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GROWING DEGREE DAY SYSTEMS FOR IDAHO

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Growing Degree Day Systems for Idaho

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Growing degree days, sometimes called "thermal indices," "heat units" or "growth units," are a simple means of relating expected plant growth to environmental air temperature. Different species of plants have different base temperatures below which, under most conditions, no growth will result. Generally accepted base temperatures for several plants are (1):

PLANT	BASE
Spring wheat	37 to 40
Canning peas	40
Oats	43
Potatoes	45
Sweet corn, snap beans, lima beans, tomatoes, grapes, field corn	50

Agribusinesses such as vegetable canning companies, commercial seed companies that grow and market their own product, and companies using intensive glasshouse operations have had success in applying thermal indexing procedures. These companies usually operate with known seed sources and varieties and contract the same acreage year after year in a given area. Planting dates are accurately recorded and the crop is carefully managed until harvesting. Specific knowledge of thermal indices enables these companies to maintain a competitive advantage.

However, Newman and Dale (4) indicate that other commercial seed operators have not used thermal indexing for two reasons: first, the maturity of some crops is not directly controlled thermally, and second, much of the commercial seed trade is a horizontally, as opposed to a vertically, operated business. Seed is often produced by one management operation, purchased and processed by another, marketed by still another, then consumed by commercial farmers, perhaps hundreds of miles away. Built-in biases may exist when comparing growing degree days from locations in different geographical areas if only the daily minimum and maximum temperatures are averaged to attain a "growing degree day" value. Such a value assumes that for each location the temperature range is the same and that both the reported daily minimum and maximum represent the same proportion of hours.

For example, daily temperatures in two different locations could average 70° with minimum and maximum readings of 60—80 and 50—90. Both would have 20 growing degree days base 50. The time period of optimum growth could obviously differ.

Diurnal temperature ranges—the difference between daily minimum and maximum—vary between 15 and 35° F during the growing season in the Corn Belt. In Idaho the range varies between 25 and 45°. Therefore, caution should be used when making interregional comparisons.

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COMPUTATION OF GROWING DEGREE DAYS

Old Method

The conventional manner for computing growing degree days is to average the daily maximum plus minimum temperatures and subtract the base temperature. For example, if the daily low were 44 and the high were 90, the following computation would be appropriate for growing degree days base 50:

$$\text{GDD} = \frac{44 + 90}{2} - 50$$

$$= 67 - 50 = 17$$

For GDD base 40:

$$\text{GDD 40} = \frac{44 + 90}{2} - 40$$

$$= 67 - 40 = 27$$

New Method

Corn Belt investigators (4) became dissatisfied with the old method of computing growing degree days. Corn doesn't grow at temperatures of 50 to 55° F, but as the temperature rises to a range of 80 to 86° it grows faster, if moisture is plentiful. At temperatures above 86° the roots have increasing difficulty taking in water fast enough to keep the plant cells turgid and working at top speed. Therefore, only temperatures between 50 and 86 degrees were used to calculate GDD base 50

$$\text{GDD 50} = \frac{\text{Max. temp.} + \text{Min. temp.}}{2} - 50$$

with the stipulation that only values between 50 and 86 degrees may be used. Any minimum temperature less than 50 is given a value of 50 and any maximum temperature exceeding 86 is given a value of 86. In our previous example with low of 44 and high of 90, the new method calculation is:

$$\text{GDD 50} = \frac{50 + 86}{2} - 50 = 18$$

as contrasted to 17 with the old method.

For the cooler crops, 77° F has been considered as the upper limit of plant growth. Foley (2) has evidence that the new method may be lower. By this new method:

$$\text{GDD 40} = \frac{44 + 77}{2} - 40$$

$$= 60.5 - 40 = 20.5$$

compared with 27 calculated by the old method.

Length of Season

Since growing degree days are accumulated, the time period must be specified. The period may be defined as total growing degree days from given calendar dates such as March 1, or over the frost-free season, or from planting date to harvest.

Growing degree day accumulations for warm season crops should begin with the planting date and continue until the date of maturing or the date growth terminates through freeze or harvest. To obtain the normal or average growing degree days available for the crop, adjustments can be made from a table of growing degree days for an area by subtracting, for each computation date, the GDDs accumulated to the planting date. This number can be matched to crop requirements to judge suitability for growth in the area. A more useful table would be accumulations beginning with the mean last date of a 32° F temperature in spring and ending with the first freezing temperature in fall.

Tables 2 and 3 contain cumulative weekly growing degree days computed by the NEW methods for base 40 and 50, respectively, while Tables 4 and 5 refer to the OLD method. If the last spring frost in Aberdeen were May 23 for a particular year and the first fall frost was expected to occur on September 5,

$$2133 - 423 = 1710 \text{ GDD } 50$$

would be the norm for this period for warm season crops (Table 3). This figure may be compared to the total for the average length of growing season as found in Idaho Bulletin 484 (5), where the average date of last spring frost for Aberdeen is May 30 and first fall frost is September 16, or

$$2289 - 506 = 1783 \text{ GDD } 50.$$

The 2289 equals 2237 for the week ending September 12 plus 4/7 times 89 (2326 − 2237 where 2326 was the cumulative for the week ending September 19).

Plants for which the base temperature of 40° F is used are generally not adversely affected by late spring or early fall freezing temperatures. March 1 has been selected as the beginning date for the season (7).

Tables 4 and 5 contain the OLD GDD 40 and GDD 50 by weeks, respectively. Table 1 shows the monthly averages for all stations.

Growing degree days (GDD) accumulated by the NEW method (to bases 40° and 50° F) are greater than by the OLD method when mean temperatures are less than the bases, 40° or 50°. By the NEW method, minimum temperatures are set to either 40° or 50° until they actually exceed these values; by the OLD method, mean temperatures are used directly.

The two methods yield the same number of growing degree days when the minimum temperature is above the respective base temperature and the maximum is equal to, or less than, 77° for base 40 and 86° for base 50. Growing degree days are greater by the OLD method for those days where minimum temperatures exceed 40° or 50° and the maximum temperatures exceed 77° or 86° respectively.

At Ashton, a higher elevation station where the minimum temperature averages less than 50° and the maximum temperature less than 86°F through the growing season, the NEW method (base 50°) gives greater values. The exception would be those days when the maximum temperature goes above 86°; the older method would give more growing degree days (Figs. 1 and 2.) In Ashton, where the minimum temperature goes above 40° and the maximum temperature above 77°, the OLD method gives more growing degree days to base 40°. Specifically, this is true for the period beginning with the 15th week—March 1—and continuing through to the 28th week (Fig. 3).

At a lower elevation station such as Caldwell where mid-growing season temperatures go above 86°F and do not fall below 40°F, the OLD method produces more growing degree days for base 40° for the weeks 10 through 30 and for base 50° for weeks 17 through 26 (Figs. 5 and 6).

Considering weekly accumulations of growing degree days by both methods to base 50° for March 1 through mid-October, the NEW method produces more than the OLD throughout the season at both high and low elevation stations. However, accumulations by the two methods are more nearly equal at lower altitudes where temperatures are higher. This same relationship holds for the 40° base at higher elevation stations such as Ashton but not for lower stations where temperatures go significantly above 77°. The NEW minus the OLD (base 40°) becomes zero near the 19th week following March 1 and negative thereafter in the southwest valleys of Idaho, near the 20th week in the central plains of Idaho, and about the 21st or 22nd week in the agricultural valleys of the eastern highlands and upper Snake River plains. At higher valley stations such as Challis, Hailey, Idaho City, St. Anthony and Salmon, accumulations by the NEW method are the same as those by the OLD method at the 24th to the 26th week, fall below for 4 weeks and then are higher than the OLD method from the 30th to the 33rd week.

CONCLUSION

Growing degree days (GDD) provide a way to evaluate the progress of the growing season based on daily temperature conditions. Although research to test plant growth-temperature-time relationships is needed, the following conclusions are accepted by many:

1. Studies through the years have shown that specific temperature ranges are highly correlated with warm season plant growth for each crop. Lehenbauer in 1914 reported measurements of the growth rate of corn seedlings during 24-hour periods at various temperatures. He determined that corn growth begins at about 41°F but is extremely slow below 50°, and that most optimum growth rate occurs near 86°F. Researchers agree that Lehenbauer's basic corn growth curve is about right (3). This curve shows plant growth rate to increase from 85 to 100 percent of optimum as temperatures increase from 80° to 86°F and to drop from 100 to 94 percent of optimum as the temperature increases from 86° to 90°F. Growth rate is indicated to be 12 percent of optimum at 110°F.
2. Each plant seems to have its own lower and upper threshold temperatures for growth. These threshold temperatures probably change with the age of the plant (6).
3. The NEW method for computing growing degree days (base 50°F), first proposed by the National Weather Service in 1969 and introduced nationally in 1971, is an attempt to better relate temperatures through growing degree days (heat units) to the growth cycle of a crop, from planting date to maturity. More study should develop refined relationships throughout the cycle. Once understood, the NEW method of computation is no more complex than the method it replaced. For simplicity and versatility, this computation is as useful as any method in use at this present time (6). The NEW method for computations (base 40°F) awaits official announcement.
4. The growing degree day system does not take into account many factors which influence plant growth and development, such as soil moisture and vapor pressure deficit (6).
5. Evidence supports use of a method for accumulating growing degree days that has a cut-off point above and below the mean diurnal optimal temperature for growing a given crop. If producers are to be served, industries and involved scientists need to test and work toward adopting a uniform computational procedure.

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Table 1. Growing degree days by month for different stations in Idaho and for two bases.

