

Checks Lassen 1943 Seed Petri

@ 70°F
327 Giannini

Test year 1946

Exp No I Britten Checks also
for this exp.

%
Germin

100

90

80

70

60

50

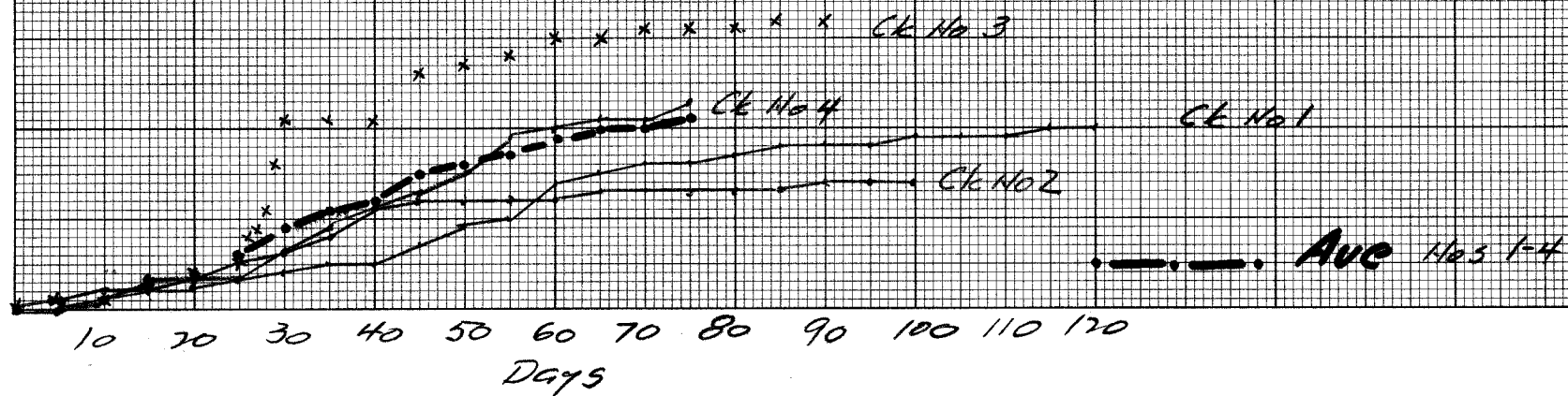
40

30

20

10

These results show variation
within a seed lot.



Checks.

Exp I 1946

No ger @ 104°F

Lassen seed

Room 3x7

Giannini

Date

No Days

Ger strat

Strat

104°F

temperature °F

check 1

check 2

check 3

check 4

Feb 21 am
Feb 25 8AM

0

started

1st sample

150

started

240/188V

179/121V

188/117V

288/209V

Ger %

Ger %

Ger %

Ger %

Ger %

Feb 25 8AM

0

4

0 0

78%

68

62

73

Feb 26 "

1

0 0

0 0

" 27 "

2

0 0

0 0

" 28 "

3

0 0

0 0

Mar 1 "

4

0 0

0 0

" 4 10AM

7

0 0

1

" 5 8AM

8

(end)

1

" 6 "

9

see below

1

" 7 "

10

see below

1

" 8 "

see below

1

Started

All other samples

of seed in chamber were decayed

on March 1. 1946

Mar 11 8AM

3

0

0

" 12 "

3

0

0

" 13 "

4

1

0

" 14 "

4

1

0

" 15 "

4

1

0

" 16 "

4

1

0

" 17 "

5

1

0

" 18 "

5

1

0

" 19 "

5

1

0

" 20 "

5

2

0

" 21 "

5

3

0

" 22 "

5

3

0

" 23 "

6

3

0

" 24 "

7

4

0

" 25 "

7

5

0

" 26 "

7

5

0

" 27 "

7

6

0

" 28 "

7

7

0

April 12

9

7

1

Started

0 0

0 0

0 0

0 0

1 1

(4) 9

3

Birkton
April 3 1946

Date	check 1		check 2		check 3		check 4		out April 11 10 AM
	Ger	90	Ger	90	Ger	90	Ger	90	
April 3. 8 AM	9		9		1				
" 4 "	9		9		1				
" 8	11		11		1				
9 8 AM	11		11		2				
10 "	12		11		3				
11 "	13		12		4				
12 "	13		14		4				
15 "	16		15		5				
16 "	17		15		5				
17 "	17		18		5				
18 "	17		19		5				
19 "	18		20		6				
22	20		22		9				
23	21		22		11				
24	22		22		14				
25	23		22		19				
26	27		22		24				
30	29		23		24				
May 2	29		23		25				
May 6	30		23		25				
9	30		23		30				
13	30		23		31				
14	30		23		32				
16	32		24		32				
20	33		24		33				
21	33		24		33				
23	33		25		35				
27	33		25		35				
28	34		25		35				
31	34		25		35				
June 3	34		25		35				
4	34		25		35				
6	34		25		36				
10	35		26		36				
13	35		26		36				
17	36		26		36				

288/209V
Started

out Apr 11.
1092 AM

Date	Check 1	Check 2	Check 3	Check 4
June 19	36	26	36	113
24	36	26	38	48
26	37	28	38	49

9/10/46
DP
ER

EXPERIMENT I

Percent Germinated, Viable Seed

U50 Room 327 - Baseline Hall

DATE		CHECK 1			CHECK 2			CHECK 3			CHECK 4	
		DAYS Ferm	PERCENT VIALE SEEDS GERM		DAYS Ferm	PERCENT VIALE SEEDS GERM		DAYS Ferm	PERCENT VIALE SEEDS GERM		DAYS Ferm	PERCENT VIALE SEEDS GERM
FEB. 25	0	0										
26		1	0									
27		2	0									
28		3	0									
MAR. 1		4	0									
4	7	7	1									
5		8	1									
6		9	1									
7		10	1									
8		11	1									
11	14	14	2		0	0						
12	15	15	2		1	0						
13		16	2		2	1						
14		17	2		3	1						
15		18	2		4	1						
18	21	21	3		7	1						
19		22	3		8	1						
20		23	3		9	1						
21		24	3		10	2						
22		25	3		11	2						
25	28	28	3		14	2						
26	29	29	4		15	2						
27		30	4		16	3		0	0			
28		31	4		17	3		1	0			
29		32	4		18	3		2	0			
APR. 1	35	35	5		21	4		5	1			
2	36	36	5		22	4		6	1			
3		37	5		23	5		7	1			
4		38	5		24	5		8	1			
8		42	6		28	6		12	1			
9		43	6		29	6		13	2			
10	44	44	6		30	6		14	3			
11		45	7		31	6		15	3			
12		46	7		32	7		16	3		0	0
15		49	9		35	8		19	4		3	0
16		50	9		36	8		20	4		4	0

Experiment I

Percent Germinated, Viable Seed

(cont'd)

		CHECK 1		CHECK 2		CHECK 3		CHECK 4	
		DAYS	PERCENT OF VIABLE SEED GERM.	DAYS	PERCENT VIABLE SEEDS GERM.	DAYS	PERCENT VIABLE SEEDS GERM.	DAYS	PERCENT VIABLE SEEDS GERM.
		Ferm.		Ferm.		Ferm.		Ferm.	
APR.	17	51	9	37	10	21	4	5	0
	18	52	9	38	10	22	4	6	0
	19	53	10	39	11	23	5	7	0
	22	56	11	42	12	26	8	10	1
	23	57	11	43	12	27	9	11	1
	24	58	12	44	12	28	12	12	1
	25	59	12	45	12	29	16	13	1
	26	60	14	46	12	30	21	14	3
	30	64	15	50	12	34	21	18	3
MAY	2	66	15	52	12	36	21	20	3
	6	70	16	56	12	40	21	24	3
	9	73	16	59	12	43	26	27	6
	13	77	16	63	12	47	26	31	9
	14	78	16	64	12	48	27	32	9
	16	80	17	66	13	50	27	34	9
	20	82	18	70	13	54	28	38	11
	21	83	18	71	13	55	28	39	11
	23	85	18	73	13	57	30	41	11
	27	89	18	77	13	61	30	45	13
	28	90	18	78	13	62	30	46	14
	31	93	18	81	13	65	30	49	15
JUNE	3	96	18	84	13	68	30	52	17
	4	97	18	85	13	69	30	53	18
	6	99	18	89	13	71	31	55	19
	10	103	19	91	14	75	31	59	20
	13	106	19	94	14	78	31	62	20
	17	110	19	98	14	82	31	66	21
	19	112	19	100	14	84	31	68	21
	24	117	19	105	14	89	32	73	23
	26	119	20	107	15	91	32	75	23

3

Birkhoff
March 15 3pm
1946

Purshia tridentata - Checks Exp. I

Date		Days	S.C.S 41°F Nov. 20 1945		S.C.S Rm 327 May 20, 1945		Madoc 41°F 1935 (com 78)		Susannah airport July 20 79% viability			
			A		B		C		D			
			Started		1st		Sample					
			192	147V	96	70V	100	90V	163	129V	Total	Ave
			Cor	%	Cor	%	Cor	%	Cor	%		
Mar 15	3pm	Cor	0	0	0	0	0	0	0	0	0	0
Mar 18	8am	0	0	0	0	0	0	0	0	0	0	0
19	1	0	0	0	0	0	0	0	0	0		
20	2	0	0	0	0	0	0	0	0	0		
21	3	0	0	0	0	0	0	0	0	0		
22	4	0	0	0	0	0	0	0	0	0	0	0
25	7	0	0	0	0	0	0	0	1			
26	8	0	0	0	0	0	0	0	1			
27	9	0	0	0	0	0	0	0	3			
28	10	0	0	0	0	0	0	0	3		3	
29	11	1	0	0	0	0	0	0	3			
April 1	14	2	1		0		0		3			
2	15	2	1		0		0		4		7	
3	16	2	1				1		4			
4	17	2	1				1		4			
8	21	4	3		2		2		5		14	
9	22	4	3		2		2		7			
10	23	4	3		2		2		8			
11	24	9	3		2		2		12			
12	25	10	6		5		5		13		34	3.5
15	28	12	7		8		8		17			
16	29	13	7		10		10		23			
17	30	13	11		10		10		28		62	1.5
18	31	15	12		10		10		34			
19	32	15	12		10		10		36			
22	35	16	12		13		13		48		89	2.3
23	36	18	16		16		16		58			
24	37	19	16		16		16		64			
25	38	22	16		16		16		67			
26	39	25	19		18		18		79		141	15.3
30	43	32	20		18		18		82			
May 2	45	33	20		19		19		82			
May 6	49	34	20		20		20		86	✓ 160		
9	52	37	24		21		21		88			
13	56	39	24		21		21		91	✓ 175	4	3

