

Do not use results of The
Following experiments because
inadequately controlled.

1. SCS X April 1943

SCS
That in
Sawed.

See graph.

This is new copy of record.

April 14, 1943

Bitterbrush Germination
Experiment No. 2' - shelled seed

Seed used: Seed obtained from Soil Conservation Service

Pregermination treatment: None
(Not stratified)

Germination Record

0 days

No. of seeds 200				No. of seeds 683			
Days	Date	Ger.	%	Days	Date	Ger.	%
0	Apr. 5 - 5 p.m.	Started	0	52	May 27	36	18
1	Apr. 6	0	0	53	" 28	36	18
7	" 12	1	1.1	54	" 29	36	18
9	" 14	3	2	56	" 31	36	18.14
10	" 15 8 a.m.	4	2	59	June 3	36	18
11	" 16	6	3	63	" 7	37	19.12
12	" 17	7	4	66	" 10	37	19
14	" 19	8	4.3	67	" 11	37	19
15	" 20	9	5.3	70	" 14	37	19.13
16	" 21	9	5	71	" 15	37	19
18	" 23	9	5	72	" 16	38	19
21	" 26	10	5.3	73	" 17	38	19
22	" 27	11	6	75	" 19	38	19
23	" 28	11	6	77	" 21	38	19.13
24	" 29	13	7	78	" 22	39	20
25	" 30	14	7	80	" 24	40	20
28	May 3	17	9.6	84	" 28	40	20.14
29	" 4	19	10	86	" 30	40	20
30	" 5	21	11	87	July 1	42	21
31	" 6	24	12	88	" 2	43	22
32	" 7	25	13	91	" 5	46	23.16
33	" 8	27	14	92	" 6	46	23
35	" 10	28	14.10	99	" 13	47	24.16
38	" 13	30	15	101	" 15	47	24
39	" 14	31	16	106	" 20	49	25.17
40	" 15	32	16	113	" 27	50	25
42	" 17	32	16.10	120	Aug. 3	53	27.18
44	" 19	32	16	127	" 10	59	30.11
45	" 20 11 a.m.	33	17	134	" 17	61	31.11
47	" 22 8 a.m.	34	17	140	" 23	74	37.13
49	" 24	35	18.14	144	" 27	84	42.14
50	" 25	36	18				
51	" 26	36	18				

572 84
76
good seed
visibility?

April 14, 1943

Bitterbrush Germination
Experiment 2' - shelled seed

Seed used: Seed obtained from the Soil Conservation Service

Pregermination treatment: Stratified in sand

7 days

1 weeks strat.

GERMINATION RECORD

Days	Date	Strat. at 41° F. on March 31				Strat. at 32° F. on April 6			
		No. of seeds	<u>172</u>	<u>200</u>	<u>372</u>	Days	<u>153</u>	<u>154</u>	<u>304</u>
			A	B	Total		A	B	Total
Number of roots longer than $\frac{1}{4}$ inch									
0	April 6				Into 327				
6	April 12		1	1	2				
7	April 13		1	1	2				
8	April 14		1	2	3				
<u>10</u>	April 16 DAM		2	2	4				
11	April 17 "		3	5	8				
13	" 19 "		4	5	9				
14	" 20 "		6	9	15				
16	" 22 "		8	11	19				
18	" 24 "		11	12	23				
20	" 26 "		13	15	28				
21	" 27 "		14	15	29				
22	" 28 "		14	15	29				
23	" 29 "		15	16	31				
24	" 30 "		16	17	33				
27	May 3 "		19	21	40				
28	" 4 "		21	22	43				
29	" 5 "		21	22	43				
30	" 6 "		22	22	44				
31	" 7 "		23	22	45				
32	" 8 "		26	22	48				
33	" 10 "		28	22	50				
34	" 11 "		30	22	52				
35	" 12 "		30	23	53				
36	" 13 "		31	23	54				
37	" 14 "		33	23	56				
38	" 15 "		33	23	56				
39	" 17 "		34	23	57				
40	" 19 "		35	25	60				
41	" 21 "		35	25	60				
42	" 22 "		36	26	62				
43	" 24 "		36	27	63				

(cont)

7 days strat.