Station	Years record	40° Base New Method								50° Base New Method							
		Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.
Aberdeen ES	41	126	305	468	580	733	693	532	372	42	166	309	415	576	547	396	223
Arrowrock Dam	22	137	300	496	642	822	791	605	375	41	153	305	431	638	605	425	215
Ashton	39	42	214	421	521	659	620	483	318	5	95	266	356	508	481	338	178
Avery RSL	33	131	301	468	575	688	665	532	342	40	162	313	403	541	522	388	185
Bliss	33	199	371	546	653	805	762	602	442	78	218	372	471	641	605	461	284
Bonners Ferry	28	119	294	479	598	719	679	518	274	31	144	301	388	532	494	342	119
Caldwell	39	253	403	568	676	811	760	593	427	109	243	389	485	639	594	444	262
Cambridge	38	154	347	523	630	777	721	565	413	51	197	358	457	618	577	443	264
Challis	35	130	287	449	574	734	694	523	352	39	147	284	388	557	525	367	201
Coeur d'Alene	39	129	288	478	608	753	726	558	343	36	143	296	395	566	541	381	175
Cottonwood	28	103	239	398	496	678	655	500	314	27	109	224	298	484	480	339	164
Deadwood Dam	37	69	175	346	436	581	566	460	301	13	68	205	295	483	474	337	167
Driggs	32	51	181	364	469	657	624	468	312	10	73	212	309	492	475	320	174
Dubois ES	41	40	217	417	552	767	731	527	295	10	97	242	357	576	540	344	152
Emmett	19	236	383	559	662	772	732	598	435	97	224	391	490	613	575	454	274
Fenn RS	27	180	338	505	625	746	715	560	355	64	193	339	430	579	556	396	188
Grace	39	56	213	398	515	700	674	501	319	13	95	237	340	524	499	341	177
Grand View	20	267	426	594	706	834	786	619	451	124	273	420	519	667	620	477	294
Grangeville	38	119	245	404	524	721	693	517	315	34	113	227	318	520	499	337	161
Hailey	37	67	247	431	538	713	689	521	347	13	118	269	366	549	533	370	199
Hill City	38	38	202	399	498	658	629	500	342	8	86	243	340	533	516	373	200
Hollister	17	149	303	473	594	786	761	576	386	52	160	302	412	612	579	400	231
Idaho City	38	137	300	454	537	649	619	519	389	41	162	310	401	547	530	411	248
Idaho Falls AP	41	95	272	453	574	752	713	522	339	28	138	280	384	570	535	362	192
Island Park Dam	30	34	130	315	432	608	579	418	246	4	37	172	276	448	431	277	123
Kellogg	41	133	285	465	582	714	673	521	329	41	145	291	380	537	508	362	173
Kooskia	41	237	378	542	647	751	709	583	409	100	227	370	455	586	559	442	245
Lewiston AP	22	199	345	547	696	847	819	644	392	68	179	331	468	652	617	435	202
Mackay RS	30	72	242	401	524	704	659	509	320	17	113	238	354	531	498	358	178
Malad	39	115	290	477	594	774	747	569	381	36	150	303	414	602	577	415	230
McCall	40	48	155	330	452	638	600	441	267	9	58	183	282	480	456	294	134
Montpelier RS	36	52	202	408	518	684	650	493	325	10	89	253	363	538	513	355	186
Moscow	41	125	275	449	574	720	699	547	341	34	123	257	361	531	508	357	169
Mountain Home	17	210	352	532	655	809	770	596	450	80	199	363	477	641	606	452	293
Oakley	32	155	302	467	602	801	764	580	412	53	158	290	412	619	580	406	253
Parma ES	40	253	401	558	665	796	757	588	430	110	244	380	477	627	589	444	267
Payette	21	246	408	578	687	817	779	623	429	107	247	398	497	646	604	469	262
Pierce RS	20	71	210	394	524	633	604	487	306	10	94	237	352	501	489	353	165
Pocatello AP	30	116	275	475	600	793	762	556	369	36	135	292	405	615	583	391	216
Porthill	39	105	295	469	585	710	667	499	272	21	146	292	376	519	489	328	118
Potlatch	30	150	282	440	547	662	636	508	338	47	137	274	365	515	501	357	179
Priest River ES	39	95	259	435	538	654	620	481	262	22	123	269	351	496	477	327	119
Riggins RS	23	264	408	586	703	862	847	693	476	119	244	388	489	683	666	500	274
Rupert	31	158	325	497	628	805	753	563	399	57	183	324	438	628	578	411	251
Saint Anthony	20	62	237	433	539	688	652	496	338	12	110	273	374	531	502	349	192
Saint Maries	39	154	309	476	590	702	662	535	348	50	162	305	398	539	515	387	190
Salmon	34	147	325	467	559	685	646	506	359	49	183	313	399	544	522	382	212
Sandpoint ES	41	96	265	449	567	688	652	497	277	21	120	264	357	506	481	318	120
Shoshone	32	146	345	512	626	796	748	575	392	51	198	347	456	633	590	424	238
Streyell	19	113	250	430	571	760	733	546	351	33	119	263	403	596	558	382	197
Sun Valley	22	41	186	371	460	591	574	475	322	3	70	220	319	494	478	344	180
Tetonia ES	16	35	140	345	458	646	613	432	264	3	45	195	296	484	459	281	133
Twin Falls 2NNE	41	191	352	525	641	796	746	574	414	73	202	348	454	625	583	426	258
Wallace	30	104	266	432	525	673	641	491	287	29	133	267	341	503	475	325	139
Weiser	20	223	394	565	680	801	753	598	409	87	232	385	493	634	589	448	246

Table 2. Cumulative growing degree days by week at different Idaho locations, base 40 new method.

Station	3-1 to 3-7	3-8 to 3-14	3-15 to 3-21	3-22 to 3-28	3-29 to 4-4	4-5 to 4-11	4-12 to 4-18	4-19 to 4-25	4-26 to 5-2	5-3 to 5-9	5-10 to 5-16	5-17 to 5-23	5-24 to 5-30	5-31 to 6-6	6-7 to 6-13	6- t 6-
Aberdeen	13	34	66	106	158	220	297	375	455	552	653	763	883	1003	1131	12
Arrowrock Dam	18	39	72	114	169	235	307	381	458	557	662	786	913	1049	1192	13
Ashton	3	10	20	35	56	91	147	209	276	365	455	553	662	771	884	10
Avery RS	18	42	75	114	164	228	301	376	458	551	655	763	884	1010	1140	12
Bonners Ferry	11	27	59	99	151	212	283	356	437	530	633	746	874	1005	1139	12
Caldwell	41	92	153	221	298	385	482	581	686	801	928	1061	1205	1352	1506	16
Cambridge	19	45	81	130	190	263	348	435	528	633	750	872	1005	1140	1281	14
Challis	16	38	70	110	160	219	291	365	442	533	633	738	852	971	1097	12
Coeur d'Alene	17	39	72	111	158	218	288	361	441	534	639	751	876	1007	1143	12
Cottonwood	14	33	60	92	124	168	231	296	363	442	529	621	779	831	943	10
Driggs	5	12	24	42	65	96	143	194	247	321	399	485	584	679	779	8
Dubois	3	7	16	32	57	95	153	214	277	360	449	546	660	771	888	10
Emmett	35	76	133	202	282	369	459	549	648	763	884	1018	1158	1305	1454	16
Fenn RS	27	61	104	155	216	293	373	455	543	643	756	876	1006	1144	1286	14
Grace	4	12	26	46	75	113	169	226	289	369	454	549	654	757	869	9
Grand View	45	93	157	233	319	415	516	619	725	847	978	1122	1268	1422	1581	17
Grangeville	17	38	68	102	144	194	255	316	383	461	550	643	54	863	981	11
Hailey	6	16	33	54	87	133	197	264	333	422	514	616	729	839	956	10
Hill City	2	8	17	31	52	85	138	197	260	343	428	522	626	727	836	9
Hollister	19	42	78	128	185	251	322	397	475	577	677	791	909	1032	1163	13
Idaho City	19	45	79	118	168	229	305	381	460	555	656	762	875	991	1110	12
Idaho Falls	8	22	46	78	120	174	244	315	388	480	576	681	802	919	1045	11
Kellogg	18	42	75	113	161	221	289	362	441	532	633	743	865	993	1124	12
Kooskia	38	85	144	207	278	359	450	543	641	751	871	997	1134	1276	1423	15
Lewiston	30	66	115	172	240	319	399	480	568	677	797	932	1072	1223	1378	15
Mackay RS	6	17	33	59	94	141	203	268	336	423	508	600	703	807	920	10
Malad	12	30	58	96	144	200	273	350	428	528	629	741	864	986	1116	12
McCall	5	13	26	41	62	90	129	171	218	279	350	430	521	613	713	8
Montpelier	3	12	25	42	67	101	153	210	274	359	447	541	647	753	865	9
Moscow	16	38	69	106	151	209	276	345	421	507	607	713	831	955	1085	12
Mountain Home	37	76	128	183	250	325	410	495	588	695	808	942	1076	1215	1357	15
Oakley	25	53	91	133	189	252	327	401	479	575	675	788	908	1030	1161	13
Parma	42	92	154	222	299	386	484	581	684	798	920	1051	1192	1335	1487	16
Payette	38	81	140	212	295	388	485	582	682	802	930	1067	1210	1359	1517	16
Pierce	9	21	38	60	88	126	175	237	298	374	461	553	661	772	889	10
Pocatello	13	30	58	96	145	198	267	338	414	512	611	725	849	972	1103	12
Porthill	10	26	54	87	133	195	265	341	422	514	617	728	852	980	1112	12
Potlatch	20	46	94	129	181	242	310	379	455	542	638	743	855	975	1098	12
Priest River	11	26	51	82	120	173	235	303	377	463	558	661	776	894	1016	11
Riggins	45	96	157	228	312	402	499	596	703	825	952	1089	1238	1389	1549	17
Rupert	20	50	90	136	190	255	335	420	509	609	719	835	962	1091	1229	13
Sandpoint	11	26	51	81	121	175	239	307	382	469	568	674	792	917	1045	11
Saint Anthony	4	12	27	51	85	131	193	255	321	411	502	604	716	828	948	10
Saint Maries	23	51	90	133	187	253	327	404	487	580	686	798	922	1050	1184	13
Salmon	17	41	79	125	183	248	330	411	497	593	695	803	922	1041	1167	13
Shoshone	17	43	79	124	184	256	339	427	516	621	734	856	985	1116	1255	14
Streyell	14	32	58	94	140	192	255	316	383	472	561	667	777	892	1014	11
Tetonia	3	6	13	25	48	76	111	145	190	263	334	419	508	603	695	8
Twin Falls	26	62	110	164	229	303	390	479	570	677	791	915	1048	1182	1324	14
Wallace	14	30	59	90	129	183	249	317	393	480	577	676	787	901	1020	11
Weiser	33	72	127	192	271	361	454	550	645	764	889	1024	1164	1311	1467	16

