields
- Table 16a.** Adjusted estimated area (ha) of rainfed cultivated land suited to canola production within the traditional grain producing Relatively Homogeneous Farming Areas (RHFA) in Region 1 (mainly the Swartland sub-Region), total photothermal units (PTU) and seasonal water supply (SWS) for each RHFA, and abbreviated comments by the advisory group on canola production potential of each RHFA.
- Table 16b.** Adjusted estimated area (ha) of rainfed cultivated land suited to canola production within marginal and "new" grain producing Relatively Homogeneous Farming Areas (RHFA) in Region 1, total photothermal units (PTU) and seasonal water supply (SWS) for each RHFA, and abbreviated comments by the advisory group on canola production potential of each RHFA.
- Table 16c.** Adjusted estimated area (ha) of rainfed cultivated land suited to canola production within miscellaneous Relatively Homogeneous Farming Areas (RHFA) in Region 1, total photothermal units (PTU) and seasonal water supply (SWS) for each RHFA, and abbreviated comments by the advisory group on canola production potential of each RHFA.
- Table 17a.** Adjusted estimated area (ha) of rainfed cultivated land suited to canola production within the traditional grain producing Relatively Homogeneous Farming Areas (RHFA) in Region 2 (mainly the Southern Cape sub-Region), total photothermal units (PTU) and seasonal water supply (SWS) for each RHFA, and abbreviated comments by the advisory group on canola production potential of each RHFA.
- Table 17b.** Adjusted estimated area (ha) of rainfed cultivated land suited to canola production within marginal and "new" grain producing Relatively Homogeneous Farming Areas (RHFA) in Region 2, total photothermal units (PTU) and seasonal water supply (SWS) for each RHFA, and abbreviated comments by the advisory group on canola production potential of each RHFA.
- Table 17c.** Adjusted estimated area (ha) of rainfed cultivated land suited to canola production within miscellaneous Relatively Homogeneous Farming Areas (RHFA) in Region 2, total photothermal units (PTU) and seasonal water supply (SWS) for each RHFA, and abbreviated comments by the advisory group on canola production potential of each RHFA.
- Table 18.** Areas (ha) suited to canola production within each of Regions 1 and 2 allocated to high , intermediate and low production categories for a) traditional grain production areas, b) "new" and marginal production areas and miscellaneous production areas

LIST OF FIGURES

- Figure 1. Location of Coastal Renosterveld in the western and southern regions of the Western Cape Provinces
- Figure 2. Division of the Western Cape Province into rain-fed crop and pasture Production Regions (Region 1 – West, and Region 2 - East)
- Figure 3. Relatively Homogeneous Farming Area (RHFA) map of the Western Cape including the names of each RHFA (numbered alphabetically)
- Figure 4. Digitized map compiled by PICES in 2010 showing all areas identified as having been cultivated for rain-fed (dryland) crop and pasture/fodder production in the Western Cape Province
- Figure 5. NDVI map of the 10-year average biomass production potential-for rain-fed cereal crops and pastures in the Western Cape
- Figure 6. Accumulated Growing Degree Days (GDD) from planting date to 50% flowering (90 days) of canola in each RHFA in the Western Cape
- Figure 7. Accumulated Growing Degree Days (GDD) during flowering (45 days) of canola in each RHFA in the Western Cape
- Figure 8. Accumulated Growing Degree Days (GDD) post flowering to physiological maturity (30 days) of canola in each RHFA in the Western Cape
- Figure 9. Accumulated Growing Degree Days (GDD) from planting to physiological maturity (165 days) of canola in each RHFA in the Western Cape
- Figure 10. Accumulated Photothermal Units (PTU) from planting date to first flowering (90 days) of canola in each RHFA in the Western Cape
- Figure 11. Accumulated Photothermal Units (PTU) during flowering (45 days) of canola in each RHFA in the Western Cape
- Figure 12. Accumulated Photothermal Units (PTU) post flowering to physiological maturity (30 days) of canola in each RHFA in the Western Cape
- Figure 13. Accumulated Photothermal Units (PTU) planting date to physiological maturity (165 days) of canola in each RHFA in the Western Cape
- Figure 14. Estimated canola production potential (kg/ha) within and between each RHFA in the Western Cape
- Figure 15. PICES spatial analysis of areas planted to canola in the Western Cape - 2007 to 2011
- Figure 16. Areas of RHFAs as described in the Hoffmann study for the Swartland
- Figure 17. Areas of RHFAs as described in the Hoffmann study for the Southern Cape

TABLES

Table 1 Calendar dates defining the start and end of each growth phase in each of two canola production regions

Growth phase	Region 1	Region 2
Phase 1	1 May to 31 July	16 April to 15 July
Phase 2	1 August to 15 September	16 July to 31 August
Phase 3	16 September to 15 October	1 September to 30 September

Table 2 Calendar dates defining the start and end of three periods used to estimate soil water supply in each of two crop production regions

Rainfall and soil water	Region 1	Region 2
In-crop rainfall	1 May to 15 Oct	15 April to 30 Sept
Soil water at sowing	1 Jan to 30 April	1 Jan to 15 April
Soil water at harvest	16 Sept to 15 Oct	1 Sept to 30 Sept

Table 3 Name, number and area of each Relatively Homogeneous Farming Area (RHFA) identified for Region 1 (Swartland and Caledon Ruens), % of the total area under cultivation plus cultivated areas (ha) for rain-fed crop and pasture production

Swartland - Region 1					
RHFA	RHFA No.	Region	Area (ha)	% Cultivated	Area cultivated (ha)
Agter-Paarl	2	1	27449	40.7	11169
Agterpakhuis/Bidouwvallei Besproeiing	3	1	12291	6.1	750
Bergrivier/Paarl	7	1	15352	10.2	1566
Boesmanland	10	1	53389	0.2	106
Botrivier	12	1	16464	36.7	6037
Caledon Ruens	16	1	150896	74.0	111707
Ceres-Karoo	17	1	506844	0.3	1561
Citrusdal/Clanwilliam Besproeiing	18	1	50086	14.2	7109
Constantia/Philippi	19	1			
Drakenstein/Groenberg	21	1	15258	1.5	235
Eersteriviervallei	23	1	44231	1.7	746
Eiland	24	1	44203	0.1	26
Elgin/Grabouw	25	1	23496	1.9	449
Franchhoek/Simonsberg	26	1	16914	0.9	146
Gemengde Boerderygebied	27	1	104739	43.6	45716
Goudini/Breerivier	28	1	29446	2.1	606
Graafwater/Sandveld	31	1	193599	38.8	75115
Hardeveld	32	1	249573	12.4	31055
Hermon/Gouda	34	1	43223	42.9	18546
Hoe Reenval Saaigebied	36	1	221555	61.4	135955
Hottentots-Holland	37	1	21747	0.7	151
Knersvlakte	43	1	550502	2.6	14390
Koringberg/Rooi Karoo Droe Saaigebied	45	1	86832	83.4	72415
Koue-Bokkeveld	46	1	164236	12.9	21210
Kusgebied	49	1	150194	7.0	10455
Langvleirivier	53	1	54532	23.5	12823
Middel Swartland Saaigebied	56	1	240297	72.6	174421
Olifantsrivier Besproeiing	65	1	28413	3.6	1020

Table 3 continued

Swartland - Region 1					
RHFA	RHFA No.	Region	Area (ha)	% Cultivated	Area cultivated (ha)
Olifantsrivierberge	67	1	110826	22.1	24477
Overhex/Moordkuil	70	1	75956	6.2	4701
Piketberg/Porterville Berge	71	1	47567	2.8	1320
Riviersonderendvallei	74	1	29598	34.6	10230
Sandveld Saai- en Veldweidingsgebied	76	1	425096	25.9	109907
Sentrale Bergreekse en Gebroke Veld	77	1	114107	6.0	6828
Suid-oostelike Platogebied	81	1	493738	6.4	31802
Tulbagh/Wolseley	85	1	31862	23.3	7410
Urionskraal	88	1	9003	42.2	3798
Vier-en-Twintig Riviere	90	1	5124	21.3	1091
Villiersdorp/Vyeboom	91	1	33792	12.8	4331
Warm Bokkeveld	92	1	36669	24.3	8927
Winterhoek	93	1	9793	17.0	1667
Grand-total cultivated Region 1 (ha) =					971976

Table 4 Name, number and area of each Relatively Homogeneous Farming Area (RHFA) identified for Region 2 (southern Cape), % of the total area under cultivation plus cultivated areas (ha) for rain-fed crop and pasture production

Southern Cape - Region 2					
RHFA	RHFA No.	Region	Area (ha)	% Cultivated	Area cultivated (ha)
Agter-Kleinswartberge	1	2	10057	0.1	12
Amalienstein/Van Zylsdamme	4	2	11810	13.1	1541
Bergplase	6	2	83784	12.5	10458
Besproeiingskomme	8	2	72510	33.2	24040
Bo-Langkloof	9	2	17335	51.3	8899
Bosbou	11	2	42717	0.5	232
Bredasdorp Ruens	13	2	135519	79.4	107647
Bredasdorp/Strandveldvlakte	14	2	71524	43.8	31322
Breerivier Vallei	15	2	55573	6.9	3850
Die Mere	20	2	36053	3.3	1193
Duineveld	22	2	288671	7.4	21233
Gourits-Rooiruens	29	2	38200	60.2	23012
Gouritzriviervallei	30	2	7661	33.9	2601
Heidelberg Ruens	33	2	99477	63.5	63165
Hexvallei	35	2	13999	0.6	82
Jonkersberg/Geelhoutboom	38	2	39213	1.5	596
Kamanassie	39	2	169809	19.5	33141
Kango	40	2	89930	4.5	4040
Karoo - Berggebied (Sneeuberge)	41	2	78020	1.4	1066
Kleinberg/Suurrug	42	2	41799	44.5	18580
Koo/Concordia/Bo-vlakte	44	2	13569	19.9	2707
Kouga/De Hoop	47	2	39873	3.8	1528
Koup	48	2	13750	0.2	2152
Langeberg Saaigebied	50	2	20262	13.5	2733
Langebergvoetheuwels	51	2	111207	21.7	24121
Langkloof	52	2	8724	35.9	3133
Loxton Soetveld	54	2	45975	0.3	154
Malgas/Heidelbergvlakte	55	2	64800	75.6	48986

Table 4. Continued

Southern Cape - Region 2					
RHFA	RHFA No.	Region	Area (ha)	% Cultivated	Area cultivated (ha)
Montagu-Bergplase	57	2	13681	14.1	1924
Montagu-kom	58	2	71799	0.6	424
Montagu-Rivierplase	59	2	5118	0.6	29
Montagu Saaigebied	60	2	137289	9.8	13491
Moordenaarskaroo	61	2	209533	0.0	75
Nelspoortrante	62	2	529814	0.4	2167
Noordelike Swartberghang	63	2	225000	1.0	2212
Nuveld	64	2	362485	0.3	985
Olifantsrivier/Gamka	66	2	167770	11.2	18847
Outeniqua/Woodville/Uplands	68	2	81805	20.0	16344
Outeniquaklowe	69	2	8296	15.1	1249
Rietbronvlakte	72	2	422297	0.3	1420
Riversdale Ruens	73	2	43843	61.0	26760
Riviervlakte	75	2	9119	19.0	1735
Sentrale Bo-Karoo	78	2	226543	0.7	1522
Stockwell	79	2	5301	23.6	1253
Strandveldvoetheuwels	80	2	57597	28.2	16260
Swellendam Ruens	82	2	160431	68.3	109576
Touw/Ladismith-Karoo	83	2	495694	1.3	6372
Traka	84	2	140209	0.1	195
Twisniet/Barrydale	86	2	27287	3.3	901
Uniondale Karoo	87	2	100803	3.1	3103
Victoriabaai/Kleinplaas	89	2	4774	10.3	493
Winterreengebied	94	2	251804	1.2	3089
Wittedrifvallei	95	2	20307	16.8	3415
Grand-total cultivated (ha) =					676065

Table 5. Name and number of each Relatively Homogeneous Farming Area (RHFA) in Region 1 (Swartland including Caledon Ruens) and the accumulated monthly average growing degree days (GDD) for each of three growth phases. Phase 1 = planting to 50% flowering (1 May to 31 July), Phase 2 = 1st flower to end of flowering (1 August to 15 September), and Phase 3 = end of flowering to physiological maturity (16 September to 15 October)

RHFA	RHFA No.	Accumulated GDD in Region 1		
		Phase 1	Phase 2	Phase 3
Koue-Bokkeveld	46	880	459	387
Ceres-Karoo	17	941	515	451
Warm Bokkeveld	92	976	504	413
Piketberg/Porterville Berge	71	1102	537	429
Villiersdorp/Vyeboom	91	1110	547	425
Tulbagh/Wolseley	85	1130	568	461
Winterhoek	93	1131	564	461
Elgin/Grabouw	25	1144	555	422
Caledon Ruens	16	1153	562	440
Suid-oostelike Platogebied	81	1156	599	485
Riviersonderendvallei	74	1171	576	456
Hottentots-Holland	37	1181	579	446
Eersteriviervallei	23	1184	582	452
Overhex/Moordkuil	70	1188	595	474
Franchhoek/Simonsberg	26	1190	593	467
Goudini/Breerivier	28	1197	601	479
Drakenstein/Groenberg	21	1199	596	476
Gemengde Boerderygebied	27	1208	590	464
Botrivier	12	1211	588	448
Boesmanland	10	1213	602	450
Olifantsrivierberge	67	1214	609	484
Hoe Reenval Saaigebied	36	1220	595	468
Sandveld Saai- en Veldweidingsgebied	76	1222	598	456
Middel Swartland Saaigebied	56	1232	601	478
Vier-en-Twintig Riviere	90	1232	607	494
Agter-Paarl	2	1236	610	486
Hermon/Gouda	34	1240	614	497