419F

379F

	Days	Date	<u>172</u>	<u>200</u>	<u>372</u>	%	Days	<u>153</u>	<u>151</u>	<u>304</u>	%
			A	B	Total			A	B	Total	
49	48	May 25-8 a.m.	36	28	64	17	42	21	20	41	13
50	49	" 26 "	37	28	65	17	43	22	20	42	14
53	52	May 29 "	38	29	67	18	46	22	20	42	14
55	54	May 31 "	38	29	67	18	48	23	21	44	14
57	56	June 2 "	39	32	71	19	50	23	21	44	14
58	57	" 3 "	40	33	73	20	51	23	21	44	14
62	61	" 7 "	41	35	76	20	55	24	21	45	15
68	63	" 9 "	41	36	77	21	57	25	22	47	15
69	68	" 14 "	42	36	78	21	62	25	23	48	16
70	69	" 15 "	42	36	78	21	63	25	24	49	16
71	70	" 16 "	42	37	79	21	64	25	24	49	16
76	75	" 21 "	42	37	79	21	69	25	25	50	16
77	76	" 22 "	42	37	79	21	70	25	26	51	17
78	77	" 23 "	42	37	79	21	71	26	26	52	17
79	78	" 24 "	42	38	80	22	72	26	26	52	17
81	80	" 26 "	42	38	80	22	74	27	27	54	18
83	82	" 28 "	42	38	80	22	76	27	27	54	18
85	84	" 30 "	43	38	81	22	78	28	27	55	18
86	85	July 1 "	43	39	82	22	79	29	27	56	18
90	89	" 5 "	44	41	85	23	83	30	27	57	19
91	90	" 6 "	44	41	85	23	84	31	27	58	19
98	97	" 13 "	46	42	88	24	91	34	28	62	20
105	104	" 20 "	47	44	91	24	98	34	28	62	20
112	111	" 27 "	51	45	96	26	105	34	30	64	21

April 14, 1943

Bitterbrush Germination

Experiment No. 2' - shelled seed

Seed used: Seed obtained from the Soil Conservation Service

Pregermination treatment: Stratified in sand

Germination Record

14 days
2 weeks strat.

Days	Date	Strat. at 41° F. on March 31	Germination Record				Strat. at 32° F. on April 6	Germination Record			
			No. of seeds	A	B	Total		%	Days	A	B
			178		115	243		152	158	310	

Number of roots longer than 1/4 inch

0	0	April 13			Into 327		0						
2	2	April 15 8AM	6	2	8	3							
3	3	April 16 8AM	12	11	23	9							
4	4	April 17 " "	16	20	36	15							
6	7	" 20 " "	17	23	40	16	0	Into 327				0	←?
8	9	" 22 " "	17	24	41	17	2	7	0	7	2		
9	10	" 23 " "	17	25	42	17	3	14	1	15	5		
12		" 26 " "	19	27	46	19	6	16	2	18	6		
13		" 27 " "	21	27	48	20	7	16	3	19	6		
14		" 28 " "	22	27	49	20	8	17	4	21	7		
16		" 30 " "	24	28	52	21	10	17	4	21	7		
17	May 1	" " " "	25	29	54	22	11	17	4	21	7		
19	" 3	" " " "	26	29	55	23	13	19	7	26	8		
20	" 4	" " " "	26	30	56	23	14	19	8	27	9		
21	" 5	" " " "	26	30	56	23	15	20	8	28	9		
22	" 6	" " " "	26	32	58	24	16	20	8	28	9		
24	" 8	" " " "	27	32	59	24	18	21	9	30	10		
26	" 10	" " " "	27	32	59	24	20	21	11	32	10		
27	" 11	" " " "	28	33	61	25	21	24	11	35	11		
28	" 12	" " " "	28	33	61	25	22	25	14	39	13		
29	" 13	" " " "	28	33	61	25	23	26	14	40	13		
30	" 14	" " " "	28	33	61	25	24	26	16	42	14		
31	" 15	" " " "	28	33	61	25	25	26	17	43	14		
33	" 17	" " " "	29	33	62	26	27	27	17	44	14		
34	" 18	" " " "	30	34	64	26	28	27	17	44	14		
35	" 19	" " " "	30	34	64	26	29	27	18	45	15		
36	" 20 11a.m.		31	36	67	28	30	28	19	47	15		
37	" 21 8a.m.		31	36	67	28	31	30	19	49	16		
38	" 22 " "		31	36	67	28	32	32	20	52	17		
40	" 24 " "		31	36	67	28	34	33	21	54	17		
41	" 25 " "		31	37	68	28	34	33	21	54	17		
42	" 26 " "		32	38	70	29	35	33	21	54	17		

April 14, 1943

14 days' strat. (cont.)