21 to 27	6-28 to 7-4	7-5 to 7-11	7-12 to 7-18	7-19 to 7-25	7-26 to 8-1	8-2 to 8-8	8-9 to 8-15	8-16 to 8-22	8-23 to 8-29	8-30 to 9-5	9-6 to 9-12	9-13 to 9-19	9-20 to 9-26	9-27 to 10-3	10-4 to 10-10	10-11 to 10-17	10-18 to 10-24
18	1567	1730	1897	2065	2236	2401	2562	2717	2865	3006	3141	3262	3373	3484	3582	3671	3746
07	1669	1852	2041	2229	2423	2610	2795	2972	3140	3299	3458	3593	3718	3837	3938	4028	4104
43	1277	1423	1574	1726	1878	2025	2170	2308	2441	2568	2692	2802	2902	3003	3090	3169	3230
14	1559	1712	1871	2029	2185	2339	2493	2644	2788	2927	3057	3177	3297	3404	3500	3584	3652
27	1577	1736	1902	2069	2231	2391	2551	2703	2847	2988	3116	3233	3346	3445	3520	3589	3642
32	2000	2181	2367	2552	2737	2915	3093	3262	3426	3581	3729	3864	3992	4115	4226	4327	4415
88	1747	1919	2098	2278	2456	2625	2794	2957	3110	3255	3397	3526	3618	3768	3877	3975	4058
81	1531	1694	1862	2033	2202	2365	2527	2684	2831	2971	3105	3221	3330	3436	3527	3612	3684
39	1593	1760	1933	2108	2281	2450	2620	2784	2939	3091	3231	3358	3476	3588	3683	3766	3831
85	1318	1464	1622	1783	1940	2092	2245	2394	2533	2667	2797	2908	3015	3113	3198	3277	3337
13	1143	1285	1435	1590	1745	1895	2038	2178	2311	2437	2559	2665	2760	2857	2939	3013	3074
67	1318	1488	1664	1843	2020	2193	2364	2529	2685	2832	2971	3090	3194	3294	3378	3450	3507
75	1933	2106	2283	2459	2638	2810	2981	3144	3302	3451	3603	3738	3869	3994	4107	4208	4301
85	1711	1908	2078	2247	2419	2584	2749	2910	3067	3215	3359	3738	3869	3994	4107	4208	4301
26	1265	1418	1578	1740	1905	2065	2222	2373	2517	2653	2784	3187	3003	3715	3810	3899	3968
25	2096	2283	2476	2664	2857	3042	3226	3401	3570	3728	3886	4025	4158	4287	4403	4510	4605
37	1376	1534	1701	1870	2038	2201	2365	2523	2668	2808	2940	3054	3165	3266	3352	3426	3489
25	1368	1524	1687	1853	2019	2180	2340	2497	2645	2785	2918	3034	3144	3251	3342	3426	3496
84	1216	1361	1512	1664	1818	1965	2112	2251	2389	2519	2646	2759	2865	2970	3062	3142	3210
59	1608	1781	1963	2147	2332	2515	2693	2860	3021	3171	3325	3455	3574	3689	3793	3882	3960
71	1506	1650	1797	1947	2098	2241	2384	2523	2659	2791	2920	3037	3150	3263	3363	3455	3535
31	1483	1650	1822	1995	2170	2340	2506	2665	2818	2961	3097	3214	3321	3426	3517	3598	3667
05	1550	1709	1874	2039	2200	2358	2516	2668	2811	2951	3082	3198	3309	3414	3504	3584	3647
35	1894	2062	2235	2406	2576	2740	2904	3064	3218	3367	3511	3644	3771	3894	4001	4099	4183
17	1887	2076	2273	2466	2661	2853	3045	3230	3404	3573	3928	3881	4023	4147	4252	4346	4425
84	1323	1478	1640	1804	1967	2123	2278	2426	2565	2700	2830	2947	3053	3151	3240	3314	3379
13	1570	1741	1917	2096	2279	2455	2628	2795	2956	3108	3255	3386	3502	3618	3719	3811	3886
36	1059	1200	1346	1495	1643	1785	1927	2063	2187	2305	2419	2518	2609	2697	2770	2834	2888
24	1261	1411	1567	1726	1888	2041	2191	2336	2476	2608	2733	2850	2949	3049	3137	3214	3279
62	1508	1666	1833	2000	2164	2326	2489	2647	2798	2943	2080	3202	3321	3431	3525	3607	3674
82	1846	2029	2218	2402	2585	2767	2950	3120	3283	3439	3593	3727	3853	3977	4093	4202	4294
62	1620	1796	1977	2164	2352	2532	2711	2885	3046	3202	3351	3481	3599	3721	3828	3927	4010
08	1973	2150	2332	2514	2698	2875	3053	3223	3385	3539	3685	3819	3946	4070	4182	4285	4373
49	2016	2200	2389	2574	2763	2946	3128	3304	3470	3628	3786	3928	4063	4190	4301	4401	4490
41	1276	1417	1565	1714	1852	1993	2133	2268	2400	2526	2650	2766	2872	2962	3051	3128	3185
02	1561	1737	1919	2101	2286	2468	2645	2815	2979	3130	3273	3397	3513	3625	3724	3814	3890
93	1540	1698	1862	2027	2185	2341	2499	2649	2791	2930	3055	3167	3271	3368	3445	3513	3564
62	1499	1646	1799	1951	2102	2250	2398	2540	2678	2813	2940	3055	3165	3269	3357	3437	3507
74	1409	1556	1706	1857	2004	2149	2295	2434	2568	2700	2822	2930	3030	3124	3200	3266	3313
90	2066	2259	2456	2655	2853	3049	3246	3438	3622	3803	3976	4126	4280	4424	4545	4656	4754
40	1704	1882	2065	2252	2438	2614	2789	2959	3120	3272	3415	3544	3660	3775	3877	3976	4056
16	1458	1611	1770	1929	2083	2235	2388	2536	2675	2812	2938	3050	3153	3249	3328	3396	3448
12	1353	1507	1665	1822	1982	2137	2289	2434	2573	2703	2832	2944	3048	3149	3243	3324	3392
69	1615	1771	1933	2095	2253	2408	2562	2711	2854	2993	3126	3246	3362	3474	3568	3651	3722
40	1581	1734	1890	2048	2205	2357	2508	2653	2791	2925	3051	3166	3276	3381	3479	3567	3637
63	1723	1899	2080	2264	2450	2625	2800	2968	3128	3281	3426	3555	3677	3795	3901	3995	4072
01	1453	1620	1795	1971	2149	2324	2497	2658	2814	2961	3107	3228	3341	3449	3545	3630	3700
26	1052	1193	1341	1493	1644	1794	1942	2073	2199	2320	2440	2534	2616	2704	2775	2836	2891
40	1803	1981	2162	2344	2528	2704	2878	3044	3204	3356	3501	3631	3752	3872	3980	4073	4163
72	1408	1556	1713	1871	2023	2173	2322	2468	2603	2737	2861	2972	3077	3172	3251	3324	3380
95	1961	2139	2324	2506	2691	2870	3043	3214	3375	3527	3676	3814	3945	4065	4172	4267	4352

Table 3. Cumulative growing degree days by week at different Idaho locations, base 50 new method.

Station	3-1 to 3-7	3-8 to 3-14	3-15 to 3-21	3-22 to 3-28	3-29 to 4-4	4-5 to 4-11	4-12 to 4-18	4-19 to 4-25	4-26 to 5-2	5-3 to 5-9	5-10 to 5-16	5-17 to 5-23	5-24 to 5-30	5-31 to 6-6	6-7 to 6-13	6
Aberdeen	2	7	18	34	57	87	130	175	222	284	350	423	506	587	675	7
Arrowrock Dam	3	7	16	32	57	89	127	166	206	266	330	409	489	577	669	7
Ashton	0	1	2	4	8	19	45	76	112	167	222	285	357	428	503	5
Avery RS	3	9	20	33	53	84	124	166	215	274	345	417	502	590	679	7
Bonners Ferry	1	3	11	23	44	71	107	144	189	245	310	383	466	550	633	7
Caldwell	12	31	59	92	134	184	244	305	370	448	534	626	728	830	937	10
Cambridge	3	10	21	41	68	106	156	208	264	333	413	498	593	688	787	8
Challis	3	8	17	31	51	77	116	156	199	255	318	386	460	538	619	7
Coeur d'Alene	3	7	17	30	48	75	112	150	193	248	314	384	466	549	635	7
Cottonwood	2	7	15	24	34	50	81	113	146	187	236	288	353	410	477	5
Driggs	0	1	3	7	13	22	41	64	88	130	174	224	287	344	406	4
Dubois	0	1	3	7	14	28	55	85	117	163	214	270	339	405	477	5
Emmett	9	21	45	78	121	171	224	277	337	414	498	595	696	805	912	10
Fenn RS	7	17	32	53	82	124	170	219	272	336	413	495	584	678	774	8
Grace	0	1	4	10	19	32	58	86	118	164	214	271	336	400	470	5
Grand View	17	34	64	105	156	215	281	349	416	501	595	699	803	912	1025	11
Grangeville	3	8	17	28	43	63	93	122	155	197	247	299	365	428	499	5
Hailey	0	1	4	9	19	36	69	104	141	195	251	316	390	460	537	6
Hill City	0	1	3	6	11	20	44	72	103	152	202	261	328	392	463	5
Hollister	4	9	20	42	68	101	140	182	225	289	350	425	502	584	672	7
Idaho City	3	9	20	33	54	83	126	170	217	280	349	422	503	585	672	7
Idaho Falls	1	4	11	22	38	63	100	138	178	233	292	358	436	510	591	6
Kellogg	4	10	20	33	52	80	116	155	199	253	317	386	466	548	631	7
Kooskia	12	29	56	86	12	169	226	285	348	421	504	590	687	785	885	9
Lewiston	7	16	33	56	87	228	170	213	259	322	394	478	565	665	765	8
Mackay RS	0	2	6	14	25	43	73	106	141	193	243	297	361	426	500	5
Malad	2	6	14	28	48	73	113	155	198	260	323	396	477	557	643	7
McCall	0	1	4	7	12	20	35	52	73	104	142	187	242	296	355	4
Montpelier	0	1	3	7	13	25	48	77	110	162	215	274	343	413	488	5
Moscow	3	8	17	29	44	68	99	132	169	216	273	335	406	481	560	6
Mountain Home	11	23	43	66	99	140	190	240	294	363	440	535	628	725	825	9
Oakley	6	13	26	43	69	100	142	181	224	282	343	414	491	569	655	7
Parma	13	33	62	95	136	187	249	310	374	451	534	624	722	821	927	104
Payette	11	25	51	88	135	191	251	311	372	453	541	638	739	845	955	107
Pierce	1	3	5	9	15	28	51	82	114	156	209	265	334	404	482	56
Pocatello	2	5	14	28	48	70	106	143	184	244	303	374	453	532	616	7
Porthill	1	2	7	16	32	60	95	135	180	234	299	369	449	530	614	7
Potlatch	4	10	23	40	61	89	123	158	199	251	310	378	451	529	609	6
Priest River	1	3	9	17	30	52	83	118	157	207	266	330	404	480	558	64
Riggins	16	36	64	100	147	197	257	316	382	462	545	636	738	839	946	106
Rupert	3	12	28	48	72	105	152	203	256	319	391	467	553	638	731	83
Sandpoint	1	3	8	16	29	51	80	113	152	200	259	321	395	472	551	63
Saint Anthony	0	0	2	9	20	37	68	99	133	188	244	310	383	459	539	62
Saint Maries	5	12	25	41	64	96	137	180	226	282	351	423	506	591	679	77
Salmon	2	8	21	39	65	97	145	194	246	309	376	451	533	615	702	79
Shoshone	4	11	22	40	68	106	156	210	263	332	409	492	582	673	771	88
Streyell	3	6	11	26	45	68	99	130	164	217	270	337	406	482	563	65
Tetonia	0	0	0	1	5	12	23	36	55	133	183	236	295	350	422	50
Twin Falls	6	18	37	61	93	133	185	238	292	361	436	520	612	701	798	90
Wallace	2	5	14	24	38	62	96	131	173	224	286	346	418	490	566	64
Weiser	8	19	41	72	114	166	222	281	336	415	501	595	692	797	906	102