Table 5. Continued

RHFA	RHFA No.	Accumulated GDD in Region 1		
		Phase 1	Phase 2	Phase 3
Koringberg/Rooi Karoo Droe Saaigebied	45	1241	609	493
Bergrivier/Paarl	7	1248	619	495
Eiland	24	1252	611	463
Constantia/Philippi	19	1262	613	456
Langveirivier	53	1272	625	489
Agterpakhuis/Bidouwvallei Besproeiing	3	1282	674	546
Citrusdal/Clanwilliam Besproeiing	18	1295	663	533
Graafwater/Sandveld	31	1334	652	495
Sentrale Bergreekse en Gebroke Veld	77	1351	659	478
Hardeveld	32	1359	663	485
Kusgebied	49	1363	657	478
Knersvlakte	43	1366	685	523
Urionskraal	88	1376	707	558
Olifantsrivier Besproeiing	65	1407	696	525

Table 6. Name and number of each Relatively Homogeneous Farming Area (RHFA) in Region 2 (Southern Cape excluding Caledon Ruens) and the accumulated monthly average growing degree days (GDD) for each of three growth phases. Phase 1 = planting to 50% flowering (16 April to 15 July), Phase 2 = 1st flower to end of flowering (16 July to 31 August), and Phase 3 = end of flowering to physiological maturity (1 September to 30 September)

RHFA	RHFA No.	Accumulated GDD in Region 2		
		Phase 1	Phase 2	Phase 3
Loxton Soetveld	54	954	419	371
Nuvelde	64	978	432	372
Karoo - Berggebied (Sneeuberge)	41	987	448	366
Kouga/De Hoop	47	1011	449	357
Montagu Saaigebied	60	1022	441	360
Moordenaarskaroo	61	1027	438	392
Winterreengebied	94	1043	446	384
Sentrale Bo-Karoo	78	1057	478	399
Koo/Concordia/Bo-vlakte	44	1058	458	365
Langkloof	52	1071	475	372
Agter-Kleinswartberge	1	1072	469	382
Traka	84	1093	484	422
Noordelike Swartberghang	63	1106	491	420
Uniondale Karoo	87	1112	488	407
Montagu-kom	58	1132	492	397
Nelspoortrante	62	1141	511	425
Hexvallei	35	1142	496	402
Kamanassie	39	1151	505	401
Rietbronzlakte	72	1162	519	443
Kango	40	1168	522	441
Outeniquaklowe	69	1173	513	389
Koup	48	1188	527	468
Bo-Langkloof	9	1199	513	394
Montagu-Bergplase	57	1210	527	421
Touw/Ladismith-Karoo	83	1221	535	432
Montagu-Rivierplase	59	1230	537	432
Twisniet/Barrydale	86	1242	540	428
Bergplase	6	1244	539	423

Table 6. Continued

RHFA	RHFA No.	Accumulated GDD in Region 2		
		Phase 1	Phase 2	Phase 3
Olifantsrivier/Gamka	66	1244	555	456
Stockwell	79	1260	549	434
Langeberg Saaigebied	50	1265	556	432
Breerivier Vallei	15	1278	556	437
Langebergvoetheuwels	51	1289	568	433
Bredasdorp Ruens	13	1293	553	420
Jonkersberg/Geelhoutboom	38	1294	562	417
Strandveldvoetheuwels	80	1304	568	417
Amalienstein/Van Zylsdamme	4	1305	577	466
Swellendam Ruens	82	1316	569	436
Heidelberg Ruens	33	1329	575	439
Bredasdorp/Strandveldvlakte	14	1331	578	428
Bosbou	11	1344	604	438
Riviervlakte	75	1345	592	473
Riversdale Ruens	73	1346	592	439
Outeniqua/Woodville/Uplands	68	1349	595	435
Besproeiingskomme	8	1352	601	448
Gourits-Rooiruens	29	1367	609	446
Victoriabaai/Kleinplaas	89	1367	601	435
Kleinberg/Suurrug	42	1375	617	440
Wittedrifvallei	95	1388	626	451
Malgas/Heidelbergvlakte	55	1394	606	446
Duineveld	22	1404	616	439
Die Mere	20	1429	623	452
Gouritzriviervallei	30	1434	642	454

Table 7. Name and number of each Relatively Homogeneous Farming Area (RHFA) in Region 1 (Swartland including Caledon Ruens) and the accumulated monthly average photothermal units (PTU) for each of three growth phases. Phase 1 = planting to 50% flowering (1 May to 31 July), Phase 2 = 1st flower to end of flowering (1 August to 15 September), and Phase 3 = end of flowering to physiological maturity (16 September to 15 October)

RHFA	Accumulated PTU in Region 1				
	RHFA No.	Phase 1	Phase 2	Phase 3	Total
Koue-Bokkeveld	46	8854	5102	4752	18708
Warm Bokkeveld	92	9811	5596	5079	20486
Elgin/Grabouw	25	11420	6145	5190	22755
Villiersdorp/Vyeboom	91	11066	6042	5216	22324
Piketberg/Porterville Berge	71	11091	5958	5252	22301
Caledon Ruens	16	11492	6214	5409	23115
Hottentots-Holland	37	11815	6427	5492	23734
Botrivier	12	12056	6491	5502	24049
Boesmanland	10	12433	6741	5505	24679
Ceres-Karoo	17	9501	5733	5538	20772
Eersteriviervallei	23	11830	6439	5550	23819
Constantia/Philippi	19	12577	6770	5586	24933
Sandveld Saai- en Veldweidingsgebied	76	12301	6639	5589	24529
Riviersonderendvallei	74	11690	6375	5601	23666
Winterhoek	93	11348	6249	5649	23246
Eiland	24	12503	6755	5683	24941
Tulbagh/Wolseley	85	11375	6324	5685	23384
Gemengde Boerderygebied	27	12108	6541	5703	24352
Franchhoek/Simonsberg	26	11880	6549	5723	24151
Hoe Reenval Saaigebied	36	12235	6599	5739	24573
Overhex/Moordkuil	70	11906	6606	5821	24332
Sentrale Bergreekse en Gebroke Veld	77	13800	7355	5845	26999
Kusgebied	49	13853	7318	5852	27022
Drakenstein/Groenberg	21	12027	6619	5860	24507
Middel Swartland Saaigebied	56	12398	6677	5873	24948
Goudini/Breerivier	28	11975	6652	5881	24507
Hardeveld	32	13853	7393	5937	27183

Table 7 Continued

RHFA	Accumulated PTU in Region 1				
	RHFA No.	Phase 1	Phase 2	Phase 3	Total
Suid-oostelike Platogebied	81	11711	6672	5943	24326
Olifantsrivierberge	67	12292	6788	5946	25026
Agter-Paarl	2	12380	6755	5970	25106
Langvleirivier	53	12851	6952	5992	25795
Koringberg/Rooi Karoo Droe Saaigebied	45	12503	6764	6050	25316
Graafwater/Sandveld	31	13519	7252	6060	26831
Vier-en-Twintig Riviere	90	12369	6737	6068	25174
Bergrivier/Paarl	7	12488	6842	6074	25405
Hermon/Gouda	34	12444	6813	6107	25364
Knersvlakte	43	13929	7646	6403	27978
Olifantsrivier Besproeiing	65	14302	7756	6440	28497
Citrusdal/Clanwilliam Besproeiing	18	13091	7371	6533	26995
Agterpakhuis/Bidouwvallei Besproeiing	3	12994	7510	6705	27210
Urionskraal	88	13984	7891	6844	28719

Table 8. Name and number of each Relatively Homogeneous Farming Area (RHFA) in Region 2 (Southern Cape excluding Caledon Ruens) and the accumulated monthly average photothermal units (PTU) for each of three growth phases. Phase 1 = planting to 50% flowering (16 April to 15 July), Phase 2 = 1st flower to end of flowering (16 July to 31 August), and Phase 3 = end of flowering to physiological maturity (1 September to 30 September)

RHFA	Accumulated PTU in Region 2				
	RHFA No.	Phase 1	Phase 2	Phase 3	Total
Kouga/De Hoop	47	10404	4714	4189	19306
Montagu Saaigebied	60	10513	4624	4227	19363
Koo/Concordia/Bo-vlakte	44	10846	4791	4275	19912
Langkloof	52	10904	4933	4311	20148
Karoo - Berggebied (Sneeuberge)	41	10254	4753	4315	19322
Loxton Soetveld	54	9937	4435	4356	18728
Nuvelde	64	10164	4575	4366	19104
Agter-Kleinswartberge	1	10907	4873	4432	20212
Winterreengebied	94	10751	4684	4506	19941
Outeniquaklowe	69	12033	5379	4551	21964
Moordenaarskaroo	61	10639	4621	4602	19862
Bo-Langkloof	9	12263	5359	4607	22229
Montagu-kom	58	11609	5155	4644	21408
Sentrale Bo-Karoo	78	10981	5060	4683	20724
Kamanassie	39	11801	5280	4695	21776
Hexvallei	35	11785	5223	4731	21738
Uniondale Karoo	87	11448	5122	4775	21345
Jonkersberg/Geelhoutboom	38	13204	5853	4872	23928
Strandveldvoetheuwels	80	13267	5913	4884	24063
Montagu-Bergplase	57	12343	5492	4904	22739
Noordelike Swartberghang	63	11368	5145	4910	21423
Bredasdorp Ruens	13	13197	5765	4922	23885
Bergplase	6	12732	5629	4947	23308
Traka	84	11279	5094	4951	21324
Nelspoortrante	62	11823	5401	4992	22216
Twisniet/Barrydale	86	12723	5645	5007	23375
Bredasdorp/Strandveldvlakte	14	13547	6022	5016	24585
Langeberg Saaigebied	50	12920	5801	5050	23771

Table 8 Continued

RHFA	Accumulated PTU in Region 2				
	RHFA No.	Phase 1	Phase 2	Phase 3	Total
Montagu-Rivierplase	59	12596	5613	5061	23270
Touw/Ladismith-Karoo	83	12538	5604	5067	23210
Langebergvoetheuwels	51	13207	5952	5088	24246
Stockwell	79	12914	5746	5093	23753
Outeniqua/Woodville/Uplands	68	13779	6221	5094	25095
Victoriabaai/Kleinplaas	89	13917	6276	5095	25288
Swellendam Ruens	82	13441	5941	5113	24495
Breerivier Vallei	15	13086	5808	5122	24016
Bosbou	11	13701	6298	5129	25128
Duineveld	22	14291	6423	5141	25855
Heidelberg Ruens	33	13581	6006	5141	24728
Riversdale Ruens	73	13747	6184	5144	25075
Kleinberg/Suurrug	42	14031	6443	5159	25633
Kango	40	12031	5490	5175	22695
Rietbronvlakte	72	12008	5474	5195	22677
Malgas/Heidelbergvlakte	55	14220	6321	5224	25764
Gourits-Rooiruens	29	13966	6363	5234	25563
Besproeiingskomme	8	13821	6285	5241	25346
Wittedrifvallei	95	14201	6559	5283	26044
Die Mere	20	14584	6507	5299	26389
Gouritzriviervallei	30	14639	6710	5328	26678
Olifantsrivier/Gamka	66	12797	5824	5341	23962
Amalienstein/Van Zylsdamme	4	13403	6051	5457	24911
Koup	48	12292	5560	5491	23342
Riviervlakte	75	13805	6209	5534	25547

Table 9. Name and number of each Relatively Homogeneous Farming Area (RHFA) in Region 1 and average seasonal water supply (SWS) calculated for each RHFA – refer to methodology section for detail

Region 1		
RHFA	RHFA No.	SWS (mm)
Sentrale Bergreekse en Gebroke Veld	77	-60
Hardeveld	32	-53
Kusgebied	49	-46
Ceres-Karoo	17	-37
Knersvlakte	43	-8
Urionskraal	88	0
Low production potential		
Graafwater/Sandveld	31	10
Suid-oostelike Platogebied	81	37
Olifantsrivier Besproeiing	65	44
Sandveld Saai- en Veldweidingsgebied	76	59
Agterpakhuis/Bidouwvallei Besproeiing	3	65
Langvleirivier	53	76
Intermediate production potential		
Overhex/Moordkuil	70	71
Koringberg/Rooi Karoo Droe Saaigebied	45	112
Olifantsrivierberge	67	117
Middel Swartland Saaigebied	56	130
Citrusdal/Clanwilliam Besproeiing	18	136
High production potential		
Piketberg/Porterville Berge	71	164
Hoe Reenval Saaigebied	36	181
Koue-Bokkeveld	46	194
Gemengde Boerderygebied	27	211
Agter-Paarl	2	219
Bergrivier/Paarl	7	223
Goudini/Breerivier	28	230
Warm Bokkeveld	92	232
Vier-en-Twintig Riviere	90	235
Eersteriviervallei	23	246
Hermon/Gouda	34	261
Winterhoek	93	262
Tulbagh/Wolseley	85	292
Drakenstein/Groenberg	21	300
Elgin/Grabouw	25	741

Table 10. Name and number of each Relatively Homogeneous Farming Area (RHFA) in Region 2 and average seasonal water supply (SWS) calculated for each RHFA – refer to methodology section for detail