Days	Date	Strat. at 41° F. on March 31	No. of seeds				%	Days	Strat. at 32° F. on April 6				%
			128	115	243	152			158	310			
			A	B	Total			A	B	Total			
44	43	May 27 8 a.m.	32	38	70	29	36	37	34	21	55	18	
44	"	28 "	33	38	71	29	37	38	35	22	57	18	
45	"	29 "	33	38	71	29	38	39	35	23	58	19	
47	"	31 "	33	38	71	29	40	41	37	23	60	19	
52	June 5	"	33	38	71	29	45	46	38	23	61	19	
54	"	7 "	33	38	71	29	47	48	38	24	62	20	
56	"	9 "	34	38	72	29	49	50	39	24	63	20	
59	"	12 "	35	38	73	30	52	53	39	24	63	20	
64	"	17 "	35	38	73	30	57	58	40	24	64	21	
65	"	18 "	35	38	73	30	58	59	40	25	65	21	
66	"	19 "	36	40	76	31	59	60	41	25	66	21	
68	"	21 "	37	41	78	32	61	62	41	26	67	21	
69	"	22 "	38	41	79	33	62	63	41	26	67	21	
70	"	23 "	39	41	80	33	63	64	41	26	67	21	
71	"	24 "	39	41	80	33	64	65	41	27	68	22	
75	"	28 "	39	41	80	33	68	69	41	27	68	22	
77	"	30 "	39	41	80	33	70	71	41	28	69	22	
78	July 1		39	41	80	33	71	72	41	29	70	22	
82	"	5 "	39	42	81	33	75	76	41	29	70	22	
83	"	6 "	39	43	82	34	76	77	41	29	70	22	
90	"	13 "	39	43	82	34	83	84	41	30	71	23	
98	97	" 20	39	43	82	34	90	91	41	30	71	23	

April 14, 1943

Bitterbrush Germination

Experiment No. 2' - shelled seed

Seed used: Seed obtained from the Soil Conservation Service

Pregermination treatment: Stratified in sand

Germination Record

21 days

3 weeks strat.

Date		Strat. at 41° F. on March 31	Strat. at 82° F. on April 16							
Days	No. of seeds	<u>173</u> A	<u>168</u> B	<u>341</u> Total	%	Days	<u>205</u> A	<u>203</u> B	<u>408</u> Total	%
Number of roots longer than $\frac{1}{2}$ inch										
0	April 20	Intro	327		0					
✓	April 22 8AM	59	56	115	34					
3	April 23 "	62	68	130	38					
6	" 26 "	63	69	132	39					
7	" 27 4PM	63	69	132	39	0	Intro	327		
8	" 28 8AM	66	69	135	40	1	0	0	0	0
9	" 29 " "	66	69	135	40	2	4	6	10	2
10	30 " "	67	70	137	40	3	9	13	22	5
11	May 1 " "	67	70	137	40	4	10	14	24	6
13	" 3 " "	68	71	139	41	6	10	15	25	6
14	" 4 " "	68	73	141	41	7	13	15	28	7
15	" 5 " "	68	73	141	41	8	17	15	32	8
18	" 8 " "	69	73	142	42	11	18	16	34	8
20	" 10 " "	69	73	142	42	13	19	18	37	9
21	" 11 " "	70	73	143	42	14	19	19	38	9
22	" 12 " "	70	73	143	42	15	22	20	42	10
23	" 13 " "	70	73	143	42	16	22	21	43	10
24	" 14 " "	70	73	143	42	17	23	22	45	11
25	" 15 " "	70	73	143	42	18	24	24	48	12
27	" 17 " "	70	73	143	42	20	26	26	52	13
28	" 18 " "	70	74	144	42	21	26	26	52	13
29	" 19 " "	72	74	146	43	22	26	26	52	13
30	" 20 11 a.m.	73	75	148	43	23	27	27	54	13
31	" 21 8 p.m.	74	75	149	44	24	28	27	55	13
34	" 24 " "	75	75	150	44	27	29	28	57	14
36	" 26 " "	75	76	151	44	29	29	29	58	14
37	" 27 " "	76	77	153	45	30	32	30	62	15
39	" 29 " "	76	77	153	45	32	32	33	65	16
41	" 31 " "	77	77	154	45	34	34	33	67	16
43	June 2 " "	77	77	154	45	36	34	34	68	17
45	" 4 " "	77	77	154	45	38	35	37	72	18
46	" 6 " "	77	78	155	45	39	38	38	76	19

April 14, 1943

21 days' strat. (continued)