21 to 27	6-28 to 7-4	7-5 to 7-11	7-12 to 7-18	7-19 to 7-25	7-26 to 8-1	8-2 to 8-8	8-9 to 8-15	8-16 to 8-22	8-23 to 8-29	8-30 to 9-5	9-6 to 9-12	9-13 to 9-19	9-20 to 9-26	9-27 to 10-3	10-4 to 10-10	10-11 to 10-17	10-18 to 10-24
4	999	1127	1259	1392	1526	1657	1784	1907	2024	2133	2237	2326	2404	2481	2545	2599	2640
5	1001	1142	1289	1437	1591	1738	1882	2017	2141	2257	2373	2466	2551	2631	2695	2746	2786
3	783	895	1011	1131	1248	1363	1475	1584	2685	1779	1869	1944	2011	2078	2131	2177	2208
2	981	1100	1225	1352	1476	1598	1722	1843	1952	2057	2156	2242	2328	2398	2456	2501	2535
2	926	1042	1166	1291	1413	1531	1651	1764	1862	1959	2050	2126	2197	2254	2291	2322	2342
5	1302	1444	1592	1738	1884	2026	2166	2298	2423	2543	2657	2757	2850	2938	3012	3075	3125
3	1135	1270	1412	1556	1699	1835	1971	2102	2224	2340	2454	2553	2646	2736	2812	2876	2924
4	923	1045	1174	1305	1434	1560	1683	1803	1911	2014	2111	2192	2266	2336	2391	2441	2479
9	936	1059	1190	1325	1457	1584	1714	1838	1949	2058	2158	2241	2319	2390	2445	2488	2517
5	711	811	925	1043	1160	1273	1386	1498	1596	1689	1781	1855	1925	1986	2036	2078	2105
6	660	765	877	996	1112	1226	1336	1444	1544	1636	1723	1793	1854	1917	1967	2009	2040
1	767	893	1026	1163	1298	1429	1556	1678	1789	1892	1985	2062	2125	2186	2234	2271	2297
1	1272	1408	1550	1690	1833	1970	2106	2232	2355	2472	2590	2691	2788	2880	2957	3020	3076
0	1095	1223	1356	1489	1623	1753	1883	2011	2128	2239	2346	2436	2513	2584	2641	2688	2721
4	745	858	978	1101	1225	1246	1462	1575	1679	1776	1868	1944	2009	2073	2126	2169	2201
4	1415	1564	1719	1870	2025	2173	2320	2455	2587	2714	2835	2943	3043	3141	3223	3293	3351
6	747	856	977	1103	1227	1346	1466	1581	1681	1777	1868	1940	2010	2070	2119	2156	2185
3	828	947	1073	1203	1332	1458	1582	1704	1816	1921	2019	2100	2175	2246	2303	2352	2390
6	738	853	975	1101	1227	1349	1470	1586	1695	1798	1897	1979	2055	2127	2185	2231	2268
2	992	1126	1267	1411	1557	1700	1838	1963	2084	2191	2303	2392	2472	2548	2615	2667	2712
0	979	1099	1224	1351	1478	1603	1727	1846	1959	2069	2174	2265	2352	2436	2506	2565	2612
6	896	1022	1153	1286	1419	1549	1675	1794	1906	2009	2107	2187	2258	2326	2381	2427	2464
7	918	1036	1161	1287	1411	1531	1653	1769	1873	1974	2069	2147	2223	2291	2344	2386	2415
8	1227	1356	1492	1627	1762	1892	2023	2149	2269	2386	2498	2597	2692	2781	2853	2911	2957
9	1119	1263	1417	1568	1720	1869	2018	2157	2279	2399	2515	2610	2702	2778	2836	2885	2923
3	784	899	1022	1148	1271	1391	1508	1621	1724	1823	1917	2000	2071	2134	2189	2229	2262
6	973	1104	1240	1381	1525	1663	1797	1926	2048	2163	2272	2368	2449	2529	2595	2651	2693
9	583	687	796	912	1026	1135	1245	1351	1441	1527	1606	1669	1727	1781	1822	1854	1879
4	779	896	1019	1146	1273	1396	1516	1631	1740	1839	1936	2017	2084	2151	2206	2250	2284
6	835	949	1073	1200	1324	1444	1565	1681	1785	1885	1979	2056	2132	2197	2249	2289	2318
7	1193	1337	1489	1635	1780	1924	2070	2201	2329	2451	2570	2670	2763	2854	2934	3007	3062
7	924	1118	1257	1404	1551	1691	1829	1961	2078	2193	2300	2390	2469	2551	2621	2682	2730
2	1287	1425	1569	1714	1859	1999	2138	2270	2393	2512	2625	2725	2819	2908	2983	3048	3098
9	1325	1469	1620	1768	1917	2063	2207	2342	2467	2591	2712	2817	2917	3009	3082	3143	3194
3	752	861	979	1100	1212	1326	1443	1556	1657	1454	1852	1936	2009	2063	2118	2160	2187
2	940	1076	1218	1361	1505	1647	1783	1913	2034	2145	2249	2334	2412	2487	2549	2602	2644
5	895	1010	1130	1253	1372	1488	1606	1718	1817	1915	2002	2073	2138	2194	2233	2264	2282
7	887	999	1116	1237	1358	1476	1595	1709	1812	1912	2004	2082	2158	2225	2276	2319	2353
8	821	930	1043	1161	1277	1390	1504	1614	1712	1807	1895	1967	2031	2088	2129	2159	2176
9	1320	1471	1629	1788	1945	2102	2259	2411	2551	2687	2817	2921	3030	3128	3203	3269	3322
4	1077	1215	1358	1506	1652	1789	1924	2056	2177	2291	2399	2493	2575	2655	2724	2788	2835
4	819	930	1047	1167	1284	1398	1513	1625	1722	1817	1902	1971	2033	2087	2127	2157	2176
3	830	947	1070	1193	1316	1435	1555	1668	1772	1869	1963	39	2110	2177	2236	2283	2319
3	978	1096	1220	1346	1470	1590	1713	1831	1939	2044	2144	228	2310	2386	2443	2488	2573
9	1007	1127	1252	1379	1504	1627	1750	1869	1978	2083	2181	268	2348	2421	2484	2537	2574
9	1123	1262	1406	1553	1702	1842	1982	2114	2238	2355	2465	561	2647	2730	2801	2858	2901
0	887	1017	1154	1293	1432	1568	1701	1823	1940	2048	2156	2238	2312	2383	2442	2490	2526
5	594	699	810	926	1039	1154	1266	1365	1458	1542	1624	683	1731	1785	1824	1855	1879
8	1151	1290	1433	1578	1723	1862	1999	2128	2251	2317	2478	574	2660	2745	2818	2879	2929
1	827	936	1054	1174	1289	1401	1514	1625	1720	1813	1901	972	2039	2095	2138	2174	2198
7	1273	1413	1560	1706	1853	1994	2132	2265	2387	2505	2619	721	2818	2902	2973	3030	3078

Table 4. Cumulative growing degree days by week at different Idaho locations, base 40 old method.

Station	3-1 to 3-7	3-8 to 3-14	3-15 to 3-21	3-22 to 3-28	3-29 to 4-4	4-5 to 4-11	4-12 to 4-18	4-19 to 4-25	4-26 to 5-2	5-3 to 5-9	5-10 to 5-16	5-17 to 5-23	5-24 to 5-30	5-31 to 6-6	6-7 to 6-13	6- t 6-
Aberdeen	2	6	15	29	52	83	131	185	243	324	414	519	641	764	899	10
Arrowrock Dam	3	9	21	42	76	122	179	239	305	400	505	635	769	915	1070	12
Ashton	0	1	2	4	8	20	47	83	127	198	273	357	461	564	676	8
Avery RS	3	9	19	33	57	92	141	194	260	341	439	544	668	801	942	10
Bonners Ferry	2	4	14	30	57	94	144	197	263	347	446	558	689	826	965	11
Caldwell	12	36	67	102	162	228	310	396	493	608	738	879	1038	1201	1373	15
Cambridge	3	10	21	43	77	125	190	259	336	431	546	670	812	957	1113	12
Challis	2	6	13	26	46	73	118	168	223	298	387	486	599	720	849	9
Coeur d'Alene	4	9	20	36	60	96	146	203	271	355	456	568	698	834	977	11
Cottonwood	2	8	18	30	44	64	107	150	200	265	341	425	528	626	738	17
Driggs	0	1	2	4	8	15	32	58	85	135	191	257	341	425	518	6
Dubois	0	1	4	9	17	34	69	110	155	225	303	392	503	612	731	8
Emmett	11	26	54	100	158	223	294	368	454	566	687	832	985	1152	1322	15
Fenn RS	8	18	36	61	99	154	216	287	366	462	578	705	844	993	1151	13
Grace	0	1	3	8	17	31	60	95	135	197	267	350	449	547	658	7
Grandview	12	28	58	104	163	235	318	408	505	627	768	930	1099	1270	1455	16
Grangeville	4	12	24	40	63	93	137	182	235	302	383	470	579	688	808	9
Hailey	0	1	4	9	19	37	76	120	168	241	320	412	521	627	744	8
Hill City	0	1	3	5	10	18	43	77	115	176	242	320	413	505	610	7
Hollister	5	13	24	50	80	118	165	220	286	366	457	569	688	814	953	11
Idaho City	1	4	10	18	32	54	94	136	186	255	337	426	532	642	763	8
Idaho Falls AP	1	4	11	22	41	69	115	167	223	303	391	491	613	732	864	10
Kellogg	4	11	23	41	67	104	154	212	278	359	457	566	693	827	967	11
Kooskia	12	32	64	102	151	212	290	373	465	574	699	832	984	1140	1304	14
Lewiston AP	12	29	60	101	155	222	291	364	446	555	679	821	968	1133	1300	14
Mackay RS	0	1	4	10	20	38	72	110	152	220	290	368	463	561	673	8
Malad	1	5	13	29	54	84	136	194	235	347	442	552	677	802	939	10
McCall	0	0	1	2	4	10	21	37	59	97	147	208	287	369	463	5
Montpelier	0	0	1	4	9	19	41	74	113	179	249	329	427	526	636	7
Moscow	6	16	33	56	86	127	181	237	302	380	475	579	698	825	959	11
Mountain Home	10	24	47	74	112	158	220	286	360	456	567	714	856	1008	1168	13
Oakley	6	14	28	49	82	120	175	230	292	377	471	581	702	827	965	11
Parma	11	32	64	104	156	221	304	389	483	595	719	857	1011	1168	1339	15
Payette	10	27	56	101	159	232	310	394	483	603	735	882	1042	1208	1386	15
Pierce	0	1	1	2	5	11	30	59	93	144	212	290	389	494	614	7
Pocatello	2	7	16	34	60	90	139	193	253	343	436	550	677	805	944	11
Porthill	1	3	10	21	41	76	123	178	243	322	418	525	650	781	918	10
Potlatch	5	12	27	49	79	114	162	210	268	340	426	525	634	754	879	10
Priest River	0	1	5	11	22	42	75	114	163	230	311	404	516	633	755	8
Riggins	25	56	98	152	225	306	396	489	594	922	855	1002	1166	1333	1511	17
Rupert	3	12	27	48	78	116	176	245	320	413	522	638	772	902	1059	12
Sandpoint	2	5	12	22	41	72	116	166	227	302	393	494	612	737	868	10
Saint Anthony	0	1	2	8	18	35	63	99	141	213	288	382	488	599	722	8
Saint Maries	6	14	28	47	75	116	170	229	298	381	484	595	722	856	999	11
Salmon	2	6	15	28	49	77	127	180	243	321	410	513	631	752	886	10
Shoshone	4	11	22	40	69	111	172	240	311	402	510	630	765	904	1055	12
Streyell	2	6	12	29	49	74	111	151	195	268	342	441	545	659	785	9
Tetonia	0	0	0	2	6	13	23	37	57	104	152	218	293	375	459	5
Twin Falls	6	8	39	66	106	156	226	300	378	481	596	724	867	1010	1167	13
Wallace	3	7	17	28	47	76	122	170	230	303	394	487	597	713	837	9
Weiser	7	21	46	83	137	205	279	360	440	556	683	827	976	1140	1316	15