Purshia tridentata - checks Exp I

Date	Days Ger	SCS, HIOF Nov 20 1945	SCS, RM 327 May 20 1945	Modac HIOF 1935 (Can 78)	HIO Susanville Airport July 20	
		A	B 1st sample	C cont-	D	
May 14	59	40	24	21	91	
16	59	41 ✓ 28%	26 37%	22 24%	92	74% 181
20	63	42	27	23	92	
21	64	42	27	23	92	✓ 184
23	66	42	28	24	92	
27	70	45	28	24	92	✓ 189
28	71	45	28	24	92	
31	74	46	29	24	92	✓ 191
June 3	77	48	30	24	92	
4	78	48	32	24	94	
6	80	49	32	24	94	
10	84	49	32	25	94	
13	87	49	32	25	94	
17	91	51	33	25	94	
19	93	51	34	25	95	
24	98	54	34	25	95	
26	100	54 37	35 50	25 28	95 74	58

Max ger of Britton checks

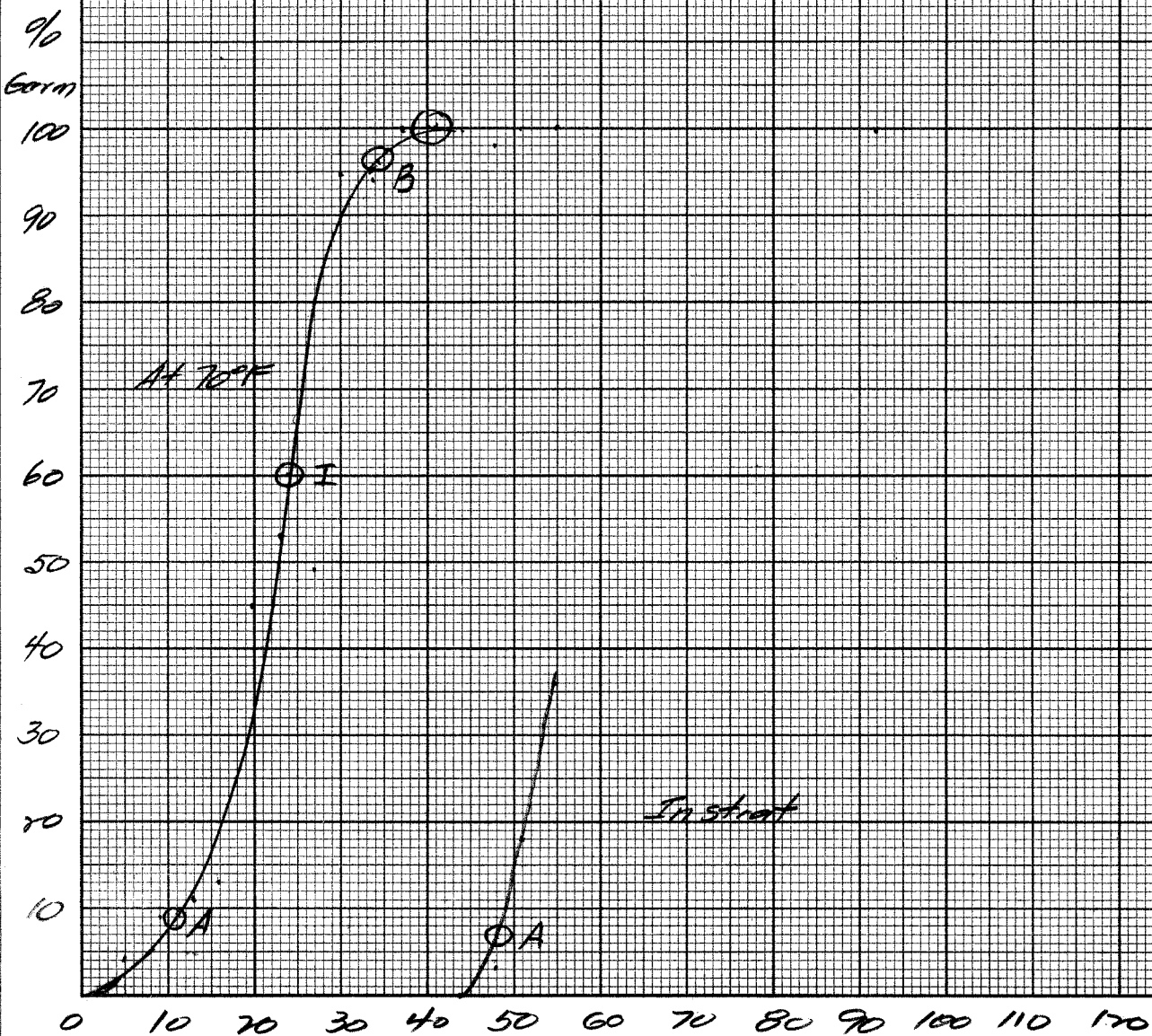
	A		B		C		D		Total	Ave
	Days	%	Days	%	Days	%	Days	%		
Seed source → SCS	100	37	100	50	100	28	100	74	184	46.5
Modac	75	32	41		27		71		171	42.7
Susanville airport										

Exp No I
1946

Start 39°F Petri Hilgard
Lassen 1945 seed 7% viability

1946

6/1/71 ALH



Experiment Summary

Exp. *No I*

Treatment:

Start 39°F Petri Hilgard

Seed - source, name

Lassen 1945 72% viability

Treatment details

Date

Germination record

Date

Sample

Treatment

No. of seeds

Germination 1/

Germination

()

Tips : Complete

in treatment

No

No. of days Total Viable

Percents

Percents

Percent

No %

No %

*Febr 20 3 PM**0**Into Start**1**5**99**4**0**2**9**104**9**0**3**13**117**11**0**4**16**107**13**0**5**20**110**45**0**6**23**109**53**0**7**27**98**49**0**8**30**113**95**0**9**34**108**94**0**10**37**111**100**0**11**41**101**100**0**12**44**97**100**0**13**48**98**98**3**14**51**106**100**18**15**55**103**100**Av 36 → 30**16**61**127**86**42**17**68**127**102**18**71**127**111**19**75**127**112**20**78**127**118*

1/ In 7 days @ 68°F. Germination complete when root tip through seed coats.

Experiment Summary

Exp. **No I** Treatment: **Strat 39°F** Cont'd.

Seed - source, name

Treatment details

Date

Germination record

Date	Sample No	Treatment (No. of days	No. of seeds		Germination ^{1/}		Germination	
			Total	Viable	Tips Percents	Complete Percents	in treatment Percent No %	
May 13	21	82						
14	22	83						
16	23	85						122
20	24	89						126
23	25	92						127 100
27	26							
31	27							
June 3	28							
4	29							
6	30							

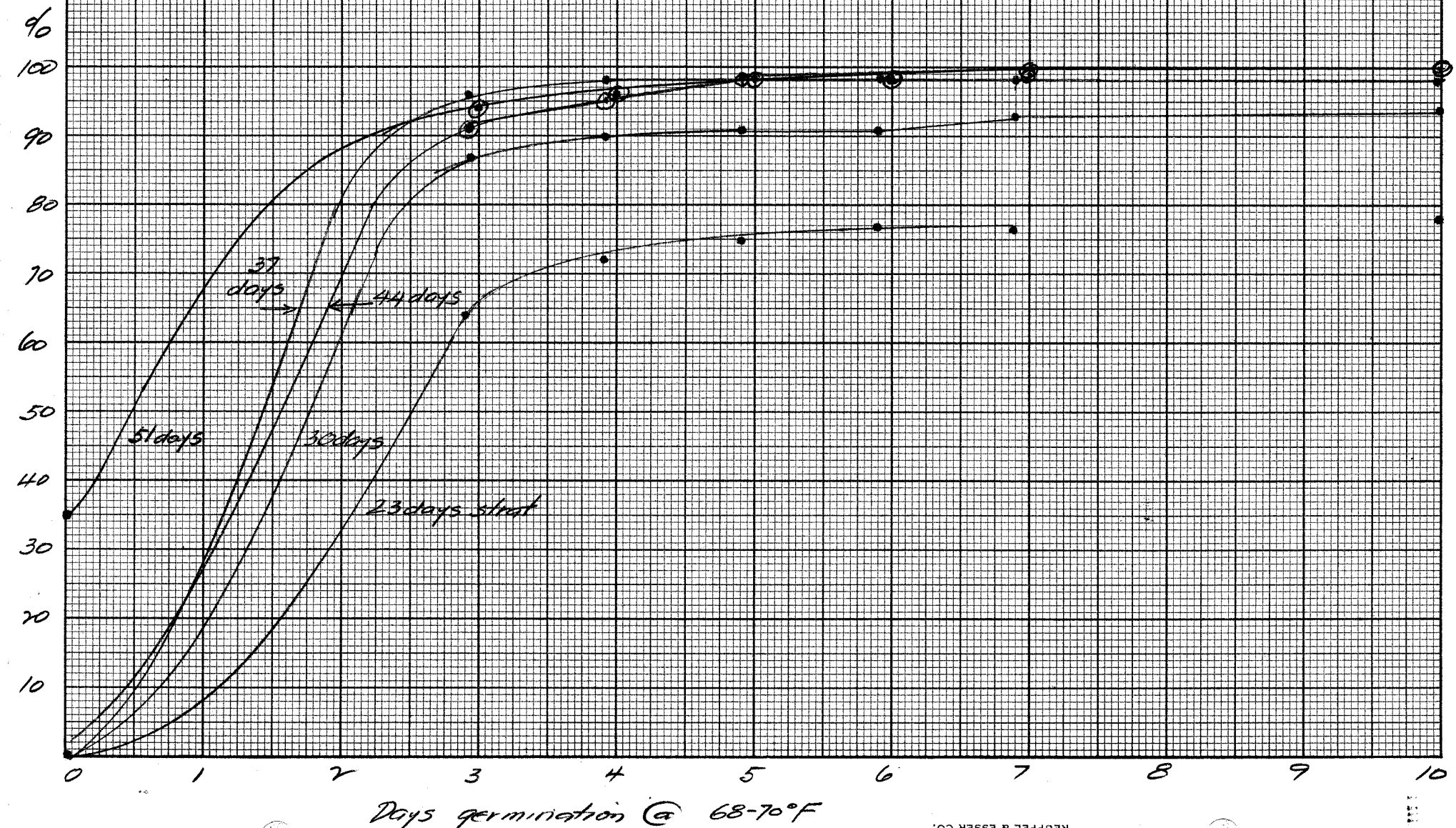
^{1/} In 7 days @ 68°F. Germination complete when root tip through seed coats.