Region 2		
RHFA	RHFA No.	SWS (mm)
Koup	48	-81
Rietbronzlakte	72	-81
Loxton Soetveld	54	-72
Nelspoortrante	62	-61
Nuvel	64	-57
Amalienstein/Van Zylsdamme	4	-54
Boesmanland	10	-53
Rivierlakte	75	-53
Noordelike Swartberghang	63	-48
Olifantsrivier/Gamka	66	-48
Uniondale Karoo	87	-44
Sentrale Bo-Karoo	78	-42
Montagu-kom	58	-39
Twisniet/Barrydale	86	-35
Touw/Ladismith-Karoo	83	-26
Low production potential		
Kamanassie	39	5
Winterreengebied	94	5
Karoo - Berggebied (Sneeuberge)	41	9
Montagu-Bergplase	57	10
Bergplase	6	12
Montagu Saaigebied	60	16
Gouritzriviervallei	30	17
Breerivier Vallei	15	31
Gourits-Rooiruens	29	36
Kleinberg/Suurrug	42	37
Kouga/De Hoop	47	42
Malgas/Heidelberglakte	55	44
Kango	40	45
Langeberg Saaigebied	50	47

Table 10 Continued

Region 2		
RHFA	RHFA No.	SWS (mm)
Intermediate production potential		
Swellendam Ruens	82	54
Bo-Langkloof	9	55
Koo/Concordia/Bo-vlakte	44	59
Langkloof	52	62
Besproeiingskomme	8	63
Bredasdorp Ruens	13	69
Heidelberg Ruens	33	72
Riversdale Ruens	73	72
Stockwell	79	85
Duineveld	22	86
High production potential		
Riviersonderendvallei	74	109
Victoriabaai/Kleinplaas	89	110
Langebergvoetheuwels	51	112
Bredasdorp/Strandveldvlakte	14	114
Caledon Ruens	16	132
Outeniqua/Woodville/Uplands	68	160
Strandveldvoetheuwels	80	175
Jonkersberg/Geelhoutboom	38	194
Botrivier	12	199
Die Mere	20	202
Villiersdorp/Vyeboom	91	245
Wittedrifvallei	95	257
Bosbou	11	260

Table 11. Name and number of each Relatively Homogeneous Farming Area (RHFA) in Region 1 (Swartland), the area (ha) in each RHFA with estimated canola production potential in excess of 0kg/ha, and the average estimated canola production potential of each RHFA

RHFA	RHFA No.	Area (ha) kg/ha>0	Predicted Yield kg/ha
Boesmanland	10	0	0
Ceres-Karoo	17	0	0
Constantia/Philippi	19	0	0
Eiland	24	0	0
Franchhoek/Simonsberg	26	0	0
Hardeveld	32	0	0
Hottentots-Holland	37	0	0
Sentrale Bergreekse en Gebroke Veld	77	0	0
Low production potential			
Urionskraal	88	1890	103
Kusgebied	49	171	132
Knersvlakte	43	3444	161
Graafwater/Sandveld	31	34116	239
Olifantsrivier Besproeiing	65	194	484
Suid-oostelike Platgebied	81	12642	511
Sandveld Saai- en Veldweidingsgebied	76	68241	656
Agterpakhuis/Bidouwvallei			
Besproeiing	3	126	710
Langvleirivier	53	5969	831

Table 11 Continued

Region 1 RHFA	RHFA No.	Area (ha) kg/ha>0	Predicted Yield kg/ha
Intermediate production potential			
Overhex/Moordkuil	70	1135	1153
Koringberg/Rooi Karoo Droë Saaigebied	45	64488	1236
Olifantsrivierberge	67	12581	1290
Middel Swartland Saaigebied	56	141683	1433
Citrusdal/Clanwilliam Besproeiing	18	2028	1500
High production potential			
Piketberg/Porterville Berge	71	214	1802
Hoe Reenval Saaigebied	36	103791	1986
Koue-Bokkeveld	46	8390	2138
Gemengde Boerderygebied	27	33518	2325
Agter-Paarl	2	7856	2406
Bergrivier/Paarl	7	786	2449
Goudini/Breerivier	28	72	2529
Warm Bokkeveld	92	4899	2548
Vier-en-Twintig Riviere	90	666	2586
Eersteriviervallei	23	239	2701
Hermon/Gouda	34	12523	2875
Winterhoek	93	518	2885
Tulbagh/Wolseley	85	4189	3210
Drakenstein/Groenberg	21	64	3298
Elgin/Grabouw	25	40	8151
Total cultivated (ha)		526472	
Total for traditional (highlighted) Swartland (ha)		343480	
Total Low production potential (ha)		126793	
Total Intermediate production potential (ha)		221915	
Total High production potential (ha)		177764	
Total Intermediate + High production potential (ha)		399678	

Table 12. Name and number of each Relatively Homogeneous Farming Area (RHFA) in Region 2 (Southern Cape), the area (ha) in each RHFA with estimated canola production potential in excess of 0kg/ha, and the average estimated canola production potential of each RHFA

Region 2 RHFA	RHFA No.	Area (ha) kg/ha>0	Predicted Yield kg/ha
Agter-Kleinswartberge	1	0	0
Amalienstein/Van Zylsdamme	4	0	0
Hexvallei	35	0	0
Koup	48	0	0
Loxton Soetveld	54	0	0
Montagu-kom	58	0	0
Montagu-Rivierplase	59	0	0
Moordenaarskaroo	61	0	0
Nelspoortrante	62	0	0
Nuveld	64	0	0
Outeniquaklowe	69	0	0
Rietbronvlakte	72	0	0
Riviervlakte	75	0	0
Sentrale Bo-Karoo	78	0	0
Traka	84	0	0
Twisniet/Barrydale	86	0	0
Uniondale Karoo	87	0	0
Low production potential			
Montagu-Bergplase	57	230	150
Touw/Ladismith-Karoo	83	468	246
Karoo - Berggebied (Sneeuberge)	41	135	250
Olifantsrivier/Gamka	66	302	300
Bergplase	6	4240	308
Noordelike Swartberghang	63	5	375
Montagu Saaigebied	60	5108	393
Gouritzriviervallei	30	586	394
Breerivier Vallei	15	896	463
Kamanassie	39	10373	504
Gourits-Rooiruens	29	15405	555
Kleinberg/Suurrug	42	12765	573
Kouga/De Hoop	47	577	631

Table 12 Continued

Region 2 RHFA	RHFA No.	Area (ha) kg/ha>0	Predicted Yield kg/ha
Intermediate production potential			
Malgas/Heidelbergvlakte	55	39473	666
Langeberg Saaigebied	50	1414	701
Kango	40	1154	769
Swellendam Ruens	82	88399	805
Bo-Langkloof	9	4792	826
Koo/Concordia/Bo-vlakte	44	1069	878
Langkloof	52	1107	924
Besproeiingskomme	8	13282	964
Bredasdorp Ruens	13	87742	1031
Heidelberg Ruens	33	50403	1078
Riversdale Ruens	73	17494	1082
Stockwell	79	609	1268
Winterreengebied	94	368	1331
Duineveld	22	10370	1339
High production potential			
Victoriabaai/Kleinplaas	89	160	1650
Riviersonderendvallei	74	5698	1660
Langebergvoetheuwels	51	12358	1679
Bredasdorp/Strandveldvlakte	14	21317	1703
Caledon Ruens	16	92536	1961
Outeniqua/Woodville/Uplands	68	6559	2400
Strandveldvoetheuwels	80	9922	2503
Jonkersberg/Geelhoutboom	38	214	2903
Die Mere	20	358	3023
Botrivier	12	3873	3037
Villiersdorp/Vyeboom	91	2835	3674
Wittedrifvallei	95	1537	3857
Bosbou	11	66	3895
Total cultivated (ha)		526199	
Total for traditional (highlighted) Southern Cape (ha)		494247	
Total Low production potential (ha)		51092	
Total Intermediate production potential (ha)		317675	
Total High production potential (ha)		157433	
Total Intermediate + High production potential (ha)		475108	

Table 13.

Estimates of cultivated areas and the crops and pastures recorded in A) the Western Cape Department of Agriculture's 1000 point surveys of the South Coast and Swartland in 2003 and 2004 respectively, and B) the PICES data set for wheat, barley and canola (averaged over the 2003 and 2004 seasons) and the 2012 PICES data sets including rain-fed small grain and pasture species

A	WCDA 1000 point survey data		
Crop/pasture	South Coast (ha)	Swartland (ha)	Total (ha)
*Wheat	142482	242944	385426
*Barley	87167	5346	92513
Oats	40855	20943	61798
Triticale	14502	7870	22372
*Canola	35711	16354	52065
Lupin	1805	13303	15108
Small grain feed	43184	71391	114575
Lucerne	169610	2142	171752
Clover	10227		10227
Medic	37673	31495	69168
Grasses	153351		153351
Rog		9739	9739
Serredella		518	518
Fababone		350	350
Old lands	37274	176100	213374
Fallow	29466	54119	83585
Total	803307	652614	
		Grand total	1455921

* Total wheat, Barley & canola (ha) =

530004

B	PICES data - Western Cape	
Crop/pasture	2003/2004 (ha)	2012 (ha)
*Wheat	339500	272000
*Malting Barley	70500	76000
Oats		
Triticale		
*Canola	43525	42500
Lupin		
Small grain feed		145200
**Legume pasture		441400
Clover		
Medic		
Grasses		
Rog		
Serredella		
Fababone		
Old lands		
Fallow		
Total	453525	
	Grand total	977100

* Total wheat, Barley & canola 2012 (ha) =

390500

** Total of lucerne, medic and clover pastures

Table 14. Division of RHFAs into the South Coast and Swartland sub-Regions and PICES estimates of cultivated areas in each RHFA. RHFA No and Zone refer to the numbering given to RHFAs and allocation of RHFAs for the purposes of the current study

South Coast sub-Region			
RHFA	RHFA No.	Zone	Cultivated (ha)
Besproeiingskomme	8	East	24040
Bosbou	11	East	232
Botrivier	12	West	6037
Bredasdorp Ruens	13	East	107647
Bredasdorp/Strandveldvlakte	14	East	31322
Breerivier Vallei	15	East	3850
Caledon Ruens	16	West	111707
Die Mere	20	East	1193
Duineveld	22	East	21233
Gourits-Rooiruens	29	East	23012
Gouritzriviervallei	30	East	2601
Heidelberg Ruens	33	East	63165
Jonkersberg/Geelhoutboom	38	East	596
Kleinberg/Suurrug	42	East	18580
Langebergvoetheuwels	51	East	24121
Malgas/Heidelbergvlakte	55	East	48986
Outeniqua/Woodville/Uplands	68	East	16344
Riversdale Ruens	73	East	26760
Riviersonderendvallei	74	West	10230
Strandveldvoetheuwels	80	East	16260
Swellendam Ruens	82	East	109576
Victoriabaai/Kleinplaas	89	East	493
Villiersdorp/Vyeboom	91	West	4331
Wittedrifvallei	95	East	3415
Total			675730

Swartland sub-Region			
RHFA	RHFA No	Zone	Cultivated (ha)
Gemengde Boerderygebied	27	West	45716
Hoe Reenval Saaigebied	36	West	135955
Koringberg/Rooi Karoo Droe Saaigebied	45	West	72415
Middel Swartland Saaigebied	56	West	174421
Piketberg/Porterville Berge	71	West	1320
Sandveld Saai- en Veldweidingsgebied	76	West	109907
Total			539735

Note: PICES estimated total cultivated area for the South Coast and Swartland = 1 215 465ha

Table 15. Canola yield estimates for good, average and poor years in selected relatively homogenous farming areas (RHFA) according to Hoffmann (2011) and seasonal water supply (SWS) - based yields

Hoffmann data				Hardy & Wallace data			
RHFA	Prod Type	yr/10	Yield est (ton/ha)	Weighted SWS yield (kg/ha)	RHFA	% of RHFA	SWS yield (kg/ha)
				Region 1 (Swartland)			
Koeberg/ Wellington	Good year	(2/10)	2.0	2113	36	65	1986
	Average year	(6/10)	1.5		2	10	2406
	Poor year	(2/10)	1.0		27	25	2325
Middel Swartland	Good year	(2/10)	1.5	1806	56	30	1433
	Average year	(6/10)	1.1		36	30	1986
	Poor year	(2/10)	0.5		27	15	2325
					34	15	2875
Rooi Karoo & Sandveld	Good year	(1/10)	1.5	1315	45	60	1236
	Average year	(4/10)	1.0		56	40	1433
	Poor year	(5/10)	0.5				
				Region 2 (Southern Cape)			
Goue Rûens	Good year	(3/10)	1.5	1682	16	70	1961
	Average year	(4/10)	1.3		13	30	1031
	Poor year	(3/10)	1.0				
Middel Rûens	Good year	(3/10)	1.5	918	13	50	1031
	Average year	(3/10)	1.2		82	50	805
	Poor year	(4/10)	0.8				
Heidelberg Vlakte	Good year	(4/10)	1.4	666	55	100	666
	Average year	(3/10)	1.1				
	Poor year	(3/10)	0.8				

Table 16a. Adjusted estimated area (ha) of rainfed cultivated land suited to canola production within the traditional grain producing Relatively Homogeneous Farming Areas (RHFA) in Region 1 (mainly the Swartland sub-Region), total photothermal units (PTU) and seasonal water supply (SWS) for each RHFA, and abbreviated comments by the advisory group on canola production potential of each RHFA.