6-21 to 6-27	6-28 to 7-4	7-5 to 7-11	7-12 to 7-18	7-19 to 7-25	7-26 to 8-1	8-2 to 8-8	8-9 to 8-15	8-16 to 8-22	8-23 to 8-29	8-30 to 9-5	9-6 to 9-12	9-13 to 9-19	9-20 to 9-26	9-27 to 10-3	10-4 to 10-10	10-11 to 10-17	10-18 to 10-24
222	1398	1600	1812	2027	2242	2448	2648	2840	3014	3172	3318	3439	3542	3637	3713	3776	3817
326	1614	1843	2082	2325	2574	2812	3046	3268	3468	3655	3839	3984	4116	4236	4332	4411	4470
945	1089	1253	1429	1609	1785	1953	2118	2273	2416	2546	2667	2763	2847	2925	2986	3038	3067
243	1411	1597	1800	2005	2206	2400	2595	2788	2959	3123	3273	3402	3527	3631	3716	3786	3837
275	1442	1626	1824	2024	2219	2406	2594	2772	2931	3083	3219	3336	3445	3533	3595	3646	3681
757	1962	2194	2439	2684	2928	3162	3392	3611	3811	3998	4170	4317	4451	4572	4673	4759	4822
469	1662	1885	2123	2368	2610	2837	3064	3281	3473	3649	3815	3952	4076	4185	4275	4348	4397
157	1326	1517	1721	1930	2135	2332	2526	2714	2880	3034	3176	3292	3395	3488	3559	3620	3662
295	1467	1663	1874	2090	2303	2508	2716	2916	3095	3269	3425	3558	3678	3785	3871	3943	3993
983	1122	1280	1460	1647	1828	2002	2178	2350	2502	2648	2786	2896	2999	3087	3160	3224	3265
752	886	1041	1211	1390	1568	1737	1898	2054	2193	2319	2437	2528	2604	2674	2727	2771	2798
028	1194	1391	1600	1816	2028	2233	2433	2625	2798	2957	3102	3219	3316	3406	3478	3534	3570
709	1903	2129	2362	2599	2838	3063	3287	3498	3692	3872	4048	4194	4332	4455	4557	4641	4710
488	1675	1887	2107	2332	2558	2775	2992	3207	3398	3576	3742	3881	4000	4110	4197	4276	4330
927	1076	1248	1432	1622	1813	1996	2174	2345	2501	2643	2776	2882	2969	3052	3118	3171	3205
879	2095	2346	2610	2871	3137	3389	3639	3872	4087	4287	4479	4636	4779	4911	5021	5113	5184
073	1221	1397	1589	1790	1988	2178	2368	2552	2712	2865	2007	3123	3232	3326	3402	3464	3510
029	1188	1372	1569	1774	1977	2173	2365	2553	2721	2874	3013	3123	3224	3317	3390	3451	3493
862	1004	1174	1358	1548	1741	1921	2100	2268	2419	2554	2680	2779	3865	2940	3000	3046	3073
285	1453	1661	1884	2111	2337	2560	2775	2972	3155	3320	3491	3627	3748	3856	3952	4026	4084
044	1197	1376	1567	1767	1966	2152	2336	2513	2673	2821	2955	3066	3168	3258	3330	3391	3432
176	1349	1548	1756	1967	2176	2378	2575	2764	2937	3093	3239	3356	3457	3549	3622	3682	3722
273	1436	1624	1825	2030	2230	2422	2615	2800	2966	3126	3271	3392	3504	3604	3684	3750	3796
663	1854	2067	2295	2526	2756	2975	3195	3408	3602	3787	3959	4108	4248	4371	4472	4556	4621
680	1874	2104	2348	2589	2835	3071	3309	3535	3733	3928	4113	4268	4420	4546	4649	4736	4806
151	1103	1282	1475	1674	1869	2055	2236	2407	2560	2704	2836	2949	3045	3127	3195	3242	3277
374	1457	1665	1883	2109	2337	2555	2769	2974	3126	3338	3502	3640	3755	3865	3953	4028	4079
384	808	962	1124	1295	1465	1623	1781	1931	2058	2174	2282	2366	2440	2505	2552	2588	2613
011	1062	1236	1424	1619	1815	1998	2177	2346	2500	2636	2766	2866	2946	3022	3080	3125	3153
150	1407	1587	1782	1982	2177	2366	2557	2740	2906	3066	3214	3339	3459	3566	3633	3724	3778
456	1758	1998	2249	2495	2740	2982	3228	3451	3655	3847	4033	4182	4314	4438	4549	4649	4717
102	1483	1692	1910	2140	2367	2584	2800	3006	3187	3362	3525	3659	3775	3894	3993	4080	4144
116	1717	2144	2384	2627	2869	3101	3331	3550	3798	3933	4102	2625	4384	4505	4605	4691	4751
177	1980	2218	2467	2714	2965	3205	3442	3667	3267	4060	4246	4400	4544	4671	4773	4857	4923
174	1019	1182	1363	1547	1716	1882	2049	2209	2352	2486	2612	2722	2817	2883	2948	3000	3033
375	1460	1676	1901	2149	2357	2581	2798	3006	3195	3366	3523	3650	3764	3870	3957	4031	4082
116	1375	1555	1746	1943	2132	2315	2499	2672	2827	2977	3107	3216	3311	3395	3453	3498	3529
058	1309	1481	1663	1851	2035	2213	2391	2561	2715	2864	2998	3113	3321	3314	3387	3448	3500
022	1165	1331	1506	1687	1862	2031	2200	2360	2505	2645	2767	2869	2957	3034	3089	3132	3158
005	2117	2364	2621	2882	3140	3398	3654	3906	4135	4358	4569	4738	4913	5071	5195	5303	5394
115	1609	1830	2061	2300	2534	2755	2974	3184	3374	3551	3714	3852	3969	4079	4170	4255	4311
050	1301	1472	1654	1840	2020	2194	2368	2536	2687	2832	2960	3067	3161	3244	3308	3358	3391
001	1156	1335	1525	1712	1900	2081	2260	2428	2579	2716	2848	2950	3041	3121	3189	3241	3275
109	1473	1658	1858	2061	2259	2450	2641	2824	2990	3149	3297	3421	3538	3643	3725	3791	3842
086	1349	1537	1737	1943	2145	2337	2527	2709	2869	3019	3150	3262	3361	3443	3512	3567	3598
111	1606	1832	2067	2311	2553	2778	3002	3213	3404	3580	3741	3877	3998	4109	4204	4278	4331
002	1277	1481	1698	1917	2134	2345	2554	2744	2920	3082	3241	3362	3467	3564	3645	3711	3756
990	815	968	1135	1308	1478	1649	1814	1956	2085	2199	2315	2391	2451	2511	2555	2591	2610
033	1730	1954	2186	2424	2660	2885	3106	3315	3508	3686	3852	3992	4117	4233	4331	4413	4473
004	1255	1426	1614	1806	1987	2163	2337	2509	2659	2805	2938	3049	3150	3237	3304	3362	3401
001	1902	2132	2378	2621	2866	3099	3327	3550	3745	3927	4098	4245	4381	4492	4584	4657	4715

Table 5. Cumulative growing degree days by week at different Idaho locations, base 50 old method.