Acetation Exp 1 1946

Seed 33°F

(Lassen Seed 1945)

Speed of germination



Supplement

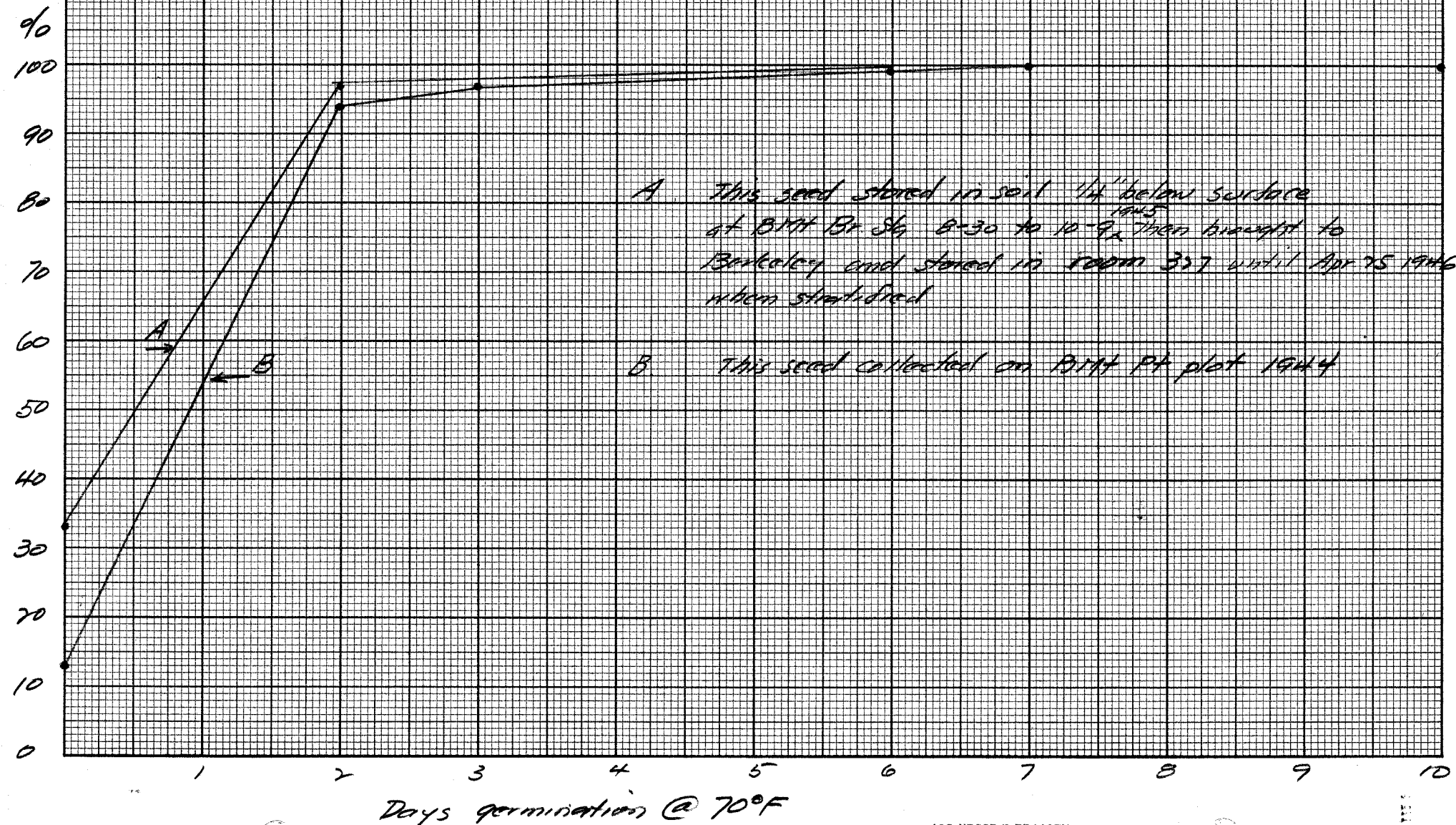
Exp I Lassen Seed 1946

Start 36°F

June 9, 1969
ALH

Speed of germination

Seeds stratified @ 36°F for 40 days



Supplement to Exp I

Strat. 36° Apr 25 - June 4 = 40 days

Soaked Apr. 25, 1946 Prior to strat

Data	Days	Chuck BMT 1944 Seed	4" below ground 8-30 to 10-9 1945	Stipa Arvensis
June 4, 1946		3/5 215V %	196 183V %	
4	0	26 12 13	60 33	
6	2	18 9 88 94	178 97	
7	3	19 5 91 97	178 99	
10	6	200 93 99	182 99	
11	7	201 93 99	183 100	
13	9	201 93 99	183 100	
17	13	201 93 99	183 100	
19	15	201 93 99	183 100	
20	16	202 94 100	183 100	
24	20	202 94 100	183 100	
26	22	202 94 100	183 100	

↑
Adjust to 100%

Both these tests show speed of germination
with strat @ 36° for 40 days

Calculate % germination June 4 to 26
and plot

See next sheet

Bittom
4-25-46

Bitterbrush Exp

4-25-46

Soaked P+ seed in H₂O several hours
Placed in 36° F

Stored at room temp.

P+ in soil 1/4" below ground level

Aug 30 to Oct 9 1945: Removed after first
rain of season started. Seed dry. (200 seeds)

Check seed from Black MTN plot 1944

Not aerated

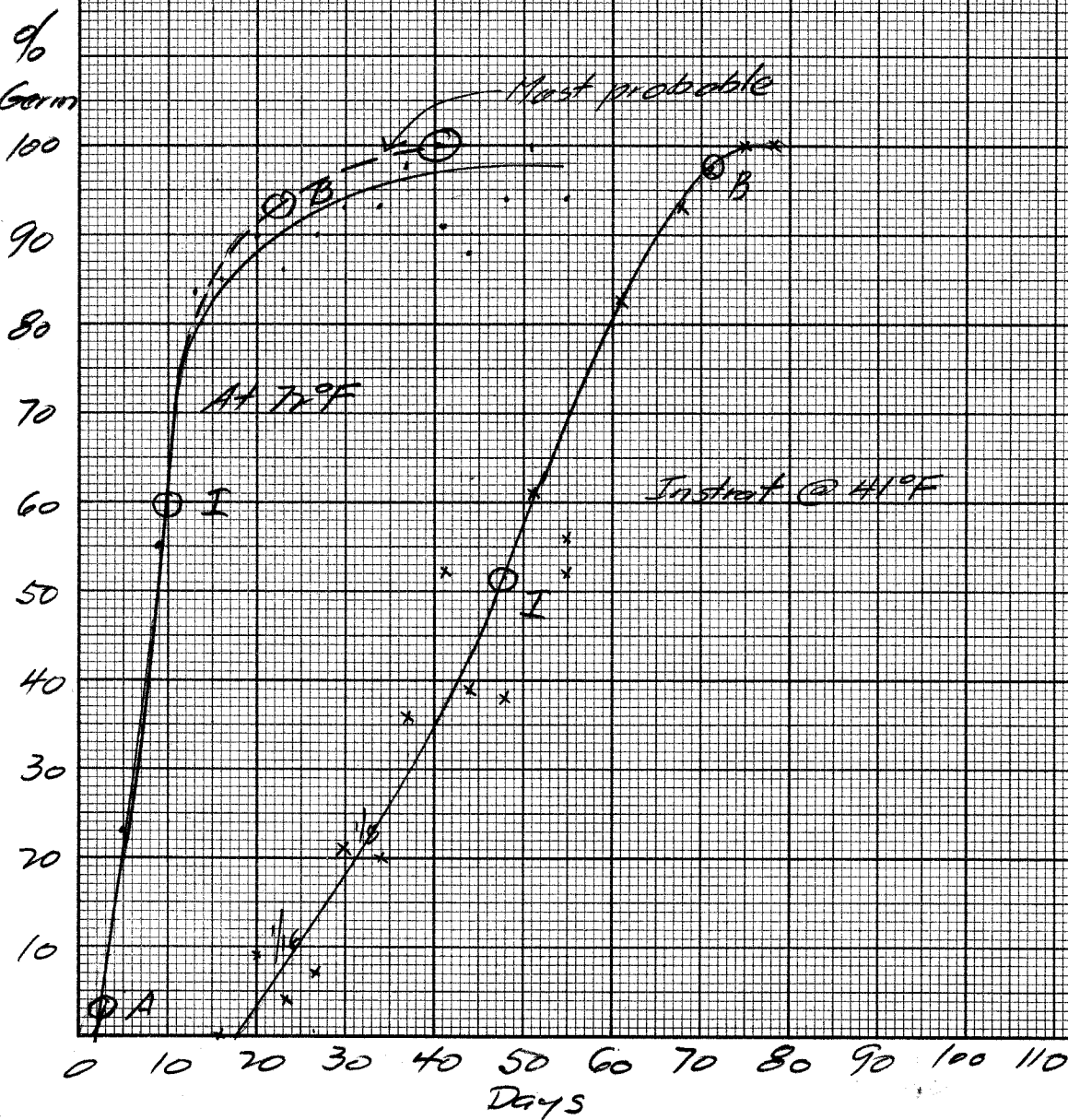
1946

Exp No I
1946

Strat 41°F Petri

Seed

Lessen 1945 seed 77% viability



Not aerated

Experiment Summary

Exp. **No I** Treatment: **Strat 44°F Petr, Seed**
 Seed - source, name **Leszen 1945 72% viability**

1946

Treatment details

Date

Germination record

Date	Sample	Treatment (No. of days	No. of seeds		Germination ^{1/}		Germination	
			Total	Viable	Tips Percents	: Complete Percents	in treatment	
							No	Percent
	No					No %	No	%
Febr. 20	3 PM	0	Into strat.					
	1	5		111		25 23		0
	2	9		95		52 55		0
	3	13		108		91 84		0
	4	16		96		82 85	0	0
	5	20		110		99 90	10	9
	6	23		111		95 86	5	4
	7	27		102		90 90	7	7
	8	30		112		104 93	23	21
	9	34		107		100 93	22	20
	10	37		114		112 98	41	36
	11	41		97		88 91	50	52
	12	44		122		107 88	47	39
	13	48		125		118 94	48	38
	14	51		114		114 100	70	61
April 16	15	55		106		99 94	35	32
22	16	61				107	89	83
29	17	68				107	100	93
May 2	18	71				107	104	97
6	19	75				107	107	100
9	20	78				107	107	100

^{1/} In 7 days @ 68°F. Germination complete when root tip through seed coats.

Remove from strat
Tues and Fri.
Germinate 10 days
@ 68-70°F in 327 pt 1946
Lassen seed 1945 = 77% viability

Exp I

Note Reddigs for
seeds = actual Feb 20, 1946
x 77% viability
Hormay
Britton

Stratification, petri - filter paper; soaked 24 hours 70°F

Date	No Days Ger	Strat temperature °F	No Days Strat
Feb 20 3PM		(27) started	
Feb 25 8AM	0	(33) started	(5)
	Total No seeds →	1st sample out	
Feb 25 8AM	0 ✓	(163 117) Ger %	
" 26 "	1	0 0	
" 27 "	2	0 0	
" 28 "	3	0 0	
Mar 1 "	4	2 9	
Mar 4 10AM	7	3 12	
" 5 8AM	8	5 14	
" 6 8AM	9	5 14	
" 7 "	10 ✓	5 16	
March 1		(and) 2nd sample out	(9)
Mar 1 10AM	0	(125 90) Ger %	
Mar 4 10AM	3	1 16	
" 5 8AM	4	3 24	
" 6 "	5	3 27	
" 7 "	6	4 30	
" 8 "	7	4 31	
" 11 "	10	(and) 6 32 and	
March 5 9AM		3rd sample out	(13)
March 5 9AM	0	(139 100) Ger %	
" 6 8AM	1	0 4	
" 7 "	2	5 24	
" 8 "	3	9 33	
" 11 "	6	13 38	
" 14 "	7	14 34	
" 15 "	8	14 36	
" 15 "	9	15 37	
" 15 "	10	17 39	

Also note!