		Strat. at 41° F. on March 31				Strat. at 32° on April 6					
		No. of seeds	173	168	341			205	203	408	
Days	Date		A	B	Total	%	Days	A	B	Total	%
48	June 7 8 a.m.		79	80	159	47	41	38	41	79	19
50	" 9 "		79	81	160	47	43	39	43	82	20
52	" 11 "		79	82	161	47	45	39	43	82	20
55	" 14 "		79	82	161	47	48	40	47	87	21
56	" 15 "		79	82	161	47	49	41	47	88	21
57	" 16 "		80	82	162	47	50	41	47	88	21
58	" 17 "		81	82	163	48	51	43	48	91	22
60	" 19 "		81	82	163	48	53	46	49	95	23
62	" 21 "		81	82	163	48	55	46	51	97	24
65	" 24 "		81	83	164	48	58	47	51	98	24
67	" 26 "		81	84	165	48	60	48	51	99	24
69	" 28 "		81	84	165	48	62	48	55	103	25
71	" 30 "		81	84	165	48	64	51	57	108	26
73	July 2 "		81	85	166	49	66	51	57	108	26
74	" 3 "		81	87	168	49	67	51	58	109	26
76	" 5 "		82	87	169	50	69	51	58	109	26
77	" 6 "		82	89	171	50	70	54	60	114	28
84	" 13 "		83	90	173	50.5	77	55	62	117	29
91	" 20 "		83	91	174	51	84	57	64	121	30
98	" 27 "		83	91	174	51	91	57	64	121	30

April 14, 1943

Bitterbrush Germination
Experiment No. 2' - shelled seed

Seed used: Seed obtained from the Soil Conservation Service

Pregermination treatment: Stratified in sand

Germination Record											
28 days 4 weeks strat.											
Days	Date	Strat. at 41° F. on March 31					Strat. at 32° F. on April 6				
	No. of seeds	<u>116</u>	<u>94</u>	<u>214</u>	%	Days	<u>88</u>	<u>111</u>	<u>199</u>	%	
		A	B	Total			A	B	Total		
Number of roots longer than $\frac{1}{2}$ inch											
0	April 27 4PM	Into	327		0						
1	" 28 8AM	4	4	8	4						
2	" 29 "	40	34	74	35						
3	" 30 "	46	37	83	39						
4	May 1 "	52	40	92	43						
6	" 3 "	56	41	97	45						
7	" 4 "	56	42	98	46	0	Into	327			
8	" 5 "	58	43	101	47	1	8	11	19	10	
9	" 6 "	59	43	102	48	2	17	24	41	21	
10	" 7 "	59	44	103	48	3	22	31	53	27	
11	" 8 "	59	44	103	48	4	24	31	55	28	
13	" 10 "	59	44	103	48	6	25	38	63	32	
14	" 11 "	59	44	103	48	7	26	41	67	34	
15	" 12 "	59	44	103	48	8	27	43	70	35	
16	" 13 "	59	44	103	48	9	27	44	71	36	
18	" 15 "	61	45	106	50	11	27	44	71	36	
20	" 17 "	61	45	106	50	13	28	45	73	37	
22	" 19 "	62	45	107	50	15	28	45	73	37	
24	" 21 "	63	46	109	51	17	29	46	75	38	
25	" 22 "	63	46	109	51	18	30	46	76	38	
27	" 24 "	64	47	111	52	20	31	46	77	39	
28	" 25 "	64	48	112	52	21	32	46	78	39	
30	" 27 "	65	48	113	52	23	32	47	79	39	
32	" 29 "	66	49	115	54	25	32	48	80	40	
39	June 5 "	66	50	116	54	32	32	49	81	41	
41	" 7 "	66	51	117	55	34	32	49	81	41	
43	" 9 "	66	51	117	55	36	33	50	83	42	
48	" 14 "	66	51	117	55	41	33	50	83	42	
51	" 17 "	66	51	117	55	44	34	50	84	42	
53	" 19 "	66	51	117	55	46	34	51	85	43	
55	" 21 "	67	52	119	56	48	35	53	88	44	

28 days
4 weeks strat.

April 8, 1943

28 days (continued)

		Stratified at 41° F on March 31						Strat. at 32° F. on April 6					
		Date		Stratified at 41° F on March 31		Strat. at 32° F. on April 6		Date		Stratified at 41° F on March 31		Strat. at 32° F. on April 6	
Days	No. of seeds	116	98	214		Days	88	111	199				
		A	B	Total	%		A	B	Total	%			
58	June 24	8 a. m.	67	52	119	56	51	35	55	90	45		
60	" 26	"	67	52	119	56	53	35	56	91	46		
62	" 28	"	67	52	119	56	55	35	56	91	46		
70	July 6	"	67	52	119	56	63	35	56	91	46		
77	" 13	"	67	53	120	56	70	37	56	93	47		
84	" 20	"	68	53	121	57	77	37	57	94	47		
91	" 27	"	68	54	122	57	84	37	57	94	47		
98	Aug 3	"	68	54	122	57	91	37	57	94	47		
118	Aug 23		69	55	124	58	111	38	57	95	48		

April 14, 1943

Bitterbrush Germination

Experiment No. 2' - shelled seed

Seed used: Seed obtained from the Soil Conservation Service

Pregermination treatment: Stratified in sand

35 days

5 weeks strat.