Station	3-1 to 3-7	3-8 to 3-14	3-15 to 3-21	3-22 to 3-28	3-29 to 4-4	4-5 to 4-11	4-12 to 4-18	4-19 to 4-25	4-26 to 5-2	5-3 to 5-9	5-10 to 5-16	5-17 to 5-23	5-24 to 5-30	5-31 to 6-6	6-7 to 6-13	6- t 6-
Aberdeen	0	0	0	0	1	5	13	26	39	66	98	139	194	249	316	40
Arrowrock Dam	0	0	0	1	5	12	25	42	61	97	140	203	268	345	431	53
Ashton	0	0	0	0	0	1	3	9	16	35	56	81	120	159	204	26
Avery RS	0	0	0	0	1	5	13	23	40	65	102	143	200	264	335	41
Bonners Ferry	0	0	0	0	1	3	11	18	33	59	94	140	201	269	338	42
Caldwell	0	2	5	11	20	34	59	87	123	173	235	307	396	489	591	70
Cambridge	0	0	0	1	4	10	26	45	66	100	150	206	279	355	441	54
Challis	0	0	0	0	1	3	8	17	28	51	82	119	167	221	281	36
Coeur d'Alene	0	0	0	0	1	4	13	25	42	67	105	151	213	280	354	43
Cottonwood	0	0	0	0	0	2	9	17	27	43	65	91	132	167	213	26
Driggs	0	0	0	0	0	0	1	4	6	15	27	43	70	97	130	17
Dubois	0	0	0	0	0	2	6	14	21	42	67	98	145	189	242	31
Emmett	0	2	4	12	24	37	55	76	103	151	205	281	364	462	562	68
Fenn RS	0	0	1	2	5	13	26	45	67	101	150	210	279	358	446	53
Grace	0	0	0	0	0	1	3	8	13	28	47	73	109	145	189	24
Grand View	1	2	4	12	23	41	69	102	137	192	265	358	452	558	673	81
Grangeville	0	0	0	1	3	7	16	25	37	55	81	110	155	199	251	31
Hailey	0	0	0	0	0	1	7	15	23	46	71	103	147	188	238	30
Hill City	0	0	0	0	0	0	2	6	11	27	44	66	99	131	171	22
Hollister	0	1	1	4	9	16	26	42	56	89	123	172	226	285	355	44
Idaho City	0	0	0	0	0	1	5	12	21	40	65	94	136	180	233	29
Idaho Falls	0	0	0	0	1	5	13	25	37	62	93	131	186	239	302	38
Kellogg	0	0	0	1	3	7	17	32	50	76	114	159	219	285	355	43
Kooskia	0	1	4	8	14	25	47	72	102	146	203	267	349	435	529	63
Lewiston	1	2	3	8	16	29	46	64	87	130	186	259	336	431	528	64
Mackay RS	0	0	0	0	0	1	5	10	16	34	54	78	112	148	193	25
Malad	0	0	0	1	3	6	16	32	45	49	115	161	219	277	345	43
McCall	0	0	0	0	0	0	0	1	2	8	18	31	55	80	111	15
Montpelier	0	0	0	0	0	1	2	7	12	29	49	73	110	146	191	25
Moscow	0	1	2	4	7	13	26	41	58	81	115	155	207	266	331	40
Mountain Home	0	2	4	7	11	18	36	57	81	118	166	244	317	400	491	60
Oakley	0	0	1	4	8	14	28	43	60	89	126	173	228	286	355	44
Parma	0	2	5	10	18	32	58	86	119	166	223	293	377	464	565	67
Payette	0	1	2	8	18	35	57	84	112	166	230	310	397	493	601	72
Pierce	0	0	0	0	0	0	0	1	5	17	38	60	98	141	195	25
Pocatello	0	0	0	1	3	6	16	30	47	79	114	164	223	284	354	44
Porthill	0	0	0	0	1	3	9	18	32	53	85	125	181	243	310	38
Potlatch	0	0	1	2	4	7	16	25	38	57	83	117	159	211	267	33
Priest River	0	0	0	0	0	1	4	10	19	34	57	88	133	183	237	29
Riggins	2	4	9	19	37	60	93	126	167	229	294	371	465	562	671	79
Rupert	0	1	2	5	8	14	29	50	74	111	158	210	277	345	427	52
Sandpoint	0	0	0	0	1	3	9	18	30	50	79	115	165	222	283	35
Saint Anthony	0	0	0	0	0	1	2	7	15	36	57	91	133	179	234	30
Saint Maries	0	0	0	1	3	8	19	34	52	77	115	160	219	284	358	43
Salmon	0	0	0	1	2	4	11	20	34	57	87	127	177	231	296	37
Shoshone	0	0	0	1	3	10	25	46	66	100	147	202	269	340	422	52
Streyell	0	0	0	1	3	6	11	19	28	53	45	113	155	203	261	33
Tetonia	0	0	0	0	0	0	0	2	3	11	18	35	57	80	103	14
Twin Falls	0	1	2	5	10	20	39	62	87	129	180	241	316	390	478	58
Wallace	0	0	0	0	1	3	10	19	33	52	84	115	160	209	264	32
Weiser	0	0	1	5	14	29	47	71	94	144	204	279	358	453	559	67

-21 to -27	6-28 to 7-4	7-5 to 7-11	7-12 to 7-18	7-19 to 7-25	7-26 to 8-1	8-2 to 8-8	8-9 to 8-15	8-16 to 8-22	8-23 to 8-29	8-30 to 9-5	9-6 to 9-12	9-13 to 9-19	9-20 to 9-26	9-27 to 10-3	10-4 to 10-10	10-11 to 10-17	10-18 to 10-24
99	605	737	879	1024	1169	1305	1435	1557	1661	1749	1826	1880	1922	1956	1977	1990	1994
67	765	924	1093	1266	1445	1613	1777	1929	2059	2176	2290	2367	2433	2488	2525	2551	2564
35	409	503	609	719	825	923	1018	1103	1176	1237	1291	1324	1349	1370	1382	1389	1390
96	594	710	843	978	1109	1233	1358	1481	1582	1676	1756	1817	1876	1915	1941	1957	1964
08	605	719	847	977	1102	1219	1337	1445	1534	1616	1682	1733	1777	1803	1813	1818	1822
35	970	1132	1307	1482	1656	1820	1980	2129	2259	2376	2478	2556	2621	2674	2710	2736	2748
57	780	933	1101	1276	1448	1605	1762	1909	2031	2137	2233	2303	2360	2404	2433	2451	2458
50	549	670	804	943	1078	1205	1329	1447	1543	1628	1700	1751	1793	1824	1844	1856	1860
32	634	760	901	1047	1190	1325	1463	1593	1702	1806	1892	1958	2013	2055	2082	2098	2104
22	392	480	590	707	819	923	1029	1131	1213	1289	1358	1404	1446	1475	1495	1508	1515
81	297	382	483	592	700	799	891	978	1048	1107	1159	1193	1217	1234	1244	1251	1253
02	499	626	765	911	1053	1188	1318	1440	1544	1634	1711	1765	1804	1836	1858	1869	1872
09	933	1089	1252	1419	1588	1743	1897	2038	2162	2272	2378	2456	2525	2580	2618	2645	2659
43	760	902	1052	1207	1363	1510	1657	1802	1923	2031	2127	2197	2249	2292	2318	2339	2346
21	401	503	617	737	858	971	1079	1180	1266	1338	1402	1445	1474	1499	1514	1521	1523
67	1103	1284	1478	1669	1865	2047	2227	2390	2535	2665	2787	2875	2949	3012	3057	3089	3105
79	457	563	685	816	944	1064	1184	1298	1388	1472	1544	1595	1643	1677	1701	1715	1723
85	475	589	716	851	984	1110	1232	1350	1448	1532	1602	1648	1690	1724	1746	1760	1766
38	361	461	575	695	818	928	1037	1135	1217	1284	1342	1379	1408	1428	1440	1447	1449
47	646	784	937	1094	1250	1403	1548	1675	1788	1884	1985	2052	2109	2154	2194	2219	2232
76	460	569	690	820	949	1065	1179	1286	1376	1454	1519	1565	1606	1635	1654	1666	1670
74	577	706	844	985	1124	1256	1383	1502	1605	1692	1769	1821	1860	1891	1910	1921	1924
21	614	732	863	998	1128	1250	1373	1488	1584	1674	1750	1805	1853	1891	1915	1930	1936
48	869	1012	1170	1331	1491	1649	1790	1933	2057	2172	2274	2354	2424	2479	2514	2539	2551
68	892	1052	1226	1397	1573	1739	1907	2063	2191	2316	2431	2517	2600	2659	2697	2724	2738
34	417	526	649	778	903	1019	1130	1232	1316	1390	1453	1501	1536	1561	1577	1583	1586
10	653	791	939	1095	1253	1401	1545	1680	1798	1904	1999	2069	2120	2166	2196	2216	2224
91	258	342	434	535	635	723	811	892	952	1002	1044	1071	1093	1107	1113	1117	1118
31	413	517	635	760	886	999	1108	1207	1292	1360	1421	1459	1486	1507	1518	1523	1524
82	570	680	805	935	1060	1179	1300	1413	1509	1600	1679	1738	1794	1837	1867	1885	1896
89	871	1041	1222	1398	1573	1745	1921	2074	2208	2330	2446	2527	2592	2650	2700	2740	2759
52	663	802	950	1110	1267	1414	1560	1696	1807	1912	2005	2072	2124	2179	2219	2250	2266
02	933	1090	1260	1433	1605	1767	1927	2076	2204	2319	2418	2496	2563	2616	2651	2677	2688
52	985	1153	1332	1509	1690	1860	2027	2182	2312	2435	2551	2636	2711	2771	2807	2832	2844
18	394	487	598	712	812	908	1005	1095	1168	1232	1290	1333	1368	1382	1396	1402	1405
66	661	807	962	1120	1278	1432	1579	1717	1836	1937	2025	2086	2136	2179	2210	2231	2240
68	557	667	788	915	1034	1147	1261	1364	1449	1529	1590	1634	1667	1690	1699	1704	1707
06	488	590	702	820	934	1042	1150	1250	1334	1414	1478	1527	1572	1604	1624	1637	1645
55	439	535	640	751	856	955	1054	1144	1219	1289	1343	1380	1409	1428	1437	1441	1442
25	1067	1244	1431	1622	1810	1998	2184	2366	2525	2678	2819	2918	3023	3112	3169	3213	3243
63	767	918	1079	1248	1412	1563	1712	1852	1972	2080	2173	2243	2296	2342	2376	2403	2414
26	507	608	720	836	946	1050	1154	1252	1333	1408	1467	1508	1540	1563	1574	1580	1583
74	459	568	688	805	923	1034	1143	1242	1324	1391	1455	1494	1526	1552	1568	1577	1579
28	622	737	867	1000	1128	1249	1370	1483	1579	1668	1746	1803	1855	1895	1919	1933	1941
67	550	668	798	934	1066	1188	1308	1420	1510	1590	1652	1698	1735	1758	1772	1780	1782
89	764	920	1085	1259	1431	1586	1740	1881	2002	2108	2200	2269	2326	2374	2410	2431	2440
40	546	680	827	976	1123	1264	1403	1523	1629	1721	1811	1867	1911	1948	1974	1992	1999
04	262	345	442	545	645	746	841	914	976	1024	1074	1094	1110	1125	1132	1136	1137
04	831	985	1147	1315	1481	1636	1787	1926	2049	2157	2253	2325	2384	2434	2471	2498	2510
93	474	575	693	815	926	1032	1136	1238	1318	1394	1458	1503	1542	1569	1585	1594	1599
04	935	1095	1271	1444	1619	1782	1940	2093	2218	2330	2431	2510	2577	2622	2650	2669	2680