Germination @ 33°F on
pages numbered ①-⑥
small sheets

Exp I 1946

Date	No Days Ger	Strat temperature °F	No Days Strat
Feb 20 3PM		45 started	
Feb 25 8AM	0	50 started	(5)
	Total No seeds →	1st sample out	
Feb 25 8AM	0 ✓	(154 111) Ger %	
" 26 "	1	0 0	
" 27 "	2	11 9	
" 28 "	3	15 12	
Mar 1 "	4	15 12	
Mar 4 10AM	7	24 20	
" 5 8AM	8	24 20	
" 6 8AM	9	25 20	
" 7 "	10 ✓	26 21	
March 1		(and) 2nd sample out	(9)
Mar 1 10AM	0	(137 79) Ger %	
Mar 4 10AM	3	53 74	
" 5 8AM	4	53 79	
" 6 "	5	53 80	
" 7 "	6	54 81	
" 8 "	7	55 81	
" 11 "	10	58 (end) 81 (end)	
March 5 9AM		3rd sample out	(13)
March 5 9AM	0	(153 110) Ger %	
" 6 8AM	1	31 90	
" 7 "	2	40 91	
" 8 "	3	79 91	
" 11 "	6	80 92	
" 14 "	7	82 92	
" 15 "	8	82 92	
" 15 "	9	82 (end) 92 (end)	

See record Page 6

Exp I

1946

Continued

1946

Continued

Stratification, Petri-filter paper; Soaked 24 hours 70°F

Stratification, Petri-filter paper; Soaked 24 hours 70°F

Date	No days Ger	Strat temperature	Strat	Sample out	Ger	%	Strat	Sample out	Ger	%
		33	36	39	41	45				
Mar 8 9AM		← 4th Sample out →								
		(134 95)	(141 102)	(149 107)	(134 96)	(170 122)				
		Ger 70	Ger 70	Ger 70	Ger 70	Ger 70				
Mar 8 9AM	0	0	0	0	0	1%				
" 11 8AM	3	17 1/4	68 1/2	3 3/4	79 3/4	104%				
" 12 "	4	18	70	5	81	104				
" 13 "	5	21	71	8	81	104				
" 14 "	6	21	71	10	82	105				
" 15 "	7	21	73	10	82	106				
" 18 "	10	22	75	14	82 85	107				
		(end)	end	end	(end)	end				
Mar 12 9AM		← 5th Sample out →								
		(144 104)	(146 105)	(153 110)	(153 110)	(138 99)				
		Ger 70	Ger 70	Ger 70	Ger 70	Ger 70				
Mar 12 9AM	0	0	0	0	10 1/4	9	5 1/4			
" 13 8AM	1	2	19 1/4	0	57	51	35			
" 14 "	2	29	83	15 1/4	91	83	63			
" 15 "	3	35	87	30	94	85	68			
" 18 "	6	44	89	46	97	88	73			
" 19 "	7	49	90	46	99	90	75			
" 20 "	8	45	90	48	99	90	76			
" 21 "	9	45	90	48	100	91	76			
" 22 "	10	45	90 end	50 end	100 end	77 end				
Mar 15		← 6th Sample out →								
		(149 107)	(124 89)	(152 109)	(154 111)	(153 110)				
		Ger 70	Ger 70	Ger 70	Ger 70	Ger 70				
Mar 15 10AM	0	0	0	0	5 1/4	4	12 1/4			
" 18 8AM	3	61 3/4	89 1/4	31 1/4	86	74				
" 19 "	4	65	89	44	90	76				
" 20 "	5	66	91	53	93	76				
" 21 "	6	69	91	54	94	76				
" 22 "	7	70	91	56	95	78				
" 25 "	10	72	91	58	95 86	81				
		(end)	(end)	end	end	(end)				

Date	No days Ger	Strat temperature	Strat	Sample out	Ger	%	Strat	Sample out	Ger	%
		50	55	61						
		← 4th Sample out →								
		(149 107)	(160 115)	(143 113)						
		Ger 70	Ger 70	Ger 70						
		0	82 1/4	79 1/2						
		4 1/4	82	79						
		4	83	79						
		5	84	79						
		6	86	79						
		9	86	79						
		10	86	80						
		end	end	end						
		← 5th Sample out →								
		(148 107)	(159 114)	(156 114)						
		Ger 70	Ger 70	Ger 70						
		6 1/8	96 1/4	92 1/4						
		7	96	92						
		7	96	92						
		10	96	92						
		12	96	92						
		15	96	92						
		17	96	92						
		17	97	92						
		18 end	97 end	92 end						
		← 6th Sample out →								
		(145 104)	(159 114)	(172 134)						
		Ger 70	Ger 70	Ger 70						
		5 1/4	82 1/4	84 1/4						
		7	83	84						
		7	83	84						
		7	83	86						
		7	83	86						
		9	85	87						
		8	86	88						
		(end)	(end)	(end)						

Brimm
3-19-1946

Brimm
3-19-46

EXP I 1946
Stratification, Petri-filter paper; Soaked 24 hours 70°F

1946
in Petri-filter paper; Soaked water 24 hours 70°F

Date	No Days Gat.	STRAT. TEMP					Strat Temperatures					No days Strat
		33"	36"	39"	41"	45"	50"	55"	61"	70"	80"	
Mar 19 9AM	0	7th Sample out					7th Sample out					27
		147 109V	117 88V	137 95	141 102V	150 108	155 112	166 120	154 111			
Mar 19 9AM	0	0	0	0	7 1/2	7 1/2	6 1/2	9 1/4	8 1/2			
" 20 8AM	1	7	10	0	39	40	7	98	80			
" 21 "	2	51 1/2	60	6	73	72	8	98	80			
" 22 "	3	62	65	19	83	78	10	98	80			
" 25 "	6	65	70	33	88	80	12	98	80			
" 26 "	7	65	72	39	90	82	14	99	81			
" 27 "	8	69	74	44	90	82	15	100	81			
" 28 "	9	69	75	46	90	82	15	100	81			
" 29 "	10	69	75	48	90 90	82	17	101	82			
		end	end	end	end	end	end	end	(end)			
March 22 9AM		8th Sample out					8th Sample out					30
		151 109	134 108V	157 113	156 116V	148 107	149 107	169 123	157 113			
March 22 9AM	0	0	0	0	23 1/2	21	2	110 1"	65 5/8			
" 25 "	3	73 1/2	93 3/8	95 1/2	91	76 3/4	6	110	67			
" 26 "	4	85	102	105	104	81	6	111	68			
" 27 "	5	88	104	106	104	86	6	111	68			
" 28 "	6	88	104	106	104	86	6	111	68			
" 29 8AM	7	88	105	107	104	89	7	111	69			
April 1	10	89	107	107	106	91	9	111	71			
		end	end	end	end 95	(end)	(end)	(end)	(end)			
Mar 26 9AM		9th Sample out					9th Sample out					34
		144 109 3V	157 97V	150 108	151 109 10V	159 104	162 117	158 114	137 99	158 114	191 128	
Mar 26 9AM	0	0	0	0	22 1/2	20	4	98 1/4	82 1/2	44 39	15	
" 27 8AM	7	11 1/2	16 1/8	69 1/2	51	65	5	98	83	44	15	
" 28 "	1	65	67	87	76	79	5	98	83	45	16	
" 29 "	3	74	82	96	88	91	7	98	84	47	17	
April 1	6	82	88	99	98	96	9	98	84	47	19	
" 2 "	7	84	91	99	100	97	10	99	84	47	19	
" 3 "	8	85	92	99	102	97	10	100	85	47	21	
" 4 "	9	85	92	99	102	97	10	100	85	47	21	
" 5 "	10	87	93	101	102 95	97	11	102	85	47 41	22	
		end	end	(end)	(end)	(end)	end	end	end	end	end	

Britton
3-29-46

Britton
3-29-46

Exp I 1946
STRAT. Patri filter paper, Soaked 24 hours 70°F

1946

Date	No Days Ger	STRAT Temp.					No Days Ger	STRAT Temp.					No Days Ger
		33°	36°	39°	41°	45°		50°	55°	61°	70°	80°	
Mar 29 9AM	0	10th Sample out					(37)	10th Sample out					37
Mar 29 9AM	0	145 105V	154 125V	154 111	158 114 19V	168 121	0	171 123	161 116	153 110	170 86	168 121	
Mar 29 9AM	0	80 70	80 70	80 70	80 70	80 70	0	80 70	80 70	80 70	80 70	80 70	
April 1 8AM	3	92 3/8	120 3/8	109 3/8	103 3/8	89	3	6	113 3/8	79 3/4	38 1 1/2	21 3/4	
" 2 "	4	99	120	113	110	96 7/8	4	6	113	79	38	24	
" 3 "	5	99	122	114	112	98	5	7	113	79	38	25	
" 4 "	6	99	122	114	112	98	6	7	113	79	38	25	
" 5 "	7	99	123	114	112	98	7	7	113	79	39	25	
" 8 8AM	10	100	123	114	113	99	10	10	113	80	42	25	
		end	end	end	end	end		end	end	end	end	end	
April 2	0	11th Sample out					(41)	11th Sample out					41
April 2 9AM	0	134 95V	145 104V	140 101	135 97 9V	166 120	0	156 112	142 106V	153 110	143 143	155 112	
April 2 9AM	0	88 70	88 70	88 70	88 70	88 70	0	88 70	88 70	88 70	88 70	88 70	
" 3 8AM	1	21 1/8	62 1/8	53 1/8	70 1/8	74	1	7	88	90 3/4	50	16	
" 4 "	2	52	94	91	80	99	2	8	88	90	50	17	
" 5 "	3	80	102	95	85	102	3	8	88	90	50	17	
" 6 "	6	87	104	100	87	104	6	11	88	92	50	18	
" 9 "	7	88	104	100	88	105	7	13	89	92	50	19	
" 10 "	8	89	104	100	89	105	8	16	89	93	50	19	
" 11 "	9	89	104	100	90	105	9	17	90	93	50	19	
" 12 "	10	89	104	102	90 93	105	10	17	93	93	51	22	
		end	end	end	end	end		end	end	end	end	end	
Apr. 5	0	12th Sample out					(44)	12th Sample out					44
Apr. 5 9AM	0	145 104V	151 91V	135 97	170 112V	165 119	0	172 124	132 95	163 112	170 122	161 116	
Apr. 5 9AM	0	80 70	80 70	80 70	80 70	80 70	0	80 70	80 70	80 70	80 70	80 70	
" 8 11AM	3	79 3/8	81 3/8	102 1 1/8	97 3/8	56	3	9	86 3/4	85 3/8	73 3/8	25 3/8	
" 9 8AM	4	84	83	102	100	57	4	9	86	86	73	25	
" 10 "	5	89	87	102	105	60	5	11	86	86	73	25	
" 11 "	6	92	87	102	107	66	6	12	86	86	74	25	
" 12 "	7	94	87	102	107	68	7	12	86	86	74	26	
" 15 "	10	95	88	102	107 88	71	10	24	86	86	74	26	
		end	end	end	end	end		end	end	end	end	end	