Germination Record

Days	Date	Strat. at 41° F. on March 31	No. of seeds				Days	Strat. at 32° F. on April 6	No. of seeds			
			A	B	Total	%			A	B	Total	%
			130 115 245						129 106 235			
			Number of roots longer than 1/2 inch									
0	May 4 8 a.m.	Intro	327			0			Intro	327		
1	" 5 " "		27	36	63	26	29					
2	" 6 " "		39	47	86	35	39					
3	" 7 " "		50	53	103	42	47					
4	" 8 " "		53	57	110	45	50					
6	" 10 " "		57	64	121	50	55					
7	" 11 " "		57	65	122	50	56					
8	" 12 " "		58	65	123	50	56	24	19	37	16	
9	" 13 " "		58	65	123	50	56	33	26	59	25	
10	" 14 " "		60	65	125	51	57	38	33	71	30	
11	" 15 " "		60	65	125	51	4	48	40	88	38	
13	" 17 " "		60	66	126	51	6	55	42	97	42	
14	" 18 " "		60	67	127	52	7	59	44	103	44	
15	" 19 " "		63	68	131	53	8	59	52	111	48	
17	" 21 " "		63	68	131	53	10	59	54	113	48	
20	" 24 " "		63	68	131	53	13	63	55	118	51	
24	" 28 " "		63	68	131	53	17	64	55	119	51	
27	" 31 " "		63	68	131	53	20	64	56	120	52	
29	June 2 " "		63	68	131	53	22	64	57	121	52	
30	" 3 " "		63	68	131	53	23	65	57	122	52	
32	" 5 " "		64	68	132	54	25	65	57	122	52	
36	" 9 " "		64	68	132	54	29	65	57	122	52	
39	" 12 " "		65	68	133	54	32	65	57	122	52	
44	" 17 " "		66	68	134	55	37	65	58	123	53	
46	" 19 " "		66	68	134	55	39	66	58	124	53	
48	" 21 " "		66	68	134	55	41	66	60	126	54	
51	" 24 " "		66	68	134	55	44	66	60	126	54	
55	" 28 " "		66	68	134	55	48	66	60	126	54	
60	July 3 " "		66	68	134	55	53	66	62	128	55	
63	" 6 " "		66	68	134	55	56	66	62	128	55	
70	" 13 " "		66	68	134	55	63	66	62	128	55	
77	" 20 " "		66	69	135	55	70	66	62	128	55	

35 days

5 weeks' stratification

		45°F		Germination Record				32°F			
Days	Date	No. of seeds	A	B	Total	%	Days	A	B	Total	%
			130	115	245			129	104	233	
Number of roots longer than 1 inch											
84	July 27	8 a. n.	66	69	135	55	77	68	62	130	56
91	Aug 3	"	66	69	135	55	84	68	63	131	56
98	" 10	"	66	69	135	55	91	68	63	131	56
111	Aug 23	"	66	69	135	55	104	68	63	131	56
Experiment terminated											

$$\frac{62}{55} = .112727$$

April 14, 1943

Bitterbrush Germination
Experiment No. 2' - shelled seed

Seed used: Seed obtained from the Soil Conservation Service

Pregermination treatment: Stratified in sand

42 days

Germination Record

6 weeks strat.

Days	Date	Strat. at 41° F. on March 31	No. of seeds				Days	Strat. at 32° F. on April 6	No. of seeds			
			A	B	Total	%			A	B	Total	%
			82	126	208				137	131	268	
			Number of roots longer than $\frac{1}{2}$ inch									
0	May 11 8 a.m.	Into	327									
0	" 11 "		6	13	19	91						
1	" 12 "		35	47	82	39						
2	" 13 "		43	66	109	52						
3	" 14 "		56	75	131	63						
4	" 15 "		58	80	138	66						
6	" 17 "		62	89	151	73						
7	" 18 "		64	90	154	74	0	Into	327			
8	" 19 "		65	90	155	75	1		50	32	82	31
9	" 20 11 a.m.		66	90	156	75	2		93	57	150	56
10	" 21 8 a.m.		67	90	157	76	3		96	63	159	59
11	" 22 " "		67	90	157	76	4		96	64	160	60
13	" 24 " "		68	90	158	76	6		96	66	162	60
14	" 25 " "		69	90	159	76	7		96	69	165	62
15	" 26 " "		69	90	159	76	8		97	69	166	62
16	" 27 " "		69	90	159	76	9		98	71	169	63
17	" 28 " "		69	91	160	77	10		99	71	170	63
20	" 31 " "		69	91	160	77	13		100	71	171	64
24	June 4 " "		69	91	160	77	17		101	71	172	64
27	" 7 " "		70	91	161	77	20		101	71	172	64
29	" 9 " "		70	92	162	78	22		101	71	172	64
31	" 11 " "		70	92	162	78	24		102	71	173	65
37	" 17 " "		70	92	162	78	30		102	71	173	65
39	" 19 " "		70	92	162	78	32		102	72	174	65
41	" 21 " "		70	92	162	78	34		102	73	175	65
44	" 24 " "		70	92	162	78	37		102	73	175	65
48	" 28 " "		70	92	162	78	41		102	73	175	65
55	July 5 " "		70	93	163	78	48		103	73	176	66
56	" 6 " "		70	93	163	78	49		104	73	177	66
63	" 13 " "		70	93	163	78	56		104	73	177	66
70	" 20 " "		71	93	164	79	63		105	74	179	67
77	" 27 " "		73	93	166	80	70		106	75	180	67