RHFA	RHFA No.	Adjusted area with estimated kg/ha>0	Total PTU	SWS	Comments from discussions with advisory group
Koringberg/Rooi Karoo Droe Saaigebied	45	50301	25316	112	78% of modelled est may be used for canola production mainly heavier soil and gravel soils - avoid sandy soils (opportunistic in patches) - based om 70 of PICES estimate
Middel Swartland Saaigebied	56	141683	24948	130	100% of modelled est may be used for canola production mainly heavier soil and gravel soils - avoid sandy soils (opportunistic in patches)
Hoe Reenval Saaigebied	36	103791	24573	181	100% of modelled est may be used for canola production mainly heavier soil and gravel soils - avoid sandy soils (opportunistic in patches)
Gemengde Boerderygebied	27	33518	24352	211	100% of modelled est suited to canola
Agter-Paarl	2	7856	25106	219	100% of modelled est suited to canola
Hermon/Gouda	34	12523	25364	261	100% of modelled est suited to canola
Tulbagh/Wolseley	85	4189	23384	292	100% of modelled est suited to canola
Total (ha)		353861			

Table 16b. Adjusted estimated area (ha) of rainfed cultivated land suited to canola production within marginal and “new” grain producing Relatively Homogeneous Farming Areas (RHFA) in Region 1, total photothermal units (PTU) and seasonal water supply (SWS) for each RHFA, and abbreviated comments by the advisory group on canola production potential of each RHFA.

RHFA	RHFA No.	Adjusted area with estimated kg/ha>0	Total PTU	SWS	Comments from discussions with advisory group
Graafwater/Sandveld	31	1000	26831	10	Estimated area of approximately 1000ha near Ratelfontein due to soil type (low production potential)
Sandveld Saai- en Veldweidingsgebied	76	1000	24529	59	Deep well-drained sands cover almost 100% of RHFA. Fodder crops, mainly low production cereal grains and some annual legume pastures, produced on cultivated land. Cash crops planted opportunistically on an estimated 1000ha on soils on the boundary with RHFA 56 & 36
Koue-Bokkeveld	46	8390	18708	194	100% of modelled est may be used for canola production. Risk of frost damage during flowering, and insufficient PTU for optimal canola production.
Bergrivier/Paarl	7	786	25405	223	100% of modelled est suited to canola. Relatively small lands
Warm Bokkeveld	92	2756	20486	232	75% of modelled est suited to canola. Risk of frost damage during flowering, and insufficient PTU for optimal canola production.
Vier-en-Twintig Riviere	90	666	25174	235	100% of modelled est suited to canola. Relatively small lands
Total (ha)		14598			

Table 16c. Adjusted estimated area (ha) of rainfed cultivated land suited to canola production within miscellaneous Relatively Homogeneous Farming Areas (RHFA) in Region 1, total photothermal units (PTU) and seasonal water supply (SWS) for each RHFA, and abbreviated comments by the advisory group on canola production potential of each RHFA.

RHFA	RHFA No.	Adjusted area with estimated kg/ha>0	Total PTU	SWS	Comments from discussions with advisory group
Olifantsrivier Besproeiing	65	194	28497	44	High risk poor rainfall, sandy soils, small lands
Agterpakhuis/Bidouwvallei Besproeiing	3	126	27210	65	High risk, sandy soils, small lands
Langvleirivier	53	1000	25795	76	High risk, small lands
Overhex/Moordkuil	70	1135	24332	71	High risk poor rainfall, small lands
Olifantsrivierberge	67	1000	25026	117	High risk, sandy soils, small lands
Citrusdal/Cianwilliam Besproeiing	18	2028	26995	136	High risk, sandy soils, small lands
Goudini/Breerivier	28	72	24507	230	100% of modelled est suited to canola, small lands
Eersteriviervallei	23	239	23819	246	100% of modelled est suited to canola, small lands
Winterhoek	93	518	23246	262	100% of modelled est suited to canola, small lands
Drakenstein/Groenberg	21	64	24507	300	100% of modelled est suited to canola, small lands
Elgin/Grabouw	25	40	22755	741	100% of modelled est suited to canola, small lands
Total (ha)		6415			

Table 17a. Adjusted estimated area (ha) of rainfed cultivated land suited to canola production within the traditional grain producing Relatively Homogeneous Farming Areas (RHFA) in Region 2 (mainly the Southern Cape sub-Region), total photothermal units (PTU) and seasonal water supply (SWS) for each RHFA, and abbreviated comments by the advisory group on canola production potential of each RHFA.

RHFA	RHFA No.	Adjusted area with estimated kg/ha>0	Total PTU	SWS	Comments from discussions with advisory group
Malgas/Heidelbergvlakte	55	39473	25764	44	100% of modelled est suited to canola
Swellendam Ruens	82	88399	24495	54	100% of modelled est suited to canola
Bredasdorp Ruens	13	87742	23885	69	100% of modelled est suited to canola. Intermediate to high potential area
Heidelberg Ruens	33	45362	24728	72	(90%) can be used, NW facing slopes higher risk.
Riversdale Ruens	73	17494	25075	72	100% of modelled est suited to canola
Riviersonderendvallei	74	2849	23666	109	50% of modelled est suited to canola. Mainly irrigated farming area, high potential for rain-fed cash on reasonable slopes
Langebergvoetheuwels	51	3000	24246	112	Estimated 3000ha of rainfed cultivated area suited to canola production. This is mainly an irrigated farming area, high potential for rain-fed cash on reasonable slopes)
Bredasdorp/Strandveldvlakte	14	12790	24585	114	60% of modelled area est suited to canola production, mainly on heavier and gravel soils - avoid sandy soils
Caledon Ruens	16	92536	23115	132	100% of modelled est suited to canola
Total (ha)		389645			

Table 17b.

Adjusted estimated area (ha) of rainfed cultivated land suited to canola production within marginal and “new” grain producing Relatively Homogeneous Farming Areas (RHFA) in Region 2, total photothermal units (PTU) and seasonal water supply (SWS) for each RHFA, and abbreviated comments by the advisory group on canola production potential of each RHFA.

RHFA	RHFA No.	Adjusted area with estimated kg/ha>0	Total PTU	SWS	Comments from discussions with advisory group
Gourits-Rooiruens	29	4622	25563	36	General low potential for canola. Approximately 30% of modelled estimate of cultivated area suited to canola
Kleinberg/Suurrug	42	6383	25633	37	General low potential for canola. Approximately 50% of modelled estimate of cultivated area suited to canola - BUT: sandy soils, soil pH, P, and trace element deficiencies a problem
Bo-Langkloof	9	2396	22229	55	50% of modelled estimate of cultivated area suited to canola. High risk due to low temps together with low rainfall (opportunistic canola planting)
Besproeiingskomme	8	6641	25346	63	Approximately 50% of modelled estimate of cultivated area suited to canola.
Outeniqua/Woodville/Uplands	68	5247	25095	160	Approximately 80% of modelled estimate of cultivated area suited to canola suited to canola BUT slope is a risk, duplex soils, high fine fraction in soils soil pH, P, and trace element deficiencies
Strandveld- voetheuwels	80	992	24063	175	Approximately 10% of modelled estimate of cultivated area suited to canola on clay soils and ferricreats
Botrivier	12	775	24049	199	Approximately 20% of modelled estimate of cultivated area suited to canola of area suited to canola production. Poor soil structure and slopes - used mainly for fodder crop production
Villiersdorp/ Vyeboom	91	1134	22324	245	Experience suggests that this is intermediate potential area, due to soils (silcreat soils), poor soil structure, slope, duplex soils (Swartland type soil) - Approximately 40% of modelled estimate of cultivated area suited to canola
Total (ha)				28190	

Table 17c. **Adjusted estimated area (ha) of rainfed cultivated land suited to canola production within miscellaneous Relatively Homogeneous Farming Areas (RHFA) in Region 2, total photothermal units (PTU) and seasonal water supply (SWS) for each RHFA, and abbreviated comments by the advisory group on canola production potential of each RHFA.**

RHFA	RHFA No.	Adjusted area with estimated kg/ha>0	Total PTU	SWS	Comments from discussions with advisory group
Gouritzriviervallei	30	586	26678	17	Mainly irrigated farming area, low potential for rain-fed cash cropping
Kamanassie	39	0	21776	5	While this RHFA has low PTU and a very low SWS there may be pockets of higher rainfall where there is sufficient land to warrant canola production - further investigation required
Koo/Concordia/Bo-vlakte	44	1069	19912	59	High risk for frost during seed fill and too few PTU
Langkloof	52	1107	20148	62	High risk for frost during seed fill and too few PTU
Stockwell	79	609	23753	85	Mainly irrigated farming area, intermediate potential for rain-fed cash on reasonable slopes
Duineveld	22	250	25855	86	Fodder crops, sand dunes no cash crop potential (opportunistic 2. 5%)
Victoriabaai/Kleinplaas	89	160	25288	110	Insufficient rainfed cultivated land to warrant canola production
Jonkersberg/ Geelhoutboom	38	214	23928	194	Insufficient rainfed cultivated land to warrant canola production
Die Mere	20	358	26389	202	Insufficient rainfed cultivated land to warrant canola production
Wittedrifvallei	95	1537	26044	257	Soil risk, duplex, Villafonte, rainfall intensity, slope, 15% harvestable
Bosbou	11	66	25128	260	Insufficient rainfed cultivated land to warrant canola production
Total (ha)		5955			

Table 18. Areas (ha) suited to canola production within each of Regions 1 and 2 allocated to high , intermediate and low production categories for a) traditional grain production areas, b) “new” and marginal production areas and c) miscellaneous production areas

a)	Production potential		
Traditional grain areas	High	Intermediate	Low
Region 1 (ha)	161877	141683	50301
Region 2 (ha)	111175	278470	
Total (ha)	273052	420153	50301

b)	Production potential		
"New" and marginal areas	High	Intermediate	Low
Region 1 (ha)	12598		2000
Region 2 (ha)	8148	9037	11005
Total (ha)	20746	9037	13005

c)	Production potential		
Miscellaneous areas	High	Intermediate	Low
Region 1 (ha)	932	2028	3455
Region 2 (ha)	2334	3037	586
Total (ha)	3266	5065	4041

	Grand totals (ha)
Traditional grain areas =	743506
“New” and marginal areas =	42788
Miscellaneous areas =	12372

FIGURES

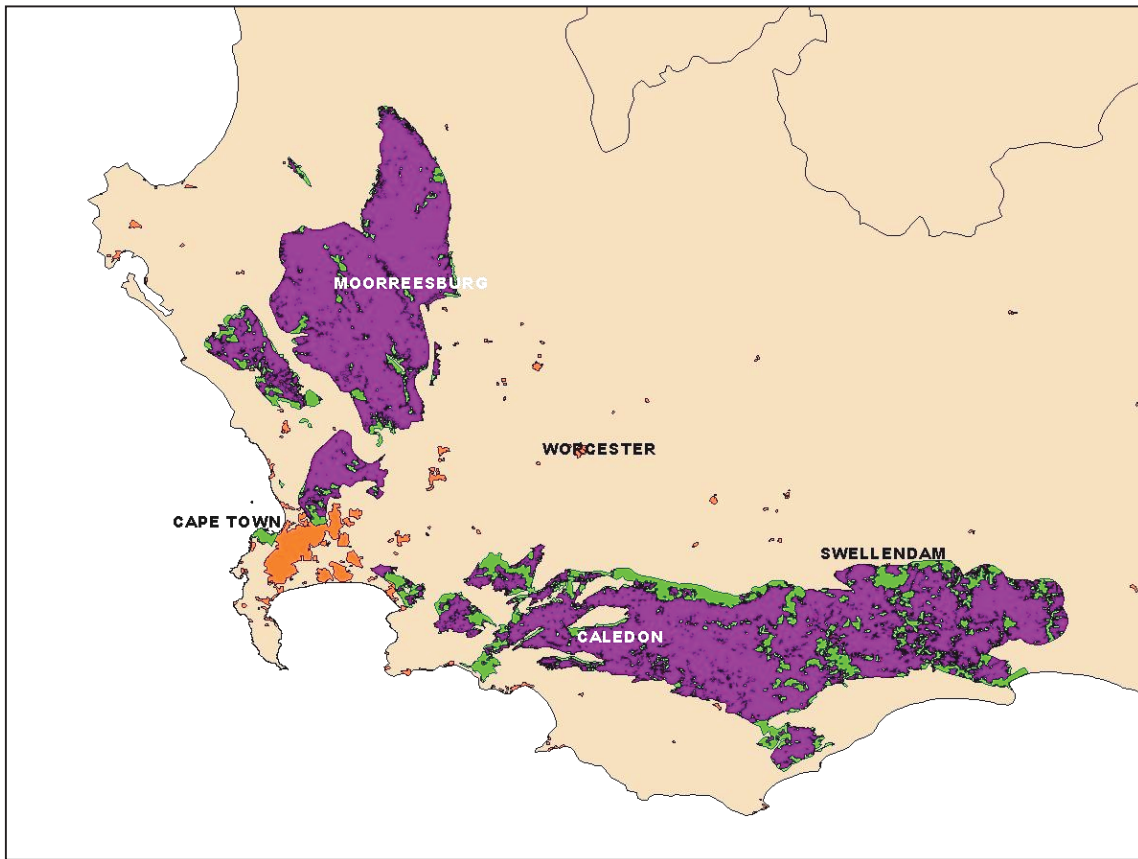


Figure 1 **Location of Coastal Renosterveld in the western and southern regions of the Western Cape Provinces**