Britton
4-9-46

Britton
4-9-46

Exp I 1946
Strat Petri Filter Paper Soaked 24 hours 70°F

Exp I 1946

Date	No days germ.	33°	36°	39°	41°	45°	No days Strat germ.	50	55	61	70	80	No days Strat
April 9 1PM		← 13th Sample out (143 100V) (132 107V) (136 98) (153 125V) (163 117)					(48)	13th Sample out (121 87) (153 110) None					48
April 9 1PM	0	Ger 90	Ger 90	Ger 90	Ger 90	Ger 90	0	4 - 96			45	13	
" 10 8AM	1	0	10	3	48 3/4 44	26	1	4 - 96			45	14	
" 11 "	2	1	55	40	80 38	54	2	4 - 97			46	14	
" 12 "	3	75	102	81	108	90	3	7 - 97			46	16	
" 15 9AM	6	80	104	90	112	101	6	7 - 97			46	19	
" 16 8AM	7	81	104	94	117	104	7	7 - 97			46	19	
" 17 "	8	86	104	94	118	105	8	7 - 97			46	19	
" 18 "	9	89	104	94	118	105	9	9 - 97			46	19	
" 19 "	10	89	105	96	120	105	10	9 - 97			46	20	
		and	and	and	(and)	(and)		(and)	(and)		end	end	
April 12 9:30 AM	0	← 14th Sample out (154 109V) (124 93V) (147 106) (158 114V) (171 123)					(51)	← 14th Sample out (167 120) (158 114) (187 135) (152 109) (150 108)					51
April 14 "	0	0	23	19	70 61	32	0	5 - 109	101		64	10	
" 15 9AM	3	94	92	108	100	102	3	9 - 110	101		64	15	
" 16 8AM	4	98	93	111	106	103	4	10 - 110	101		65	15	
" 17 "	5	102	93	111	109	106	5	10 - 110	101		65	15	
" 18 "	6	104	93	111	112	106	6	13 - 110	101		66	15	
" 19 "	7	105	93	111	114	107	7	13 - 110	101		66	15	
" 22 "	10	106	93	111	114 100	107	10	13 - 111	101		66	17	
		and	and	and	and	and		end	end	end	end	end	
April 16 9:30		← 15th Sample out (170 123V) (150 118V) (143 103) (147 105V) (151 109)					(55)	← 15th Sample out (154 111) (161 116) (158 114) (153 110) (154 111)					55
" 16 9:30	0	0	39	31	55 52	32	0	7 - 106	97		58	20	
" 17 8AM	7	27	97	106	70	44	1	7 - 106	97		58	22	
" 18 "	2	86	113	111	84	61	2	7 - 107	97		58	23	
" 19 "	3	103	115	113	89	68	3	8 - 107	98		58	23	
" 22 "	6	107	117	113	96	75	6	9 - 107	98		58	26	
" 23 "	7	107	117	113	99	78	7	11 - 107	98		59	26	
" 24 "	8	108	118	113	99 94	78	8	12 - 107	98		59	29	
" 25 "	9	(and)	end	end	end	end	9	end	end	end	end	end	
" 26 "	10						10						

Sheet #1

Britton
4-16-46

Lost in temperatures
↓

Exp I

(16) LAST SAMPLE - ALL Germination at Strat. Temp

	33°	36°	39°	41°	45°	50°	55°	61°	66°	70°	77°	80°	Total days strat	
No Seeds in dish	111V	134V	127V	107V	98V	170V	188V	164V	134V	129V	168V	144V		
Date	April 16 = 55 th day of strat													
April 16 Germinated	0	62	53	60 ⁹⁰	37	19	109	95	54	57	6	14	53	
April 22 " 6	2	62	86	89 ⁸³	51	24	111	97	55	58	12	19	61	
Apr 29 " 13	2	64	102	100 ⁹³	60	32	113	98	55	58	13	21	68	
May 5 " 16	9	64	111	104 ⁹⁷	67	40	113	98	55	59	14	21	71	
May 6 " 20	34	88	112	102 ¹⁰⁰	74	45	113	98	55	59	14	21	75	
" 9 " 23	46	0	29	118	107	78	51	113	98	55	59	14	21	78
" 13 " 27	91	90	119	107	79	52	113	98	55	59	15	21	82	
" 14 " 28				End										
16 " 30	82	95	122		81	54	3 more viable by dish not seen	98	59	59	18	21	85	
20 " 34	90	118	126		83	56		99	59	59	18	21	89	
23 " 37	93	123	127		85	59		Total 99	60	59	18	21	92	

April 16 April

May 13 May 27

116
End

50°
Down
12 ~~181~~ 56
13 ~~169~~ 59
14 ~~184~~ 69 74
15 ~~174~~ 65 75
16 ~~175~~ 67 81 91

* last seed in petri dish germinated germination complete

Apr 16

Feb 2

Sheet # 2

Exp I
 (16) last Sample - All Germination at Strat. Temp

Data	33°	36°	39°	41°	45°	50°	55°	61°	66°	70°	77°	80°
May 23	93	123	Completed	End	85	59	end	99	60	59	18	21
27	102	130			88	60		99	60	59	18	22
31	107	133			93	65		99	60	60	19	22
June 3	110	133			94	68		99	60	60	19	22
" 4	119	134										
" 6	111	end			94	68		99	60	60	19	22
	end						discontinued					

Exp I Percent Germ. Viable Seed.

Sample 16 (last Sample)

Days strat.	DAYS GERM.	33°	36°	39°	41°	45°	50°	55°	61°	66°	70°	77°	80°
✓ 55	0	0	90	90	90	90	90	90	90	90	90	90	90
✓ 61	2	56	56	42	60	33	15	84	81	61	61	5	13
✓ 68	3	2	58	80	100	46	19	85	92	62	62	10	18
✓ 71	11	9	58	87	100	60	31	87	83	62	63	11	20
✓ 75	20	33	61	88	100	67	35	87	83	62	63	12	20
✓ 78	23	58	71	93	100	70	40	87	83	62	63	12	20
✓ 82	27	68	81	94	100	71	41	87	83	62	63	12	20
✓ 85	28												
✓ 89	30	79	86	96		73	42		83	66	63	15	20
✓ 92	34	87	100	99		75	44		84	66	63	15	20
	37	89	100	100		77	46		84	67	63	15	20
92	39	89	100			79	46		84	67	63	15	20
96	41	98	100			79	47		84	67	63	15	21
100	45	100	100			84	51		84	67	65	16	21
103	48	100	100			85	54		84	67	65	16	21
104	49		100										
106	52	100				85	54		84	67	65	16	21

①

Britton

Note! —
Days strat.
50° Down

④

Exp. I

1946

Date	No days Ger	Strat temperature °F			
		66°	77°	50°	
Mar 1 2 PM		Started		Down	
Mar 4 4 PM	0	1st Sample out			
		164 118	159 114		
		Ger %	Ger %	③	
Mar 4 4 PM	0	26	0	0	
" 5 8 AM	1	30	0	0	
" 6 "	2	32	0	0	
" 7 "	3	33	0	0	
" 8 "	4	33	0	0	
" 11 "	7	33	0	0	
" 12 "	8	33	0	0	
" 13 "	9	33	0	0	
" 14 "	10	33	0	0	
		(end)	(end)		
Mar 8 9 AM		2nd Sample out			
		147 104	135 133	⑦	
		Ger %	Ger %		
Mar 8 9 AM	0	40 16 3/4	1	Started	
" 11 8 AM	3	41	1		
" 12 "	4	41	1		
" 13 "	5	41	2		
" 14 "	6	42	2		
" 15 "	7	42	3		
" 18 "	10	42	3		
		and	(end)		
Mar 12 9 AM		3rd Sample out → 1st sample			
		160 115	157 113	164 118	④
		Ger %	Ger %	Ger %	
Mar 12 9 AM	0	38 16 3/4	0	0	
" 13 8 AM	1	41	0	16 1/2 14	
" 14 "	2	42	1	24 20	
" 15 "	3	42	1	30 25	
" 18 "	6	42	1	31 26	
" 19 "	7	42	1	33 28	
" 20 "	8	42	1	34 29	
" 21 "	9	43	3	34	
" 22 "	10	43 end	4 end	34 (end)	

B. H. H. H.
Mar 15 - 1946

EXP I 1946

7874

Date	No Days	Strat.	Temp °F	Started Feb 21 - 1946	Started March 1	16 Days Stratified 27° F
		14 strat. 66	77°	(Down) 50°	Acroted 33°	27°
Mar 13 10 AM		4th Sample →	2nd Sample ←	1st Sample →		4
		(187 131)	(260 144)	(160 115)	(176 127)	(167 120)
Mar 15 10 AM 0		Ger 4 1/4	Ger 0	Ger 7 1/4	Ger 0	Ger 0
" 18 8 AM 3		4 1/4	4 3/4	2A	81 1/2 64	70 5
" 19 " 4		46	6	25	91 72 94	7
" 20 " 5		46	10	28	95 75 118	7
" 21 " 6		46	11	32	96 76 142	7
" 22 " 7		46	11	32	97 76 166	7
" 25 " 10		48	15	34	99 78 240	9
		(end)	end	(end)	(end)	(end)
Apr 19 9 AM 19		5th Sample →	3rd Sample ←	2nd Sample		8
		(170 122)	(144 104)	(152 109)	(214 154)	
" 19 9 AM 0		Ger 4 1/2	Ger 4	Ger 2 1/2	Ger 0	Ger 0
" 20 8 AM 1		49	4	32	0	0
" 21 " 2		50	8	39	4	
" 22 " 3		52	14	39	5	
" 25 " 6		53	18	42	11	
" 26 " 7		55	18	44	11	
" 27 " 8		55	18	46	12	
" 28 " 9		56	18	46	12	
" 29 " 10		58	22	46	15	
		end	end	end	(end)	
Mar 22 9 AM 22		6th Sample →	4th Sample ←	3rd Sample	3rd Sample	11
		(161 116)	(139 100)	(180 130)	(251 181)	(161 116)
Mar 22 9 AM 0		Ger 6 3/4	Ger 4	Ger 3 3/4	Ger 0	Ger 0
" 25 8 AM 3		61	9	43	158 3/4 87 71	0
" 26 " 4		61	10	47	163 90 95	4
" 27 " 5		61	11	57	165 91 119	10
" 28 " 6		62	12	51	165 91 143	11
" 29 " 7		64	13	55	168 93 167	12
April 1 " 10		64	14	58	170 94 240	15
		end	(end)	end	end	end

(1)

Britton
March 26, 1946

74% Viable
?