42 days (continued)

Bitterbrush Germination

Germination Record

Date Strat. at 41° F. on March 31						Strat. at 32° F. on April 6						
Days		No. of seeds		<u>82</u>	<u>126</u>	<u>208</u>	%	Days	<u>137</u>	<u>131</u>	<u>268</u>	%
				A	B	Total			A	B	Total	
<u>Number of roots longer than 1 inch</u>												
84	Aug	3	8 a. m.	74	94	1678	<u>81.80</u>	77	105	76	181	68
91	"	10	"					84	105	76	181	68
98	"	17	"					91	105	76	181	68
104	Aug	23	"	74	94	1678	<u>81.80</u>	97	105	76	181	68
Exp. Terminated												

RR.
MANAGEMENT
Pine Ranges

May 20, 1943

Bitterbrush Germination
Experiment No.

Seed used: Seed obtained from the Soil Conservation Service

Pregermination treatment: Seeds soaked March 31 to April 1. Stratified starting April 1 at 41° F.

Germination Record

42 days strat.

Days	Date	Strat at 41° F. on April 1	No. of seeds: 407	Total	%
				Number of roots longer than $\frac{1}{4}$ inch	
0	May 20	11 a.m.	Into 327		
0	"	"	"	52	13 (aver. length of these roots $\frac{1}{2}$ inch)
1	"	21	8 a.m.	96	24
2	"	22	"	175	43
4	"	24	"	212	52
5	"	25	"	232	57
6	"	26	"	234	57
7	"	27	"	243	60
8	"	28	"	258	63
11	"	31	"	287	71
12	June 1	"	"	294	72
13	"	2	"	296	73
14	"	3	"	298	73
15	"	4	"	301	74
16	"	5	"	306	75
18	"	7	"	307	75
20	"	9	"	309	76
22	"	11	"	312	77
23	"	12	"	313	77
26	"	15	"	314	77
30	"	19	"	316	78
32	"	21	"	318	78
37	"	26	"	319	78
46	July 5	"	"	321	79
54	"	13	"	324	80
68	"	27	"	325	80
75	Aug 3	"	"	327	80
82	" 10	"	"	331	81

April 14, 1943

Bitterbrush Germination
Experiment No. 2' - shelled seed

Seed used: Seed obtained from the Soil Conservation Service
Pregermination treatment: Stratified in sand

49 days
7 weeks strat.

Germination Record

Strat. at 41° F. on March 31					Strat. at 32° F. on April 6						
Days	Date	No. of seeds	A	B	Total	%	Days	A	B	Total	%
Number of roots longer than 1/4 inch											
0	May 18	8 a.m.	Intro 327								
0	"	"	17	18	35	18.03					100 = .154
1	" 19	"	43	42	85	45.44					39
2	" 20	11 a.m.	48	51	99	52.66					
3	" 21	8 a.m.	52	54	106	56.49					
4	" 22	" "	58	55	113	59.74					
6	" 24	" "	60	56	116	61.77					
7	" 25	" "	60	56	116	61.77	Intro 327				
8	" 26	" "	60	56	116	61.77	7	7	14	5.78	
9	" 27	" "	60	58	118	62.78	18	23	41	15.39	
10	" 28	" "	60	58	118	62.78	23	25	48	18.03	
11	" 29	" "	60	58	118	62.78	31	30	61	23.17	
13	" 31	" "	60	58	118	62.78	41	42	83	31.17	
14	June 1	" "	60	58	118	62.78	44	44	88	33.17	
15	" 2	" "	61	60	121	63.80	46	47	93	34.39	
16	" 3	" "	61	61	122	64.82	49	54	103	38.48	
17	" 4	" "	61	61	122	64.82	52	54	106	39.60	
18	" 5	" "	61	61	122	64.82	57	57	114	42.58	
20	" 7	" "	61	62	123	64.83	58	58	116	43.40	
22	" 9	" "	62	62	124	65.15	59	59	118	44.43	
23	" 10	" "	62	62	124	65.16	59	61	120	44.44	
27	" 14	" "	63	62	125	65.82	59	62	121	45.44	
30	" 17	" "	63	62	125	65.82	59	63	122	45.83	
34	" 21	" "	63	62	125	65.82	59	66	125	46.33	
37	" 24	" "	63	62	125	65.82	59	66	125	46.33	
39	" 26	" "	63	62	125	65.82	59	67	126	47.33	
41	" 28	" "	63	62	125	65.82	59	67	126	47.33	
49	July 6	" "	63	63	126	66.83	59	67	126	47.33	
56	" 13	" "	63	63	126	66.83	59	68	127	47.33	
63	" 20	" "	63	63	126	66.83	59	68	127	47.33	
70	" 27	" "	63	63	126	66.83	59	68	127	47.33	
77	Aug 3	" "	63	63	126	66.83	59	68	127	47.33	