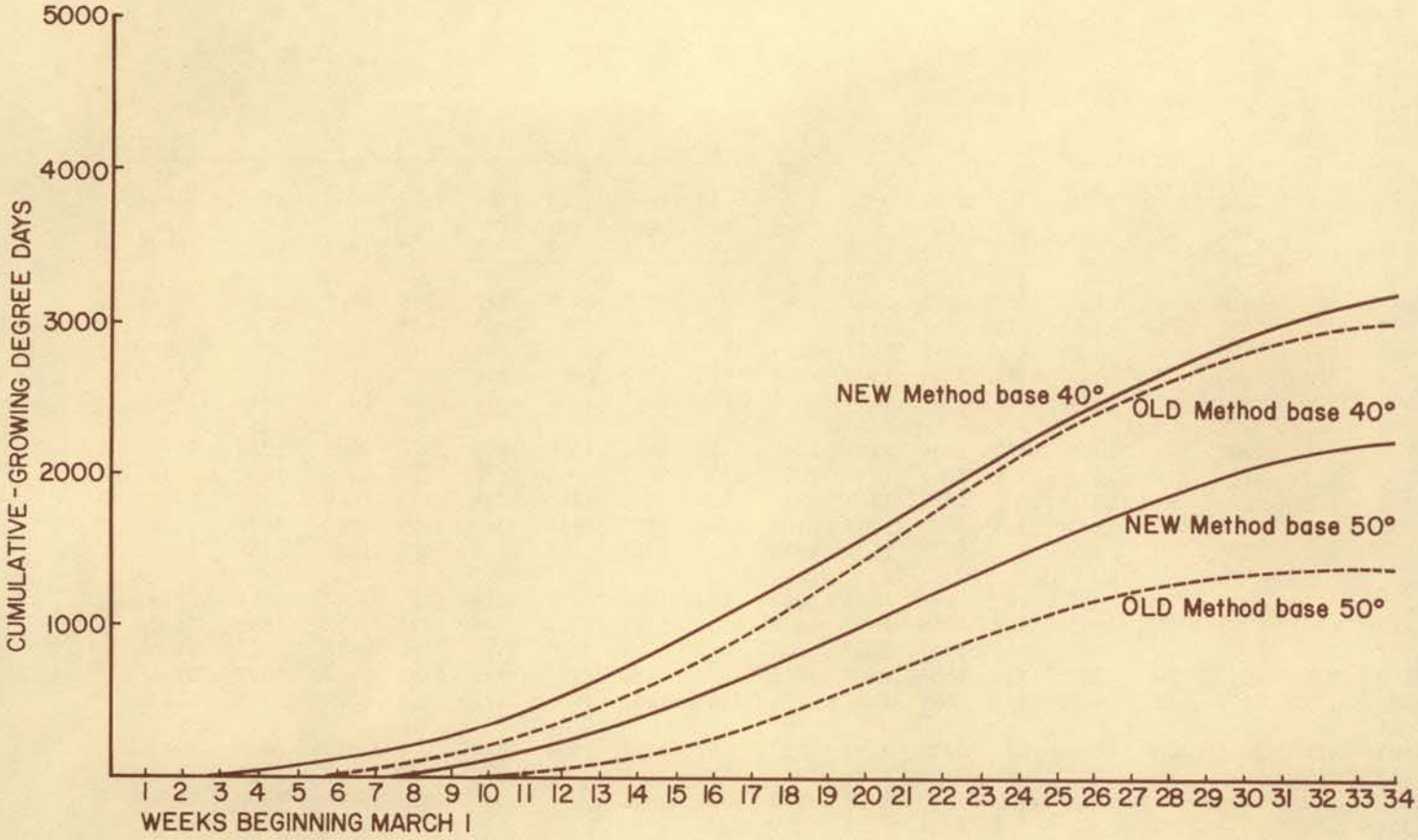

Fig. 1. Cumulative growing degree days by different methods at Ashton, Idaho, elevation 5,220 feet.

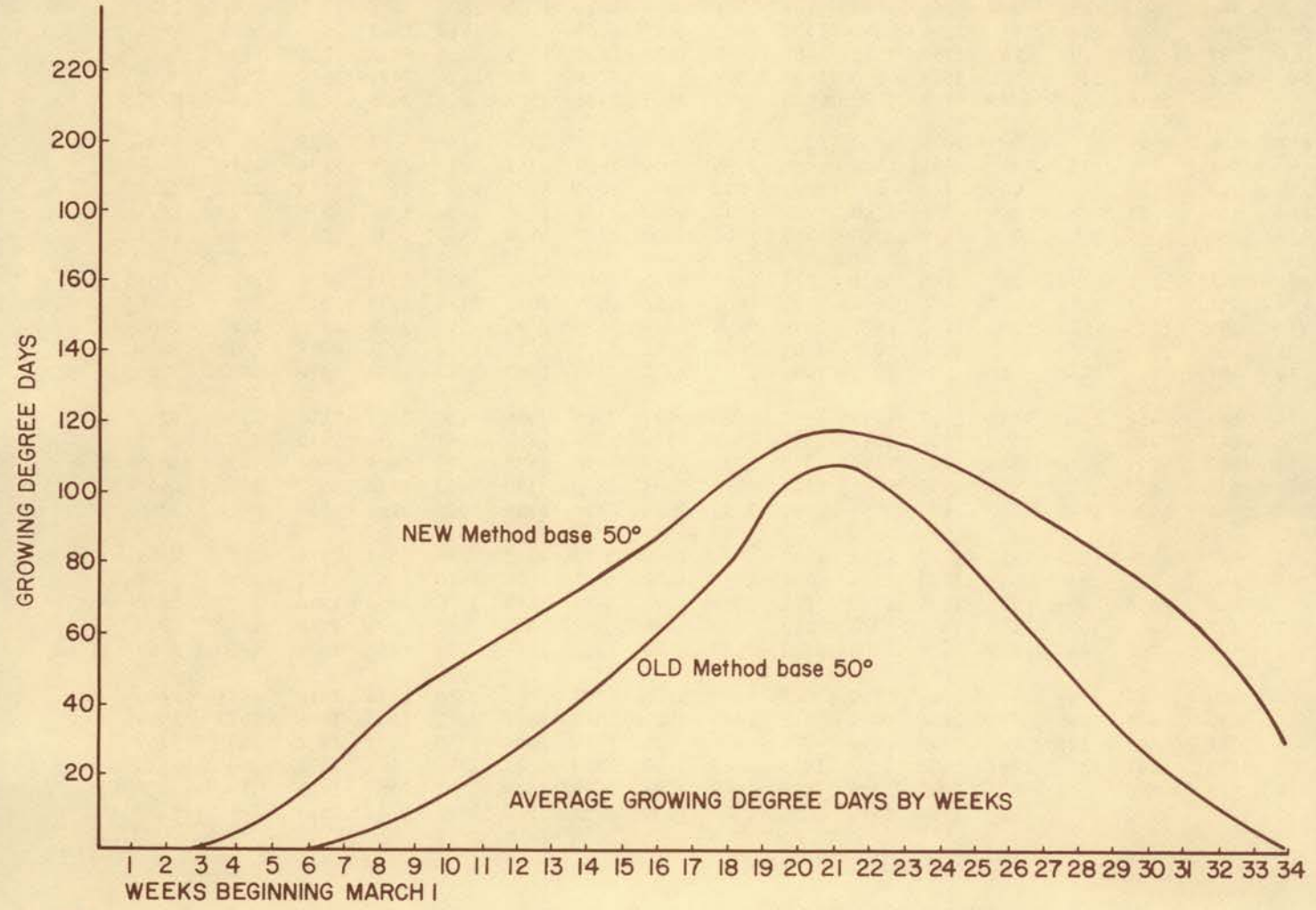

Fig. 2. Average growing degree days by two methods, base 50, at Ashton.

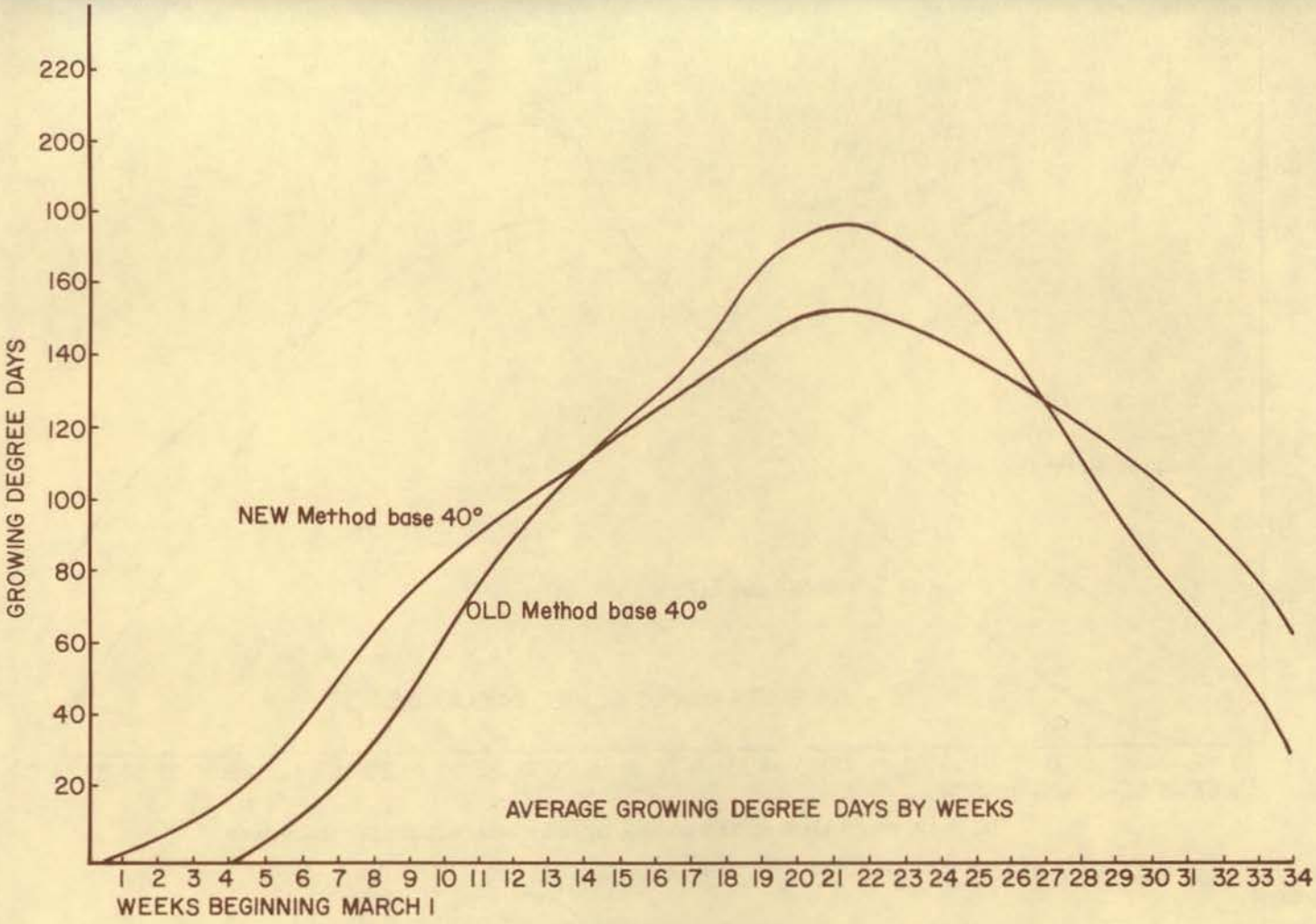

Fig. 3. Average growing degree days by two methods, base 40, at Ashton.