Exp I 1946

Date	Days	Ger.	5' STRAT.	Temp.	°F	Acroted	Days
							Stat 27F
Mar 26 9AM	26		66'	77'	50' (18)	33'	27'
			7th Sample		5th Sample		4th Sample
			115 113	157 113	166 120		190 187
Mar 26 9AM	0	39 3/4	4	49 1/4			
27 8AM	1	41	5	53			
" 28 "	2	42	10	55			
29 "	3	45	16	55			
April 1 "	6	46	17	60			
" 2 "	7	46	18	60			
" 3 "	8	46	18	62			
" 4 "	9	46	18	62			
" 5 "	10	48	20	62			
Mar 29 9AM	29	(end)	(end)				
			2nd Sample		6th Sample (21)	3rd Sample	5th Sample
			163 117	156 112	173 125	310 247	195 140
Mar 29 "	0	69 3/4	4	55		0 0 0	0 0
April 1 8AM	3	69	5	61		238 96 71	8
" 2 "	4	69	5	62		243 98 95	12
" 3 "	5	69	7	63		243 98 119	14
" 4 "	6	69	7	64		243 98 143	15
" 5 "	7	69	7	64		243 98 167	17
" 8 "	10	70	7	66		243 98 240	19
April 2 8AM		(end)	(end)			(end)	(end)
		None	None	7th Sample (23)		None	6th Sample
				173 125			189 136
April 2 9AM	0			35 3/4			0 0
" 3 8AM	1			38			0 0
" 4 "	2			38			11
" 5 "	3			38			27
" 8 7AM	6			40			28
" 9 8AM	7			42			28
" 10 "	8			42			28
" 11 "	9			42			29
" 14 "	10			43			29
		(2)		(end)			(end)

Exp I 1946

Date	Days Ger.	66	37	77	50	28	33	27°	Day Stat.
		149	107	151	109	173	125	194	143
April 5	0	48 3/4	9	71	79	130	191	72	18
" 5	3	48	10	79	79	136	95	96	21
" 8	4	50	11	81	81	140	98	120	23
" 9 8 AM	5	50	11	81	81	140	98	144	24
" 10	6	50	11	81	81	142	99	168	25
" 11	7	51	11	81	81	142	99	240	27
" 12	10	51	"	81	81	142	99	240	27
" 15 "		END	END	END	END	END	END	END	END
April 9 1 PM		None	None	9th Sample	None	8th Sample	None	None	None
April 9 1 PM	0	72	72	72	72	72	72	72	72
" 10 8 AM	1	75	75	75	75	75	75	75	75
" 11 "	2	75	75	75	75	75	75	75	75
" 12 "	3	76	76	76	76	76	76	76	76
" 15 "	6	78	78	78	78	78	78	78	78
" 16 "	7	79	79	79	79	79	79	79	79
" 17 "	8	79	79	79	79	79	79	79	79
" 18 "	9	79	79	79	79	79	79	79	79
" 19 "	10	80	80	80	80	80	80	80	80
April 14 9 30 AM		10th Sample	10th Sample	10th Sample	10th Sample	10th Sample	10th Sample	10th Sample	10th Sample
April 14 9 30 AM	0	59 1/8	11	56	56	56	35	0	0
" 15 9 AM	3	59	12	61	61	61	94	72	32
" 16 8 AM	4	59	12	62	62	62	95	96	33
" 17 "	5	59	12	65	65	65	98	120	34
" 18 "	6	59	12	68	68	68	98	144	37
" 19 "	7	59	12	69	69	69	99	168	38
" 20 "	10	60	14	71	71	71	99	240	39
" 21 "		END	END	END	END	END	END	END	END

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Benton
4-16-46

EXP I 1946

Date	N ^o Days Strat	Strat Temp	%	Days Strat 97°F
		66 77 50	27°	
April 16 9 ³⁰ am		11th sample out	10th sample	
		<u>169 122</u> <u>144 104</u> <u>16 116</u> <u>171 123</u>		36
April 16 9 ³⁰ am	0	69 11 64	0 0	
" 17 8am	1	69 13 67	4	
" 18 "	2	70 15 67	37	
" 19 "	3	70 17 68	51	
" 22 "	6	70 18 70	56	
" 23 "	7	70 20 73	59	
" 24 "	8	72 22 75	59	
" 25 "	9	<u>END</u> <u>END</u> <u>END</u>		
" 26 "	10			
Apr 26		12th (49)	11th	
		<u>171 123</u> <u>196 141</u>		46
Apr 26	0	67	0 0	
" 29	3	71	37	
" 30	4	72	45	
May 1	5			
" 2	6	72	53	
" 3	7			
" 6	10	73	53	
May 6		13th (57)	12th	
		<u>169 122</u> <u>19 2/135</u>		56
May 6	0	71	0	
" 7	1	73	10	
" 9	3	78	45	
" 13	7	79	59	
" 14	8	79	62	
" 16	10	80	67	

16
27

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④

Exp I.

1946

Date	Days	Strat	Temperature	Days Strat 29°F
May 16		50 (69) 14 1/2 h Samp. <u>184 133</u>	27° 13 1/2 h Samp. <u>196 137</u>	96 66
May 16	0	76	0	
May 20	4	79	84	
May 21	5	80	93	
May 23	7	80	98	
May 27	11	81	103	
May 27		15 1/2 h Samp. (80) <u>174 115</u>	14 1/2 h Samp. <u>182 127V</u>	87
May 27	0	78	0	
May 28	1	80	0	
May 31	4	85	114	87
June 3	7	86	117	89
June 4	8	86	120	92
June 6	10			
June 6		16 1/2 h (90) <u>175 116</u>	15 1/2 h <u>187 118V</u>	87
June 6	0	94	0	
June 10	4	96	80	
June 11	5	96	87	
June 13	7	96	94	
June 17	11	96	98	
June 17		17	16 1/2 h (111) <u>197 83V</u>	98
June 17	0		0	
June 18	2		1	
June 20	3		2	
June 24	7		18	
June 26	9		30	
June 28	11		34	
July 1	14		42	

(5)

Exp I 1946

Date	No Days	70	77	80 (82)	93	98	No Days strat
		started		started	started	started	
Feb 21 12 noon							
Feb 25 8 AM	0	131 94%	1st sample out	165 112%	150 108	150 108	4
		Ger %		Ger %	Ger %	Ger %	
Feb 25 8 AM	0	11 1/2		0 0	0 0	0 0	
" 26 8 AM	1	11		0 0	0 0	0 0	
" 27 "	2	12		0 0	0 0	0 0	
" 28 "	3	12		0 0	0 0	0 0	
Mar 1 "	4	12		0 0	0 0	0 0	
" 4 10 AM	7	17		6 0	0 0	2 0	
" 5 8 AM	8	17		6 0	0 0	2 0	
" 6 8 AM	9	18		6 0	0 0	2 0	
" 7 "	10	20 and		7 and	0 (and)	2 (and)	
March 1			2nd Sample out				8
		115 83		174 135	155 112	178 138	
		Ger %		Ger %	Ger %	Ger %	
March 1 10 AM	0	26 1/2	Started 12 PM	0 0	0 0	0 0	
Mar 4 10 AM	3	30		1 0	0 0	0 0	
" 5 8 AM	4	31		2 0	0 0	1 0	
" 6 "	5	32		2 0	0 0	2 0	
" 7 "	6	33		3 0	0 0	3 0	
" 8 "	7	34		3 0	0 0	4 0	
" 11 "	10	34 and		4 (and)	0 (and)	4 (and)	

Note! Seeds strat @ 77°F (constant) show temp too high for good growth 66 max (3)

Britten
March 5 1946

EXP. I 1946

Date	No Days Ger	Street temperature °F								No Days Street	
		70			80		93		98		
Mar 5	0	← 144 104 →		3rd	← 182 131 →		← 160 115 →		← 150 108 →		13
		Ger	%		Ger	%	Ger	%	Ger	%	
Mar 5 9 AM	0	19	1"		0	0	0	0	0	0	
" 6 8 AM	1	21			2		0	0	0	0	
" 7 "	2	25			6		0	0	0	0	
" 8 "	3	26			11		0	0	0	0	
" 11 "	6	27			13		0	0	0	0	
" 12 "	7	30			13		0	0	0	0	
" 13 "	8	32			13		0	0	0	0	
" 14 "	9	33			14		0	0	0	0	
" 15 "	10	34			16		0	0	end		
		(end)			end		end		Seeds decayed		
Mar 8 9 AM	0	← 136 98 →		4th	← 136 98 →		← 101 72 →		← 130 94 →		16
		Ger	%		Ger	%	Ger	%	Ger	%	
Mar 8 9 AM	0	34	1/4"		2 1/2"		0	0	0	0	
" 11 "	3	37			8		2		0	0	
" 12 8 AM	4	37			10		2		0	0	
" 13 "	5	37			11		3		1		
" 14 "	6	40			11		3		1		
" 15 "	7	41			11		4		end		
" 18 "	10	44			13		5		all decayed		
		end			end		end				
Mar 12 9 AM	0	← 172 124 →		5th	← 192 138 →		← 164 118 →				20
		Ger	%		Ger	%	Ger	%	Ger	%	
Mar 12 9 AM	0	56	1 1/4"		2		0		0	0	
" 13 8 AM	1	58			6		0	0	(all seeds decayed)		
" 14 "	2	59			10		0	0	1 in remaining samples		
" 15 "	3	59			13		1		end		
" 18 "	6	63			13		1				
" 19 "	7	64			14		1				
" 20 "	8	65			16		1				
" 21 "	9	65			16		1				
" 22 "	10	65			17		2		end		
		end			end		end				

Brighton
March 15-1946

Exp I

1946

Date	No Days Ger.	70	80	95	°F	No Days Ger.
Mar 15 10 AM		← 6th Sample out →				23
		(140 101)	(169 122)	(150 108)		
Mar 15 9	0	Ger. 25 1/4	Ger. 13 1/4	Ger. 0		
" 18 8 AM	3	25	22	0		
" 19 "	4	25	22	1		
" 20 "	5	26	24	✓		
" 21 "	6	28	25	1		
" 22 "	7	28	25	1 all dead		
" 25 "	10	30	28			
		(end)	(end)			
Mar 19 9 AM		← 7th Sample out →				27
		(144 107)	(144 104)	(150 108)		
Mar 19 9 AM	0	Ger. 36 1/4	Ger. 5 1/4	Ger. 0		
" 20 8 AM	1	38	8	0		
" 21 "	2	40	11	0		
" 22 "	3	40	13	0 @ 11 dead		
" 25 "	6	40	15	-		
" 26 "	7	42	17			
" 27 "	8	42	18			
" 28 "	9	43	19			
" 29 "	10	45	21			
		(end)	(end)			
Mar 22 9 AM		← 8th Sample out →				30
		(106 76)	(134 96)	(150 108)		
Mar 22 9 AM	0	Ger. 48 1/4	Ger. 6 1/4	Ger. All seeds		
" 25 "	3	50	6	decayed		
" 26 "	4	50	6			
" 27 "	5	50	6			
" 28 "	6	50	6			
" 29 8 AM	7	50	7			
April 1 "	10	53	8			
		end	end			