49 days strat.

Germination Record

Days	Date	Strat. at 41° No. of seeds	F. on March 31				Strat. at 32° F. on April 6				
			94	97	191		Days	115	155	270	
			A	B	Total	%	A	B	Total	%	
			Number of roots longer than $\frac{1}{2}$ inch								
84	Aug. 10	8 a. m.	63	63	126	66	77	59	68	127	47
91	" 17	"	63	63	126	66	84	59	68	127	47
97	Aug 23	"	63	63	126	66 (83) 90	90	59	68	127	47

78

62

= .12581

$$\frac{78}{62} = .12581$$

April 14, 1943

Bitterbrush Germination

Experiment No. 2' - shelled seed

Seed used: Seed obtained from the Soil Conservation Service

Pregermination treatment: Stratified in sand

56 days

8 weeks strat.

Germination Record

Days	Date	Strat. at 41° F. on March 31	No. of seeds				Days	Strat. at 32° F. on April 6			
			123	128	251	%		122	12	214	%
			A	B	Total			A	B	Total	
Number of roots longer than $\frac{1}{4}$ inch											
0	May 25 8 a.m.	Intro	327								
0	" " "		54	59	113	45					
1	" 26 "		76	82	158	63					
2	" 27 "		82	93	175	70					
3	" 28 "		92	98	190	76					
4	" 29 "		94	101	195	78					
6	" 31 "		96	104	200	80					
7	June 1 "		96	104	200	80					
8	" 2 "		97	105	202	80	1	20	21	41	19
9	" 3 "		97	105	202	80	2	41	42	83	39
10	" 4 "		99	105	204	81	3	52	42	94	44
11	" 5 "		99	105	204	81	4	58	47	105	47
13	" 7 "		99	105	204	81	6	64	52	116	54
15	" 9 "		100	105	205	82	8	66	54	120	56
17	" 11 "		100	105	205	82	10	67	54	121	57
20	" 14 "		101	105	206	82	13	67	54	121	57
23	" 17 "		101	105	206	82	16	68	55	123	57
27	" 21 "		101	105	206	82	20	69	55	124	58
30	" 24 "		101	105	206	82	23	69	55	124	58
32	" 26 "		101	105	206	82	25	70	55	125	58
34	" 28 "		101	105	206	82	27	70	55	125	58
42	July 6 "		101	105	206	82	35	71	55	126	59
49	" 13 "		101	105	206	82	42	71	55	126	59
56	" 20 "		101	106	207	82	49	71	55	126	59
63	" 27 "		101	106	207	82	56	71	55	126	59
70	Aug 3 "		101	106	207	82	63	71	55	126	59
77	" 10 "		101	106	207	82	70	71	55	126	59
84	" 17 "		101	106	207	82					

Intro 327 (sprouts $\frac{1}{16}$ " long)

(61)

April 14, 1943

Bitterbrush germination

Experiment No. 2' - shelled seed

Seed used: Seed obtained from the Soil Conservation Service

Pregeneration treatment: Stratified in sand

9 weeks

Germination Record

63 days strat.