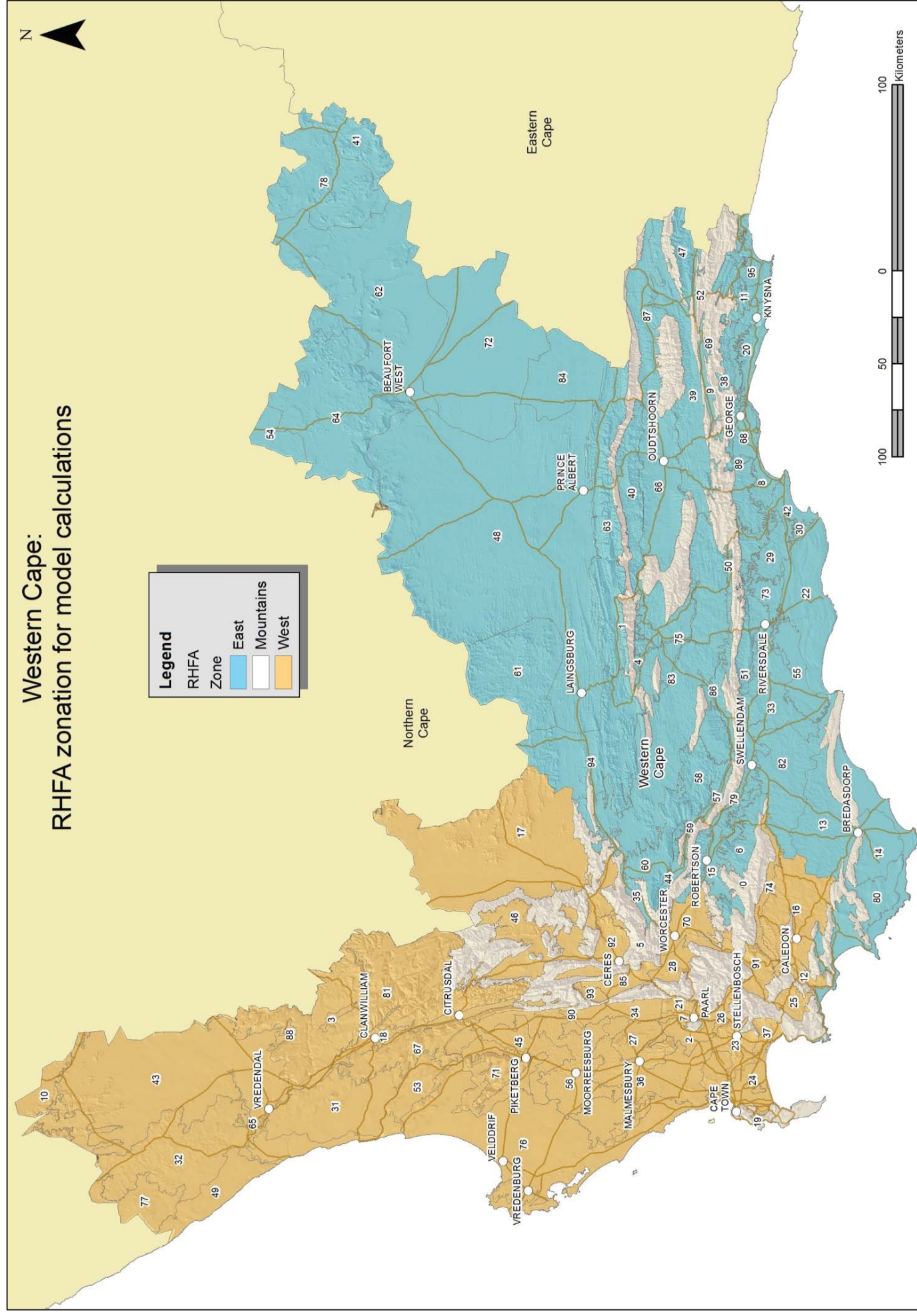


Figure 2. Division of the Western Cape Province into rain-fed crop and pasture Production Regions (Region 1 – West, and Region 2 – East)

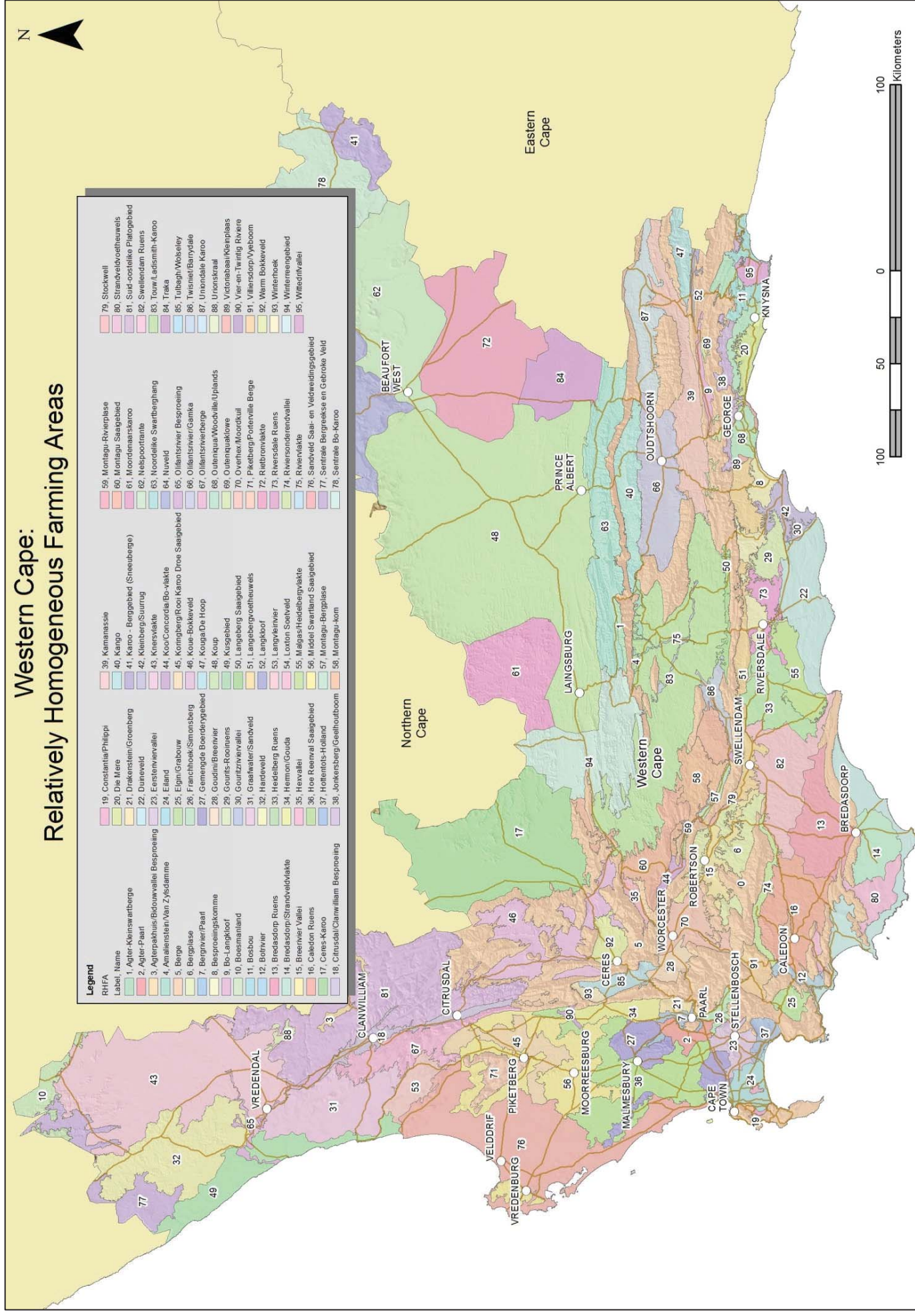


Figure 3. Relatively Homogeneous Farming Area (RHFA) map of the Western Cape including the names of each RHFA (numbered alphabetically)

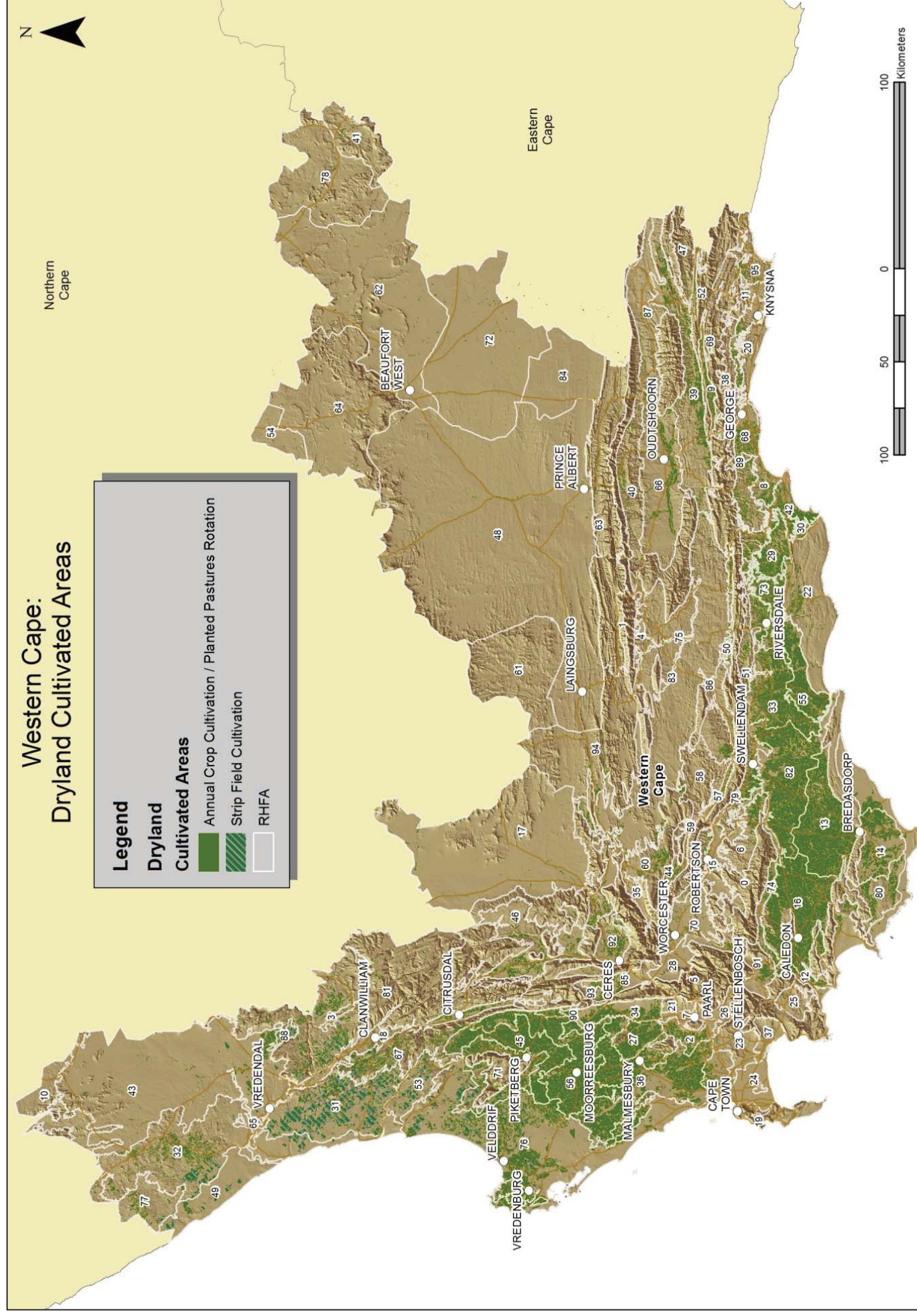


Figure 4. Digitized map compiled by PICES in 2010 showing all areas identified as having been cultivated for rain-fed (dryland) crop and pasture/fodder production in the Western Cape Province

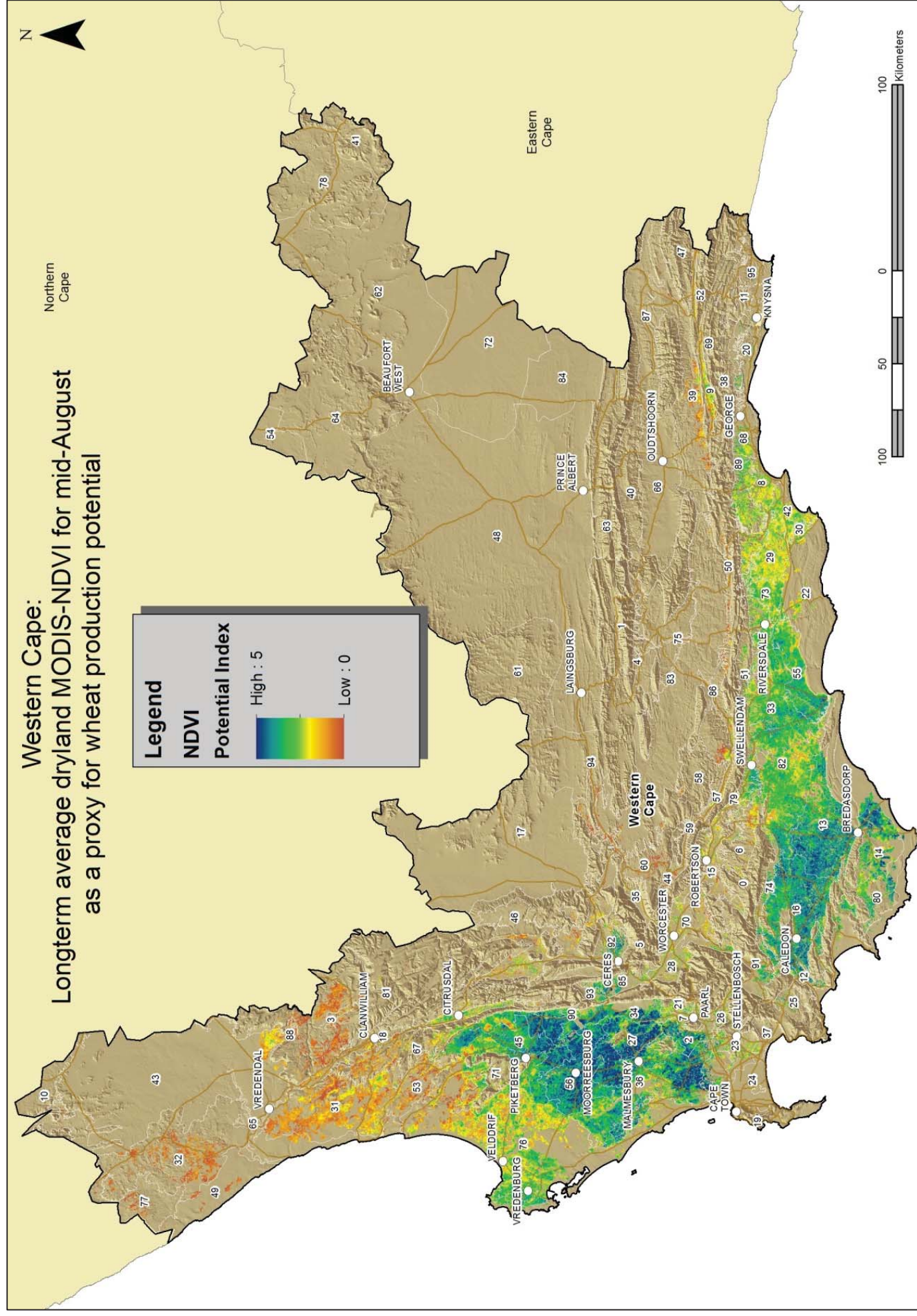


Figure 5. NDVI map of the 10-year average biomass production potential-for rain-fed cereal crops and pastures in the Western Cape