Exp I 1946

Scale for 27° only

✓ in 10 days

No Viable seeds

Experiment I

Feb. 20, 1946 to July 1, 1946

Percent Germination Viable seed basis

Sample	Days Stratified					27°	33°	36°	39°	41°	45°	50°	51°	55°	61°	66°	70°	77°	80°	93°	98°	33°
	27°	33°	36°	39°	41°	27°	33°	36°	39°	41°	45°	50°	51°	55°	61°	66°	70°	77°	80°	93°	98°	33°
1	4	4	5	4	3	120	117	102	99	111	101	122	118	112	105	118	94	114	111	108	108	12
	4	4	5	4	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	4	4	5	4	3	4	3	0	0	0	0	0	14	71	57	25	12	0	0	0	1	0
	4	4	5	4	3	6	4	0	0	8	2	9	20	75	58	27	13	0	0	0	2	0
	4	4	5	4	3	6	5	0	0	12	8	12	25	75	60	28	13	0	0	0	3	0
	4	4	5	4	3	6	6	2	2	14	10	12	26	76	60	28	13	0	0	0	4	0
	4	4	5	4	3	6	7	3	3	23	18	20	28	79	66	28	18	0	5	0	7	2
	4	4	5	4	3	7	10	4	4	23	18	20	29	79	68	28	18	0	5	0	8	2
	4	4	5	4	3	7	10	4	4	25	19	20	29	79	68	28	19	0	5	0	9	2
	4	4	5	4	3	10	4	16	4	27	19	21	29	79	68	28	21	0	6	0	10	2
2	7	8	9	8	7	154	90	95	104	95	99	128	115	87	106	106	83	133	125	112	128	99
	7	8	9	8	7	0	1	1	2	46	54	1	21	91	68	39	36	1	1	0	0	0
	7	8	9	8	7	3	2	3	3	49	54	3	22	92	68	39	37	1	2	0	4	1
	7	8	9	8	7	3	3	3	3	53	54	3	24	92	68	39	39	2	2	0	5	2
	7	8	9	8	7	7	6	4	3	54	55	3	28	93	68	40	40	2	2	0	6	2
	7	8	9	8	7	7	7	4	8	55	56	3	28	93	68	40	41	2	2	0	7	3
	7	8	9	8	7	8	8	7	9	55	56	3	28	93	68	40	41	2	2	0	10	3
	7	8	9	8	7	8	9	7	9	55	56	3	28	93	68	40	41	2	2	0	10	3
	7	8	9	8	7	10	10	10	10	55	56	3	28	93	68	40	41	2	2	0	10	3
3	11	11	13	13	11	116	100	96	112	108	110	115	109	107	94	115	104	113	131	115	108	0
	11	11	13	13	11	0	3	0	6	36	28	3	29	84	91	36	20	0	2	0	1	0
	11	11	13	13	11	3	4	5	3	82	64	7	36	85	93	37	24	1	5	0	2	0
	11	11	13	13	11	9	5	9	9	83	72	7	36	86	94	37	24	1	8	0	3	0
	11	11	13	13	11	9	6	13	9	84	73	7	39	86	94	37	26	1	10	0	6	0
	11	11	13	13	11	16	7	14	10	84	75	7	40	86	94	37	29	1	10	0	7	0
	11	11	13	13	11	13	10	14	11	84	75	8	42	86	94	37	31	1	10	0	8	0
	11	11	13	13	11	15	15	39	11	84	75	8	42	86	94	37	32	3	11	0	9	0
	11	11	13	13	11	17	17	41	11	84	75	8	42	86	94	37	33	4	12	0	10	0
4	14	15	16	16	14	137	95	102	107	96	122	107	130	115	103	131	98	144	98	73	94	0
	14	15	16	16	14	0	1	0	3	83	85	4	33	71	77	32	35	0	2	0	0	0
	14	15	16	16	14	0	1	18	67	83	85	4	33	71	77	34	38	3	8	3	3	0
	14	15	16	16	14	1	2	19	69	85	85	4	36	72	77	35	39	4	10	3	4	0
	14	15	16	16	14	2	3	22	70	85	85	5	39	73	77	35	39	7	11	4	5	1
	14	15	16	16	14	3	4	22	70	86	86	6	39	75	77	35	41	8	11	4	6	1

Exp. I

% Germ. Via Seed basis

SAMPLE NO.	DAYS STRATIFIED					27°	33°	36°	39°	41°	45°	50°	50°	55°	61°	66°	70°	77°	80°	93°	DAYS	98°
	500	27°	33°	70°	66°	GERM	GERM	GERM	GERM	GERM	GERM	GERM	GERM	GERM	GERM	GERM	GERM	GERM	GERM	GERM	GERM	EXCEPT 27°
	% DAYS	% DAYS	% DAYS	% DAYS	% DAYS	% DAYS	% DAYS	% DAYS	% DAYS	% DAYS	% DAYS	% DAYS	% DAYS	% DAYS	% DAYS	% DAYS	% DAYS	% DAYS	% DAYS	% DAYS	% DAYS	
7	25	25	27	27	25	126	106	84	98	102	108	112	115	120	111	83	107	113	104	108		
						0	0	0	0	7	6	5	28	81	72	47	34	4	5		0	
						14	3	7	12	0	38	37	6	30	82	72	49	36	4	8	All	1
						17	4	48	71	6	72	67	7	30	82	72	51	37	9	11	dead	2
						18	5	58	77	19	81	72	9	30	82	72	54	39	14	12		3
						19	6	61	83	34	86	74	11	32	82	72	55	39	15	14		6
						20	7	61	86	40	88	76	12	34	82	73	55	39	16	16		7
						(21)	10	65	88	45	(88)	76	13	34	83	73	55	39	16	19		8
								65	89	47	88	76	13	34	83	73	55	40	16	19		9
								65	89	49	88	80	15	34	84	74	58	42	18	20		10
8	28	29	30	30	28	132	109	108	113	112	107	107	125	122	113	112	76	112	96	108		
						0	0	1	0	21	5	2	57	90	58	57	63	4	6	All	0	
						0	1	67	97	84	81	71	6	63	90	59	59	66	4	6	dead	3
						15	2	78	100	93	93	76	6	63	91	60	59	66	4	6		4
						20	3	81	100	94	93	80	6	65	91	60	59	66	6	6		5
						25	6	81	100	94	93	80	6	65	91	60	59	66	6	6		6
						25	7	81	100	95	93	83	7	65	91	61	59	66	6	7		7
						27	8	82	100	95	(95)	85	8	(65)	91	63	(60)	6	9		10	
						29	9															
						(29)	10															
9	32	32	34	34	32	140	104	97	108	107	114	112	131	114	99	107	114	109	138			
						0	0	0	0	22	18	3	55	86	83	45	0	39	8	0	11	0
						23	3	11	14	47	57	4	57	86	84	45	3	39	9	3	11	1
						34	4	62	59	81	70	4	57	86	84	47	4	39	10	4	12	2
						34	5	71	23	89	81	80	6	58	86	85	47	5	41	10	5	3
						26	6	79	78	92	90	84	8	60	86	85	47	6	41	10	6	6
						27	7	81	81	92	92	85	9	60	87	85	48	7	41	10	7	7
						(28)	10	82	81	92	(94)	85	9	60	88	86	48	10	41	10	10	8
								82	81	92	94	85	9	60	88	86			41		15	9
								84	82	94	94	85	9	61	89	86			41		16	10
10	35	36	37	37	35	123	104	125	111	114	121	123	117	116	110	115	86	113	121			
						0	0	0	0	36	14	4	48	97	70	51	44	10	17		0	
						3	1	88	100	98	90	74	5	52	97	72	51	44	11	20		3
						30	2	95	100	100	96	78	5	53	97	72	51	44	11	20		4
						41	3	95	100	100	98	83	6	56	97	72	51	44	11	21		5
						46	6	95	100	100	98	83	6	58	97	72	51	44	11	21		6

EX
19P.

90 Germ. Via. Seed basis

Days Stratified						27°	33°	36°	39°	41°	45°	50°	50°	55°	61°	66°	70°	77°	80°	83°	Days	98°			
						Germ	Germ	Germ	Germ	Germ	Germ	Germ	Germ	Germ	Germ	Germ	Germ	Germ	Germ	Germ	GERM EXCEPT 27°				
Sample	50°	27°	33°	41°	66°	70°	70°	70°	70°	70°	70°	70°	70°	70°	70°	70°	70°	70°	70°	70°	70°	27°			
13	59	66	48	48		127	103	95	98	125	117	87	122	110			100		109		0				
						0	0	11	3	38	22	5	58	87			45		12		1				
						4	1	58	41	65	46	5	60	87			45		13		2				
						5	23	100	83	87	77	5		88			46		13		3				
						7	78	100	92	90	86	8	64	88			46		15		6				
						11	79	100	96	94	89	8		88			46		17		7				
							83	100	96	95	90	8	65	88			46		17		8				
							86	100	96	95	90	8	65	88			46		17		9				
							86	100	97	97	90	10		88			46		17		10				
							86	100	98	97	91	10	66	88			46		18						
14	69	77	51	51		131	109	89	106	114	123	120	133	114	135		109		108		0				
						0	0	26	18	61	26	4	57	96	75		59		9		3				
						1	86	100	100	88	83	7		96	75		59		14		4				
						4	90	100	100	93	84	8	59	96	75		60		14		5				
						7	94	100	100	96	86	8	60	96	75		60		14		6				
						8	95	100	100	98	86	11		96	75		61		14		7				
						10	96	100	100	100	87	11	60	96	75		61		14		10				
							97	100	100	100	87	11		97	75		61		16						
													61								11				
15	80	87	55	55		135	122	108	103	106	109	111	125	116	114		110		111		0				
						0	0	36	30	52	29	6	62	91	85		53		18		1				
						4	22	90	100	66	40	6	64	91	85		53		20		2				
						5	70	100	100	79	56	6	68	92	85		53		21		3				
						7	84	100	100	84	62	7	69	92	86		53		21		6				
						11	88	100	100	91	69	8	69	92	86		53		23		7				
							88	100	100	93	72	10	10	92	86		54		23		8				
							89	100	100	93	72	11		92	86		54		26						
16	90	98				141							126												
						0							0												
						2							4												
						3							5												
						7							7												
						9							11												
						11																			
						14																			

Note calc
more points Ser
in street curv.