Days	Date	Strat. at 41° F. on March 31	No. of seeds				Days	Strat. at 32° F. on April 6			
			109	104	213	%		103	83	186	%
			A	B	Total			A	B	Total	
0	June 1	8 a.m. (sprouts up to 1 1/2" long)									
0	" "	"	40	46	86	40 (45)					
1	" 2	"	59	57	116	54 60					
2	" 3	"	65	68	133	62 69					
3	" 4	"	71	72	143	67 75					
4	" 5	"	73	75	148	69 77					
6	" 7	"	74	75	149	70 78					
7	" 8	"	74	75	149	70 79	0	Into 327 (sprouts 1 1/8" long)			
8	" 9	"	74	75	149	70 79	1	16	12	28	15
9	" 10	"	74	75	149	70 79	2	34	29	63	34
10	" 11	"	74	75	149	70 79	3	39	33	72	39
11	" 12	"	74	75	149	70	4	41	38	79	42
13	" 14	"	74	75	149	70	6	47	42	89	48
14	" 15	"	74	75	149	70 (79)	7	49	43	92	50 49
15	" 16	"	74	75	149	70	8	50	44	94	51
16	" 17	"	76	75	151	71	9	50	45	95	51 61
18	" 19	"	76	75	151	71	11	51	46	97	52
20	" 21	"	76	75	151	71 80	13	51	47	98	52 53
23	" 24	"	76	75	151	71	16	52	47	99	53
27	" 28	"	76	75	151	71	20	52	47	99	53
35	July 6		76	75	151	71	28	53	47	100	54
42	" 13		76	76	152	71	35	53	47	100	54
49	" 20		76	76	152	71	42	55	48	103	55
56	" 27		76	76	152	71 81	49	55	48	103	55
63	Aug 3		76	77	153	71 81	56	55	49	104	56
70	" 10		76	77	153	71 81	63	55	49	104	56
77	" 17		76	77	153	71 81	70	55	49	104	56

45 - 11 x 5
4

April 8, 1943

Bitterbrush Germination

Seed used: Seed obtained from the Soil Conservation Service

Pregermination treatment: Stratified in sand

Germination record										70 days strat.			
Days	Date	Strat. at 41° F. on March 31	No. of seeds				Days	Strat. at 32° F. on April 6	No. of seeds				
			101 A	100 B	201 Total	%			85 A	70 B	155 Total	%	
Number of roots longer than $\frac{1}{2}$ inch													
0	June 8	8 a.m.	Into 327										
0	" "	"	23	23	46	23.71							
1	" 9	"	32	51	83	41.51							
2	" 10	"	37	53	90	45.56							
3	" 11	"	40	53	93	46.58							
4	" 12	"	43	54	97	48.60							
6	" 14	"	58	59	117	58.73							
7	" 15	"	59	59	118	59.74	0	Into 327					
8	" 16	"	59	60	119	59.74	1	21	18	39	25	31	
9	" 17	"	59	60	119	59.74	2	35	32	67	43	54	
10	" 18	"	59	60	119	59.74	3	39	35	74	48	60	
13	" 21	"	60	60	120	60.75	6	40	35	75	48	60	
14	" 24	"	60	60	120	60	9	40	35	75	48	60	
20	" 28	"	60	60	120	60	13	40	35	75	48	60	
22	" 30		60	60	120	60	15	41	35	76	49	61	
28	July 6		60	60	120	60	21	41	35	76	49	61	
35	" 13		60	60	120	60	28	41	37	78	50	63	
42	" 20		60	60	120	60	35	41	38	79	51	64	
49	" 27		61	60	121	60	42	41	39	80	52	65	
56	Aug 3		61	60	121	60	49	42	39	81	52	65	
63	" 10		61	60	121	60	56	42	40	82	53	66	
70	" 17		61	60	121	60	63	42	40	82	53	66	

$$\frac{75}{60} = .125$$

$$\frac{60}{48} = .125$$

SCS X ✓

Germination low and slow
probably because seed damage
in processing and "viability" down

Effect strat on germination and germination not
S.C.S seed 95% viability optimum because
stratified in sand

Strat @ 41°F in sand.

Period of strat

Days

0
7
14
21
28
35
42
49
56
63
70

Germination % in 10 days			
Actual		Corrected (for 95% viability)	
		Actual	Actual
0	0	0	0
1 ✓	1	1	1
18 ✓	22	19	19
40 ✓	49	42	42
48 ✓	59	51	51
51 ✓	63	54	54
75 ✓	93	79	79
62 ✓	77	65	65
81 ✓	100	85	85
70	97	83	83
59			

$$\frac{81}{79} = 1.025$$

$$\frac{81 \times 97}{81} = 97$$

$$\frac{1}{81} = 1.23456$$

Hormay

June 25 1969

① SCS X 1943

Start in sand @ 41°F & Alternated 32°F & 70°F ±

Days start
or treatment

Start 41°F

Percent ger

Actual

Corrected ✓

Alternated 32-70°F

Percent ger

Actual

Corrected

0
7
14
21
28
35
42
49
56
63
70

0
1
18
40
48
51
75
62
81
70
59

0
1
72
49
59
63
93
77
100

0
0
7
8
36
48
63
39
57
51
48

✓ Corrected for viability.