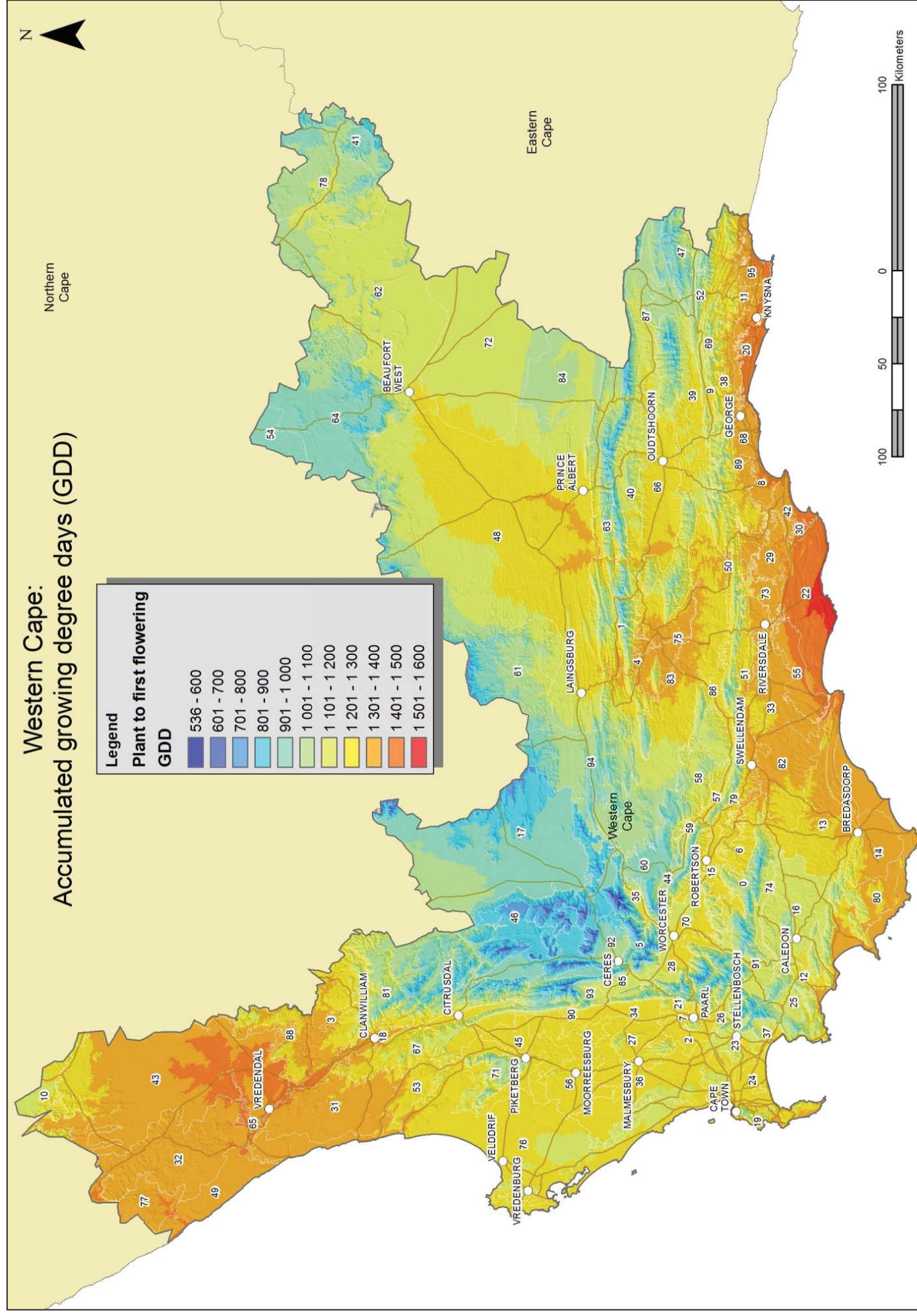


Figure 6.

Accumulated Growing Degree Days (GDD) from planting date to 50% flowering (90 days) of canola in each RHFA in the Western Cape

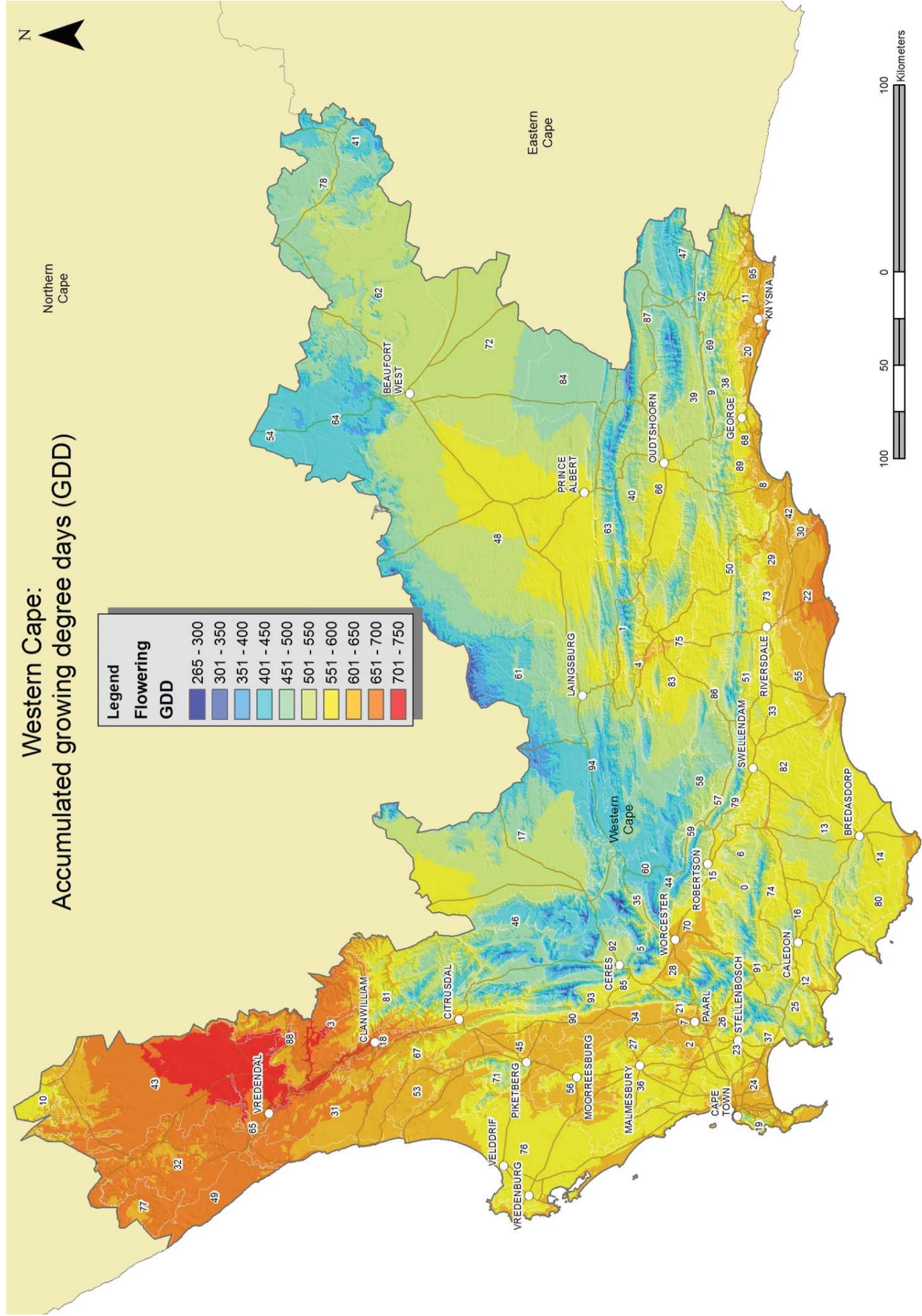


Figure 7. Accumulated Growing Degree Days (GDD) during flowering (45 days) of canola in each RHFA in the Western Cape

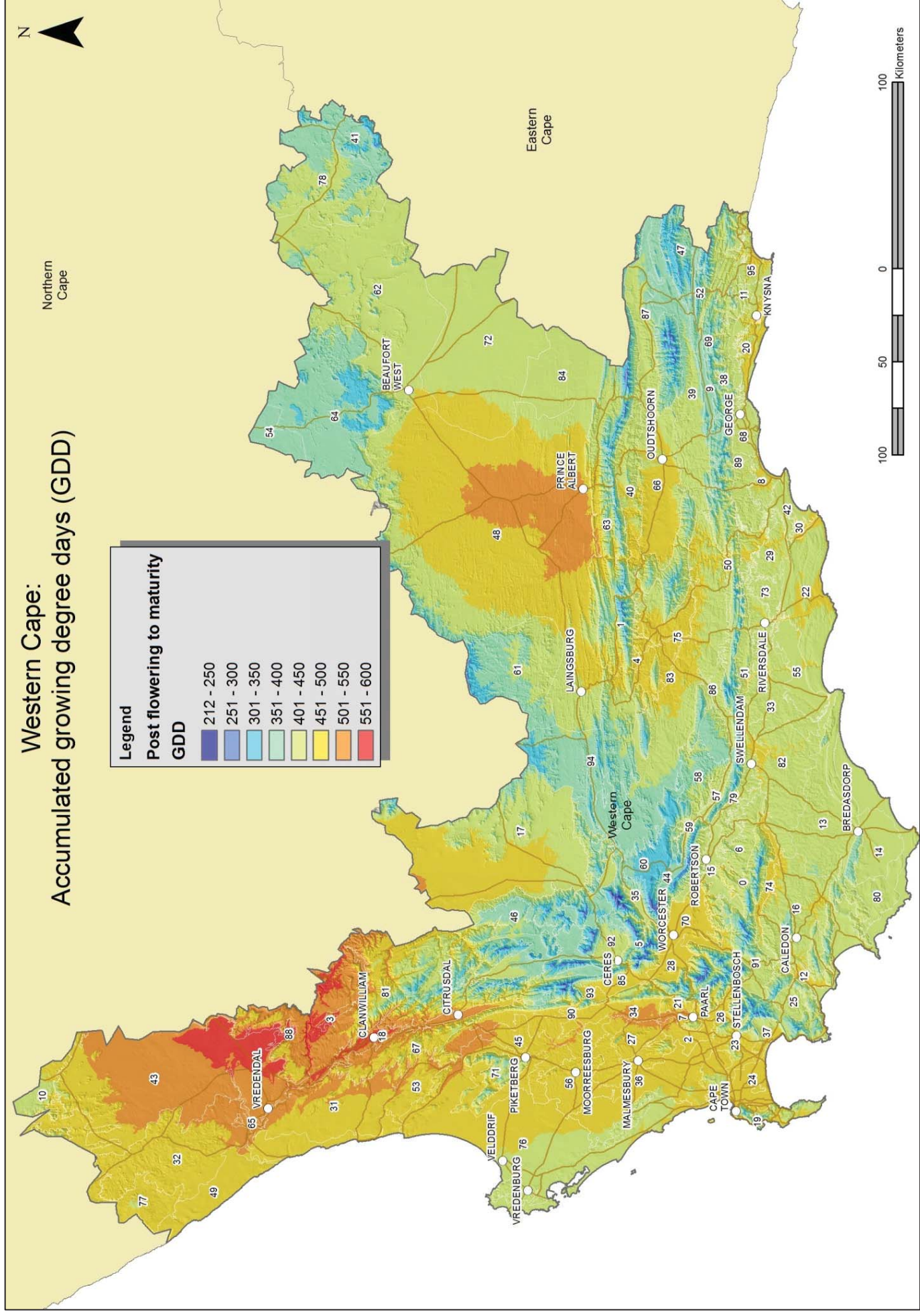


Figure 8. Accumulated Growing Degree Days (GDD) post flowering to physiological maturity (30 days) of canola in each RHFA in the Western Cape