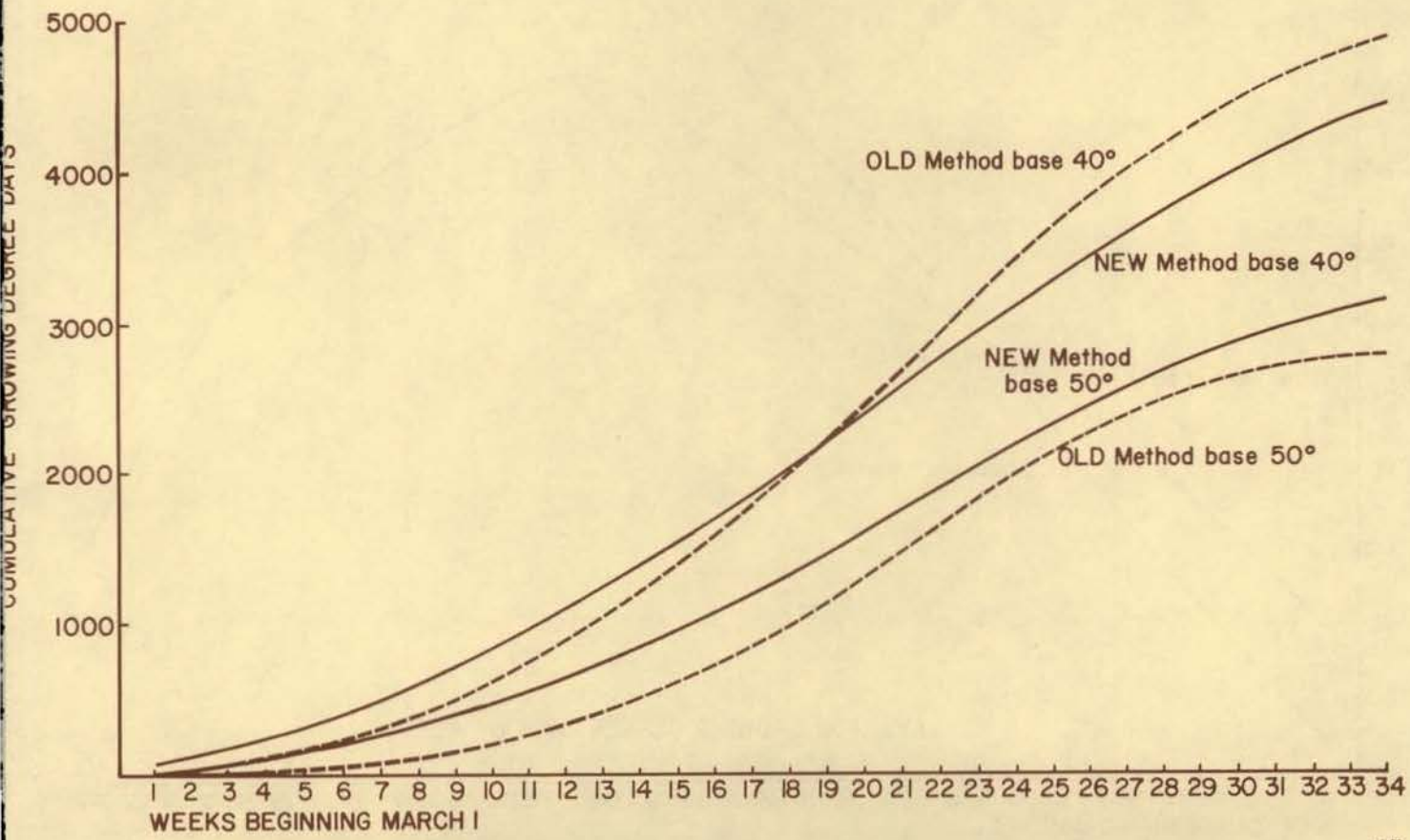

Fig. 4. Cumulative growing degree days by different methods at Caldwell, Idaho, elevation 2,370 feet.

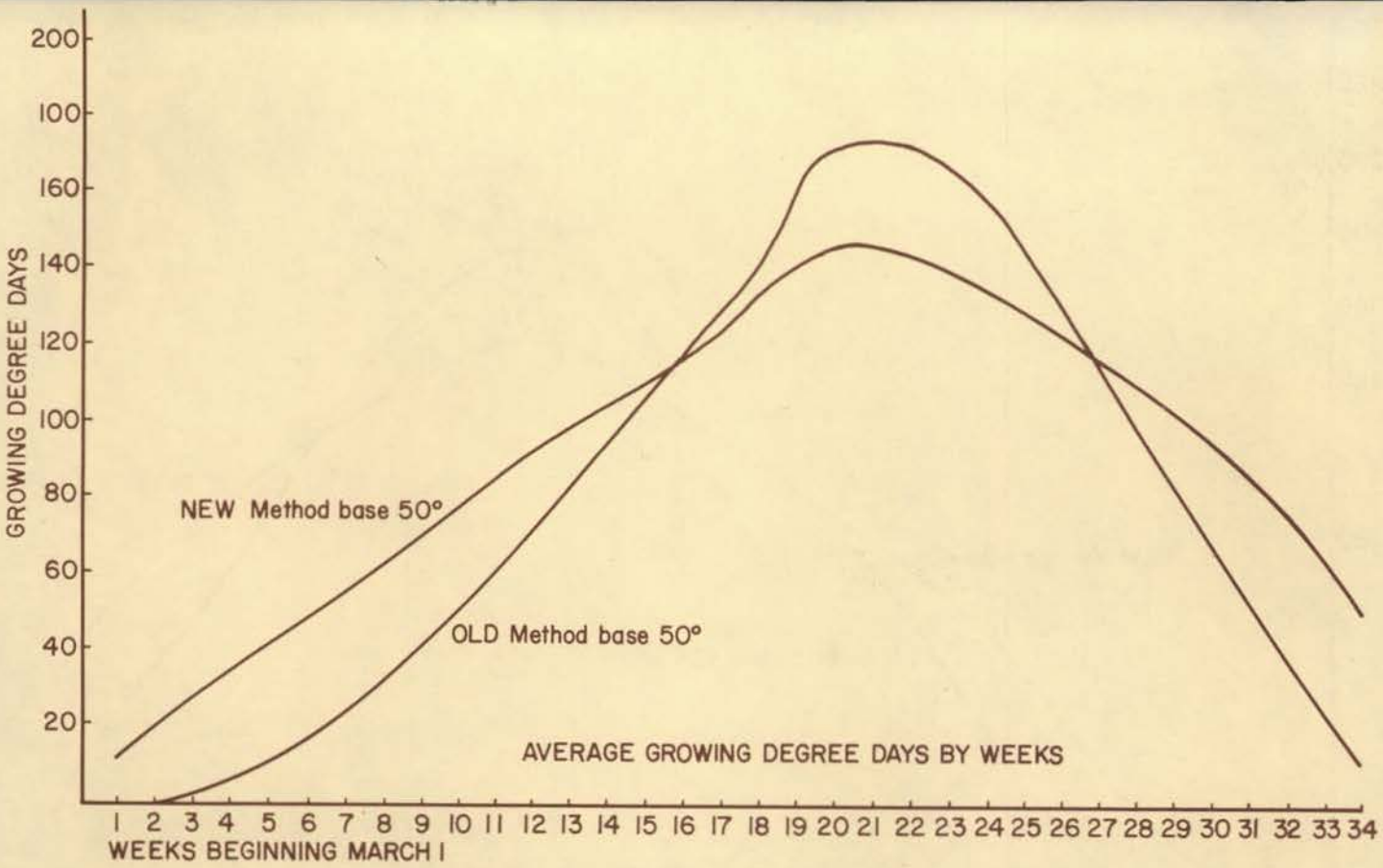

Fig. 5. Average growing degree days by two methods, base 50, at Caldwell.

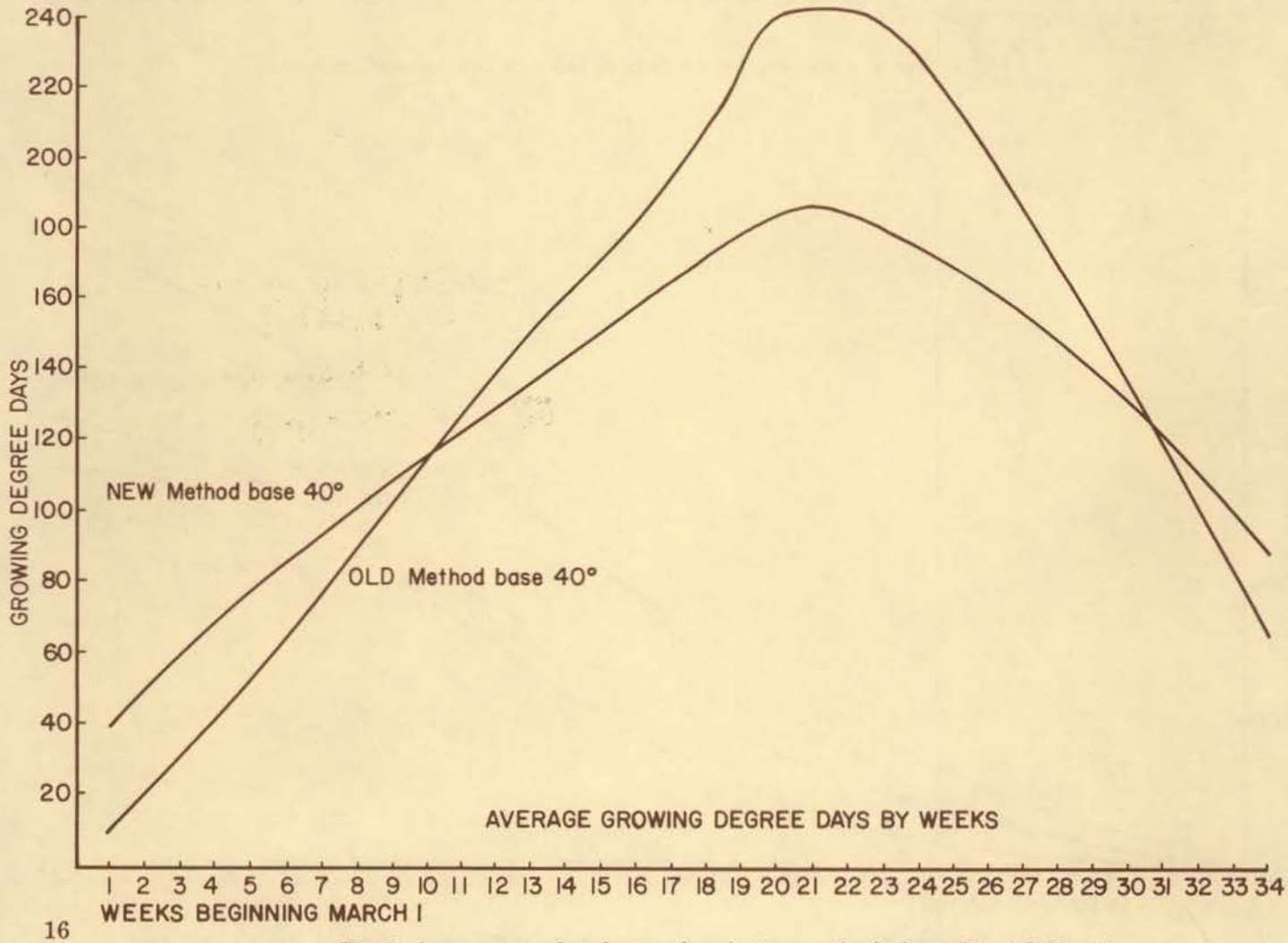

Fig. 6. Average growing degree days by two methods, base 40, at Caldwell.