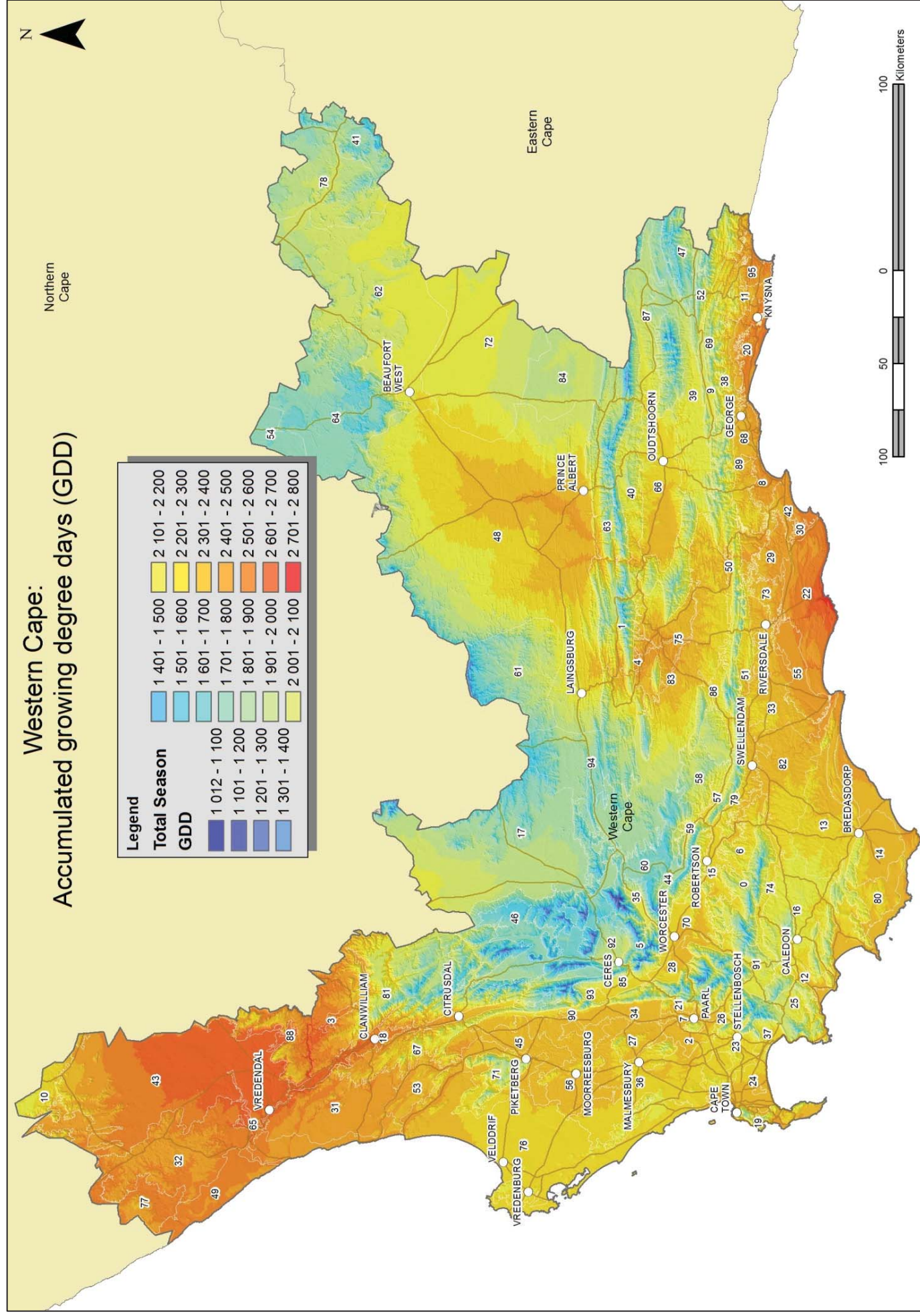


Figure 9. Accumulated Growing Degree Days (GDD) from planting to physiological maturity (165 days) of canola in each RHFA in the Western Cape

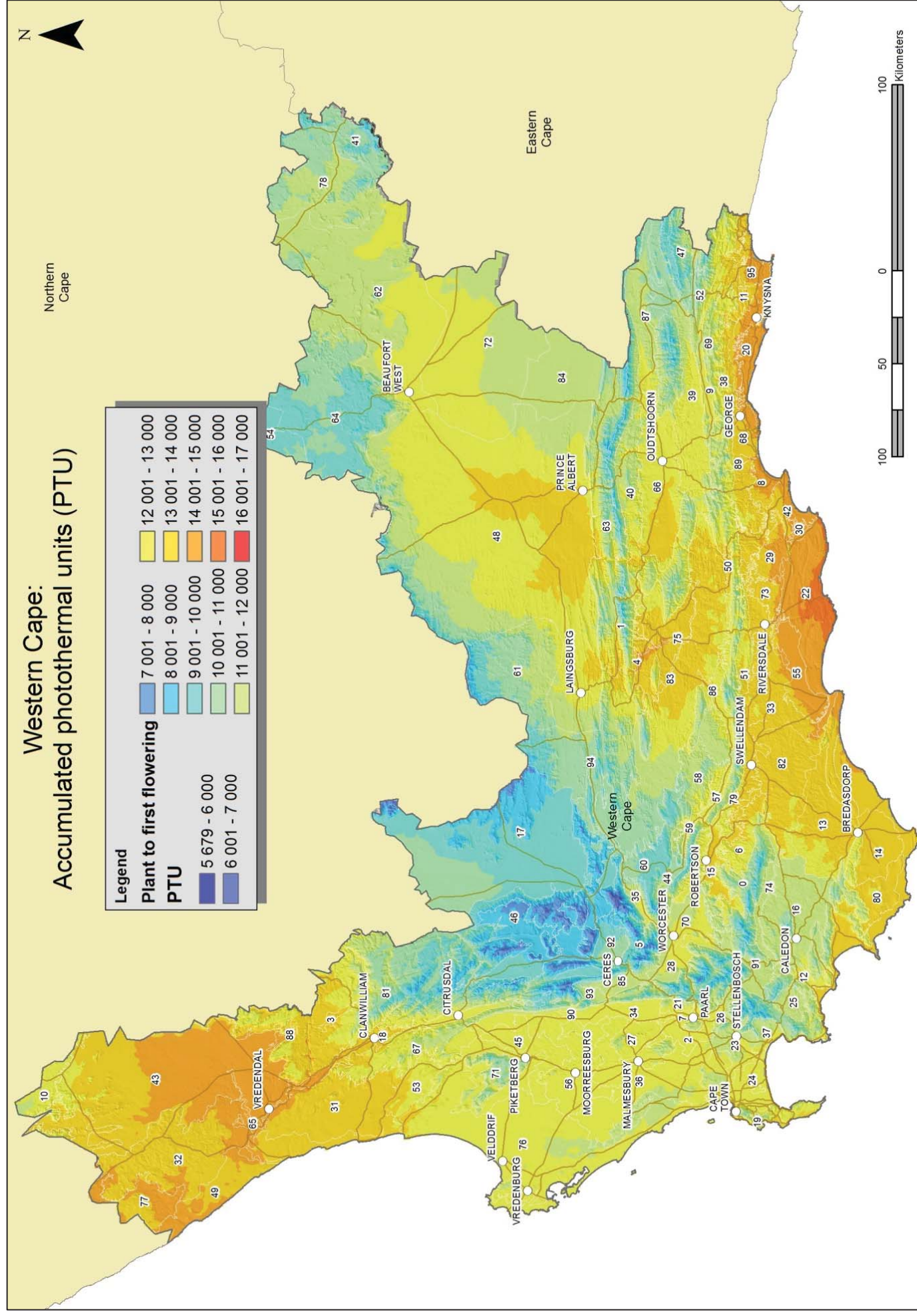


Figure 10.

Accumulated Photothermal Units (PTU) from planting date to first flowering (90 days) of canola in each RHFA in the Western Cape

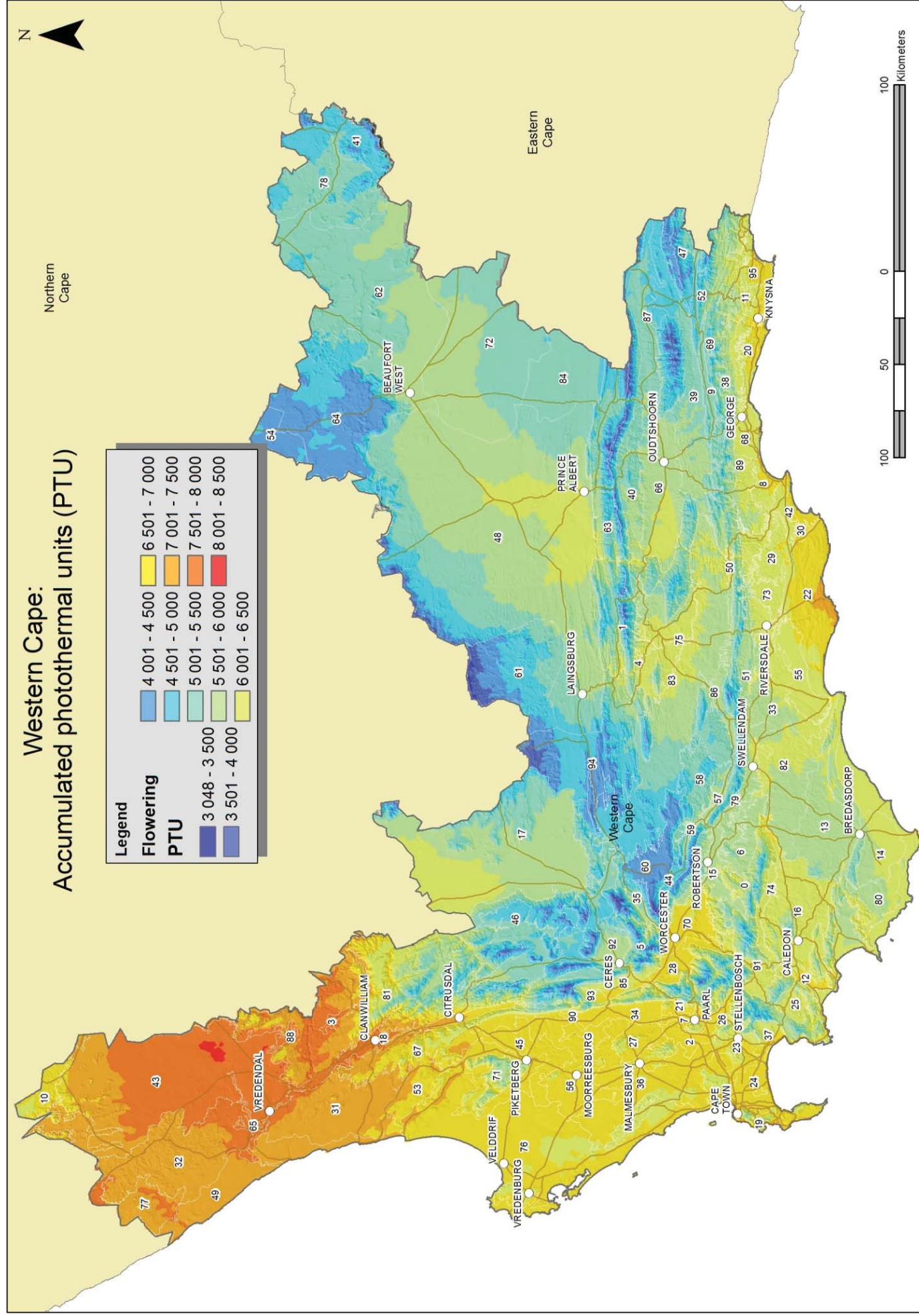


Figure 11. Accumulated Photothermal Units (PTU) during flowering (45 days) of canola in each RHFA in the Western Cape

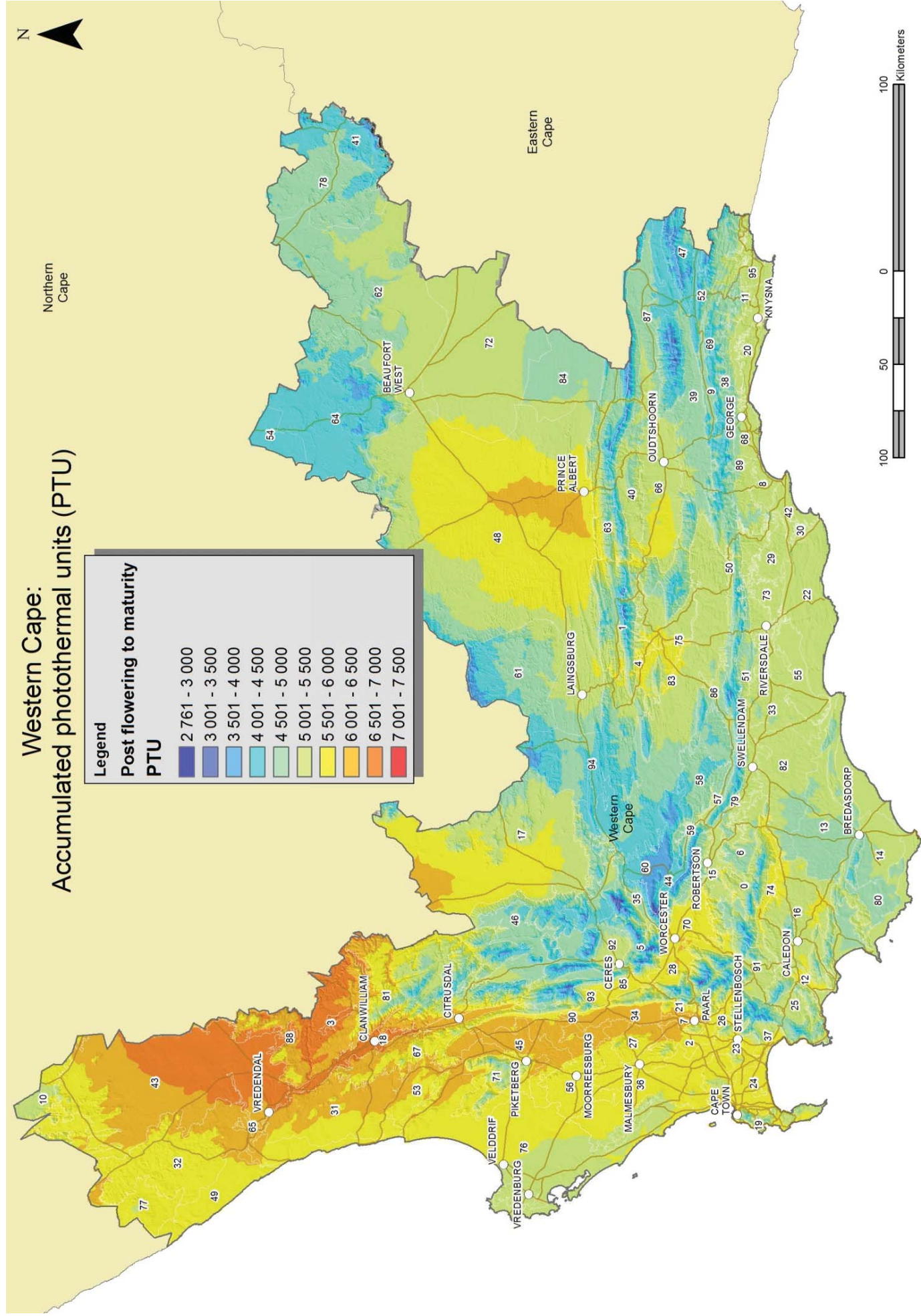


Figure 12. Accumulated Photothermal Units (PTU) post flowering to physiological maturity (30 days) of canola in each RHFA in the Western Cape

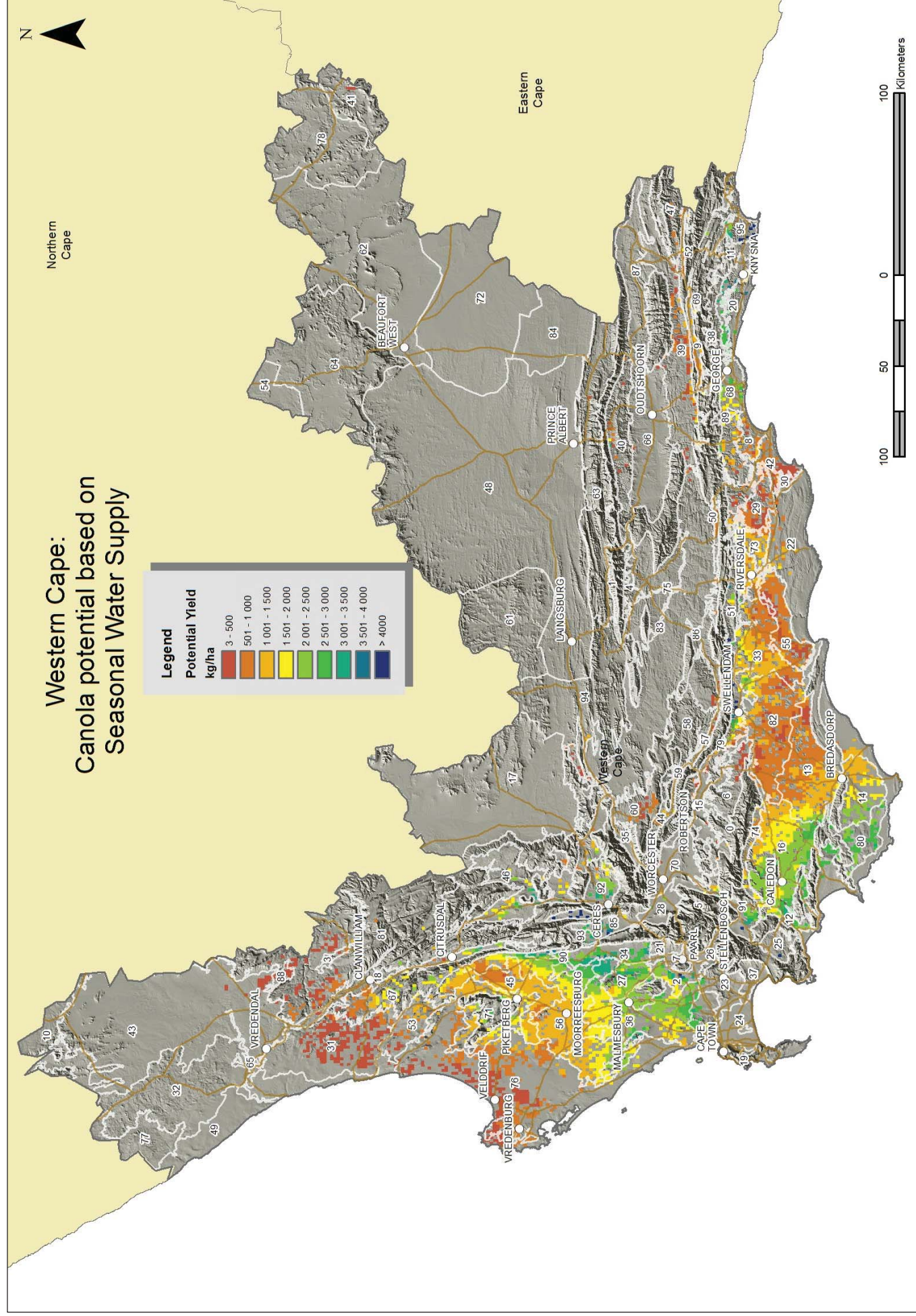


Figure 14. Estimated canola production potential (kg/ha) within and between each RHFA in the Western Cape

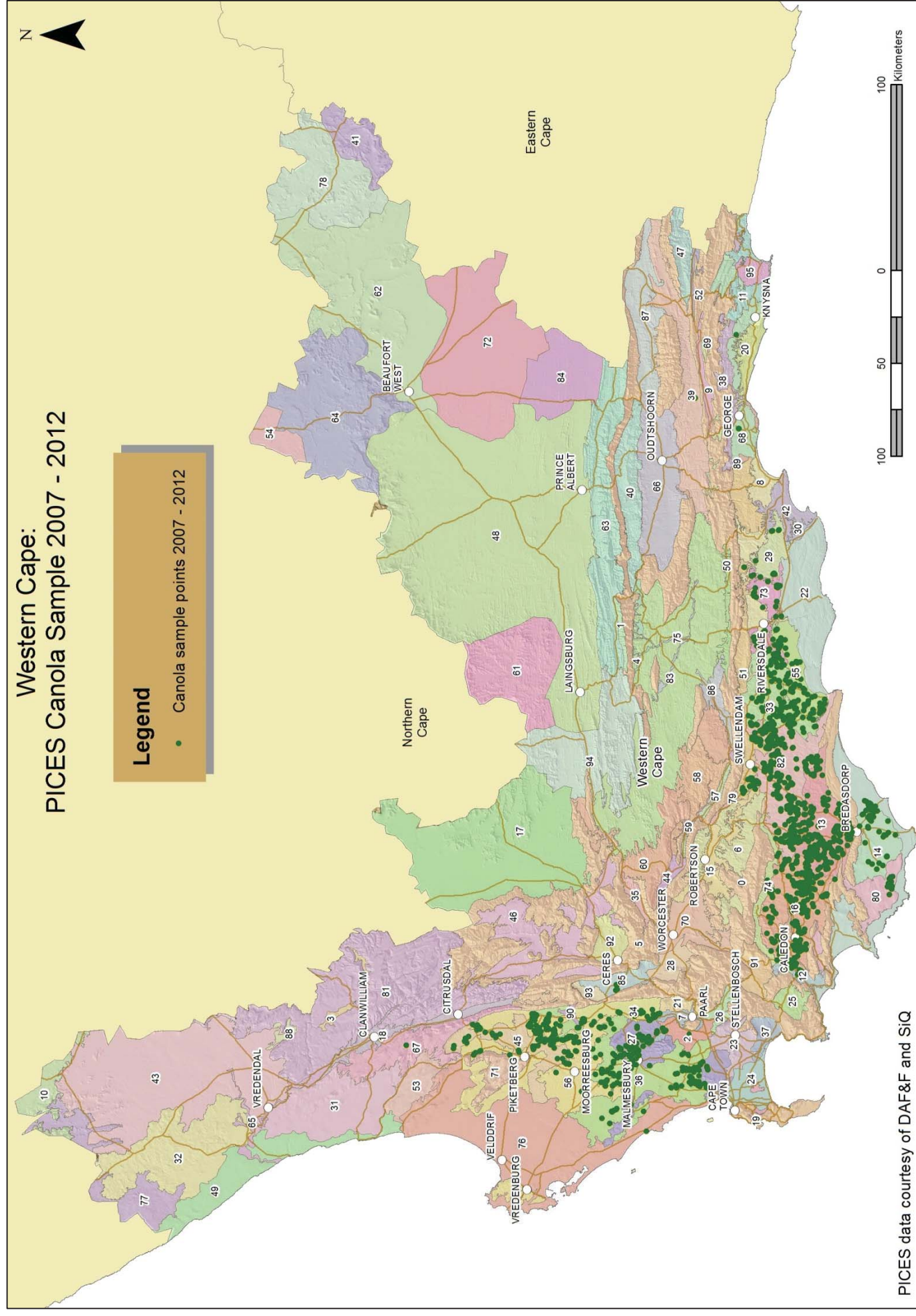
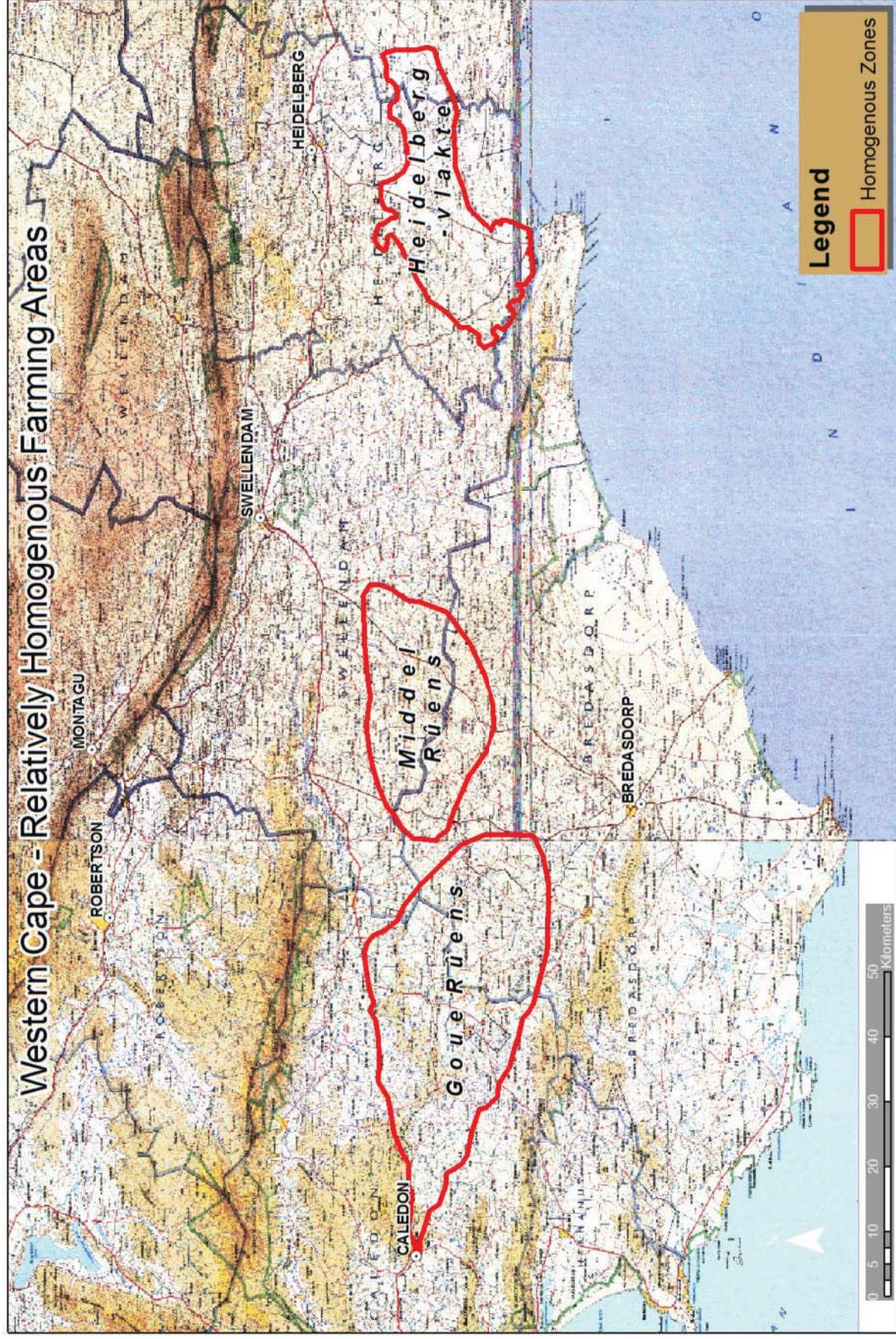


Figure 15. PICES spatial analysis of areas planted to canola in the Western Cape - 2007 to 2011



Figure 16. Areas of RHFA as described in the Hoffmann (2011) study for the Swartland



Source: data from Bouvier, R. E. (Ed.), 2008. South African Atlas of Climatology and Agroecology. Water Research Commission, Pretoria, RSA. WRC Report 1483/1/08.

Figure 17. Areas of RHFAs as described in the Hoffmann (2011) study for the Southern Cape