1946 6/1/71 ALH

Exp No I
1946

Start 36°F Petri Hilgard
Lesson 1945 seed viability 77%

%
germ

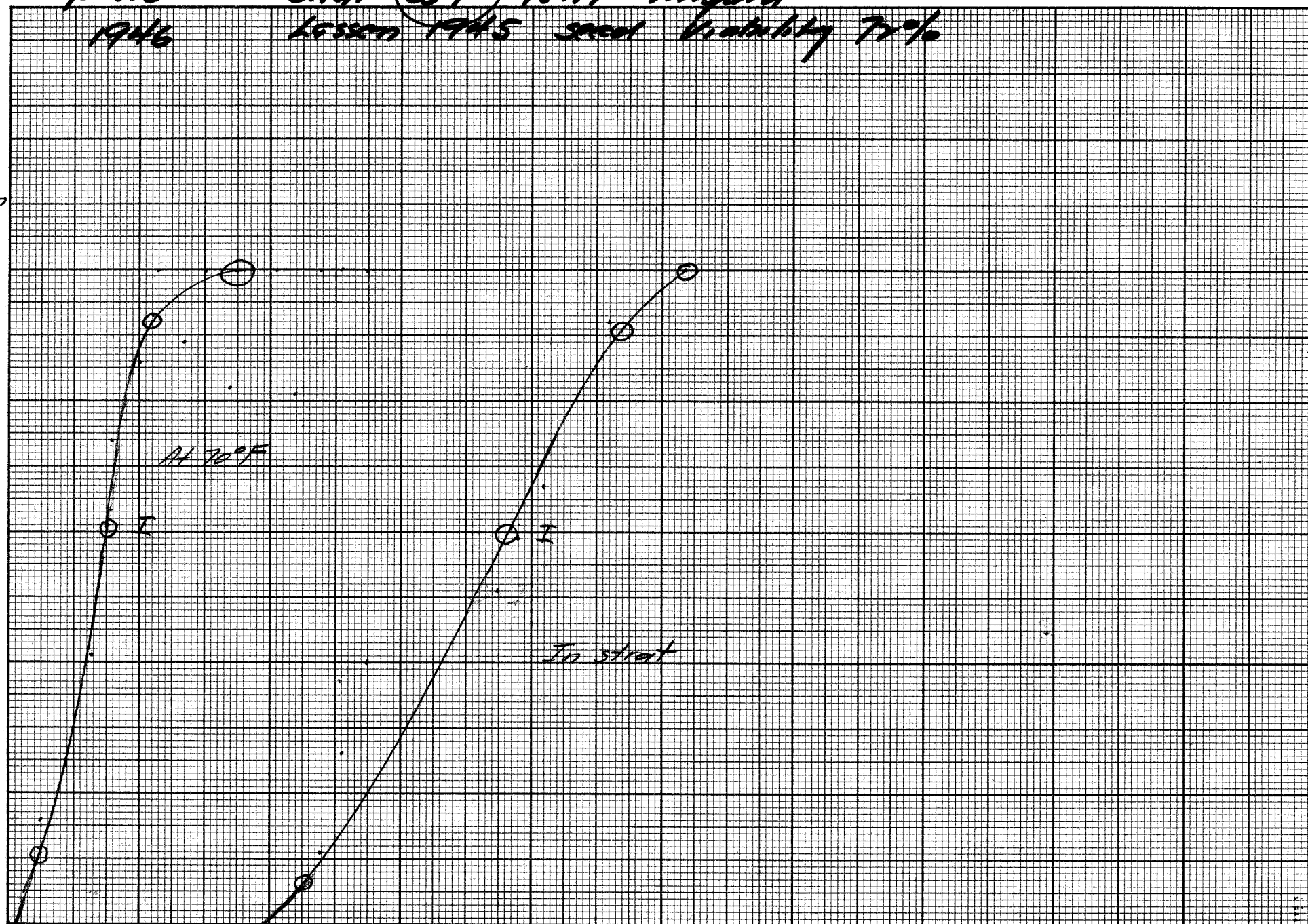
100
90
80
70
60
50
40
30
20
10

0 10 20 30 40 50 60 70 80 90 100 110 120

At 70°F

I

In street



Experiment Summary

Exp. *No I*

Treatment

Strat 36°F Hilgard Petri

Seed - source, name

*Losson 1945 72% viability**1946*

Treatment details

Date

Germination record

Date	Sample No	Treatment ()	No. of seeds		Germination ^{1/}		Germination in treatment	
			No. of days	Total Viable	Tips : Complete Percents Percents	Percent		
<i>Febr. 20 3PM</i>	<i>0</i>	<i>Into strat.</i>						
	<i>1</i>	<i>5</i>		<i>102</i>		<i>16</i>	<i>0</i>	
	<i>2</i>	<i>9</i>		<i>95</i>		<i>24</i>	<i>0</i>	
	<i>3</i>	<i>13</i>		<i>96</i>		<i>41</i>	<i>0</i>	
	<i>4</i>	<i>16</i>		<i>102</i>		<i>74</i>	<i>0</i>	
	<i>5</i>	<i>20</i>		<i>105</i>		<i>86</i>	<i>0</i>	
	<i>6</i>	<i>23</i>		<i>89</i>		<i>100</i>	<i>0</i>	
	<i>7</i>	<i>27</i>		<i>84</i>		<i>89</i>	<i>0</i>	
	<i>8</i>	<i>30</i>		<i>108</i>		<i>100</i>	<i>1</i>	
	<i>9</i>	<i>34</i>		<i>97</i>		<i>82</i>	<i>0</i>	
	<i>10</i>	<i>37</i>		<i>175</i>		<i>100</i>	<i>0</i>	
	<i>11</i>	<i>41</i>		<i>104</i>		<i>100</i>	<i>0</i>	
	<i>12</i>	<i>44</i>		<i>91</i>		<i>81</i>	<i>0</i>	
	<i>13</i>	<i>48</i>		<i>95</i>		<i>100</i>	<i>11</i>	
	<i>14</i>	<i>51</i>		<i>89</i>		<i>100</i>	<i>76</i>	
<i>April 16</i>	<i>15</i>	<i>55</i>		<i>108</i>		<i>100</i>	<i>Avg. 40% 36846</i>	
<i>22</i>	<i>16</i>	<i>61</i>		<i>134</i>			<i>62</i>	
<i>29</i>	<i>17</i>	<i>68</i>		<i>134</i>			<i>64</i>	
<i>May 2</i>	<i>18</i>	<i>71</i>		<i>134</i>			<i>64</i>	
<i>6</i>	<i>19</i>	<i>75</i>		<i>134</i>			<i>68 51</i>	
<i>9</i>	<i>20</i>	<i>78</i>		<i>134</i>			<i>79 59</i>	

^{1/} In 7 days @ 68°F. Germination complete when root tip through seed coats.

Cont'd

Experiment Summary

Exp. **No I**

Treatment

Start 36°F

Hilgard Petri

Seed - source, name

1946

Treatment details

Date

Germination record

Date	Sample No	Treatment (No. of days	No. of seeds		Germination ^{1/}		Germination	
			Total	Viable	Tips Percents	Complete Percents	in treatment Percent	
May 13	21	82	134		Ended		110	96
14	22	83	134				90	67
16	23	85	134				95	
20	24	89	134				118	
23	25	92	134				123	
27	26	96	134				130	
31	27	100	134				133	
June 3	28	103	134				133	
4	29	104	134				134	100
6	30	106	134					

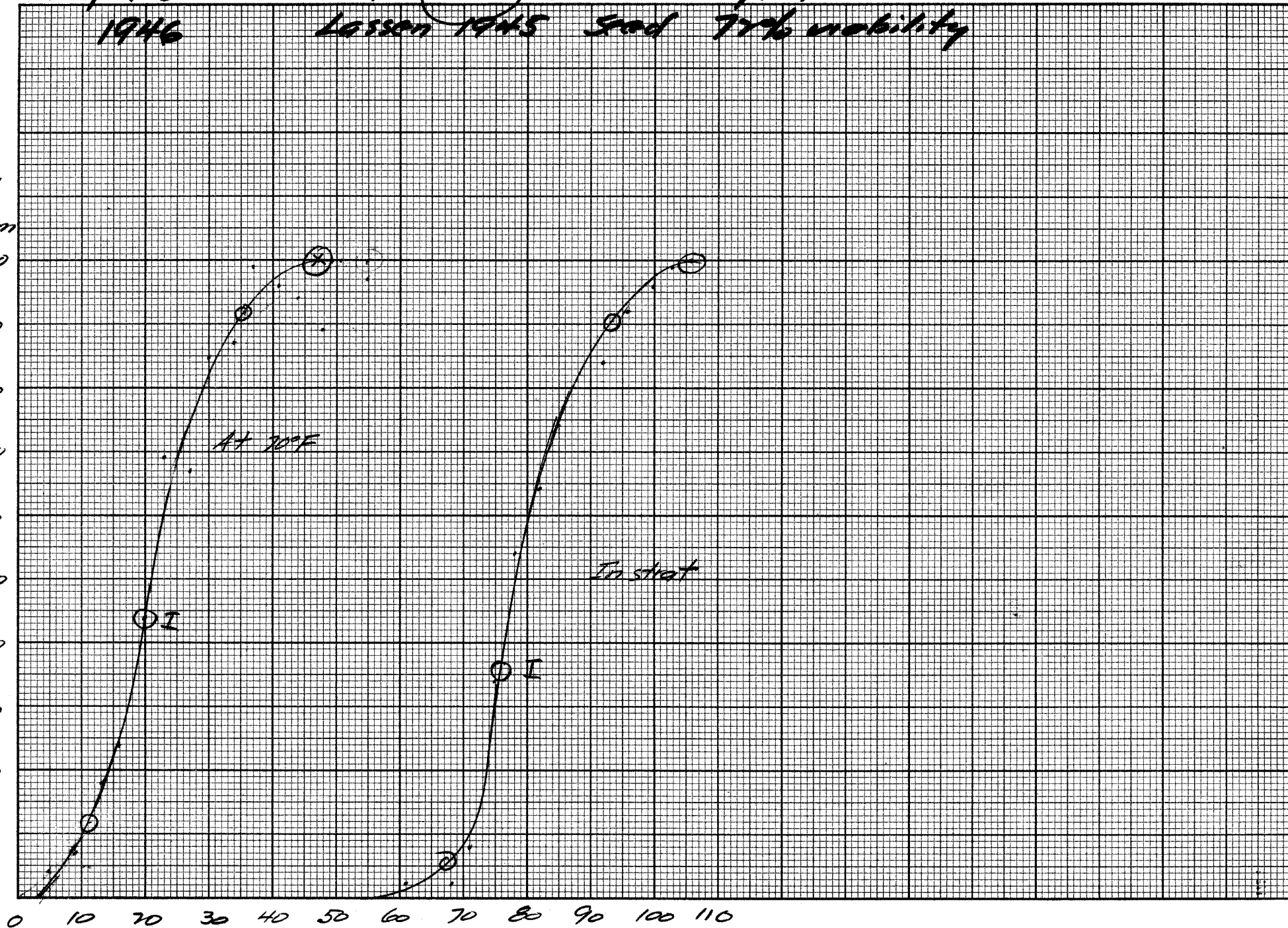
^{1/} In 7 days @ 68°F. Germination complete when root tip through seed coats.

Exp No I
1946

Strat 33°F Polri Hilgard
Lassen 1945 Seed 7% viability

1946 6/1/71 ALH

%
germ



Experiment Summary

Exp. **No I**

Treatment

Shat 33°F Polri

Seed - source, name

Lessen 1945 72% viability

Treatment details

Test 1946

Date

Germination record

100%

Date

Sample

Treatment

No. of seeds

Germination 1/

Germination

No

No. of days

Total Viable

Tips
Percents: Complete
Percents
No %in treatment
Percent
No %

Febr 20 3PM

0

Into shat

Febr 25

1

5

117

5

4

4

0

Mar 1

2

9

90

6

7

7

0

5

3

13

100

17

17

18

0

8

4

16

95

22

23

24

0

12

5

20

104

45

43

44

0

15

6

23

107

72

67

69

0

19

7

27

106

69

65

67

0

22

8

30

109

89

82

85

0

26

9

34

104

87

84

87

0

29

10

37

104

100

96

99

0

Apr 2

11

41

96

89

93

96

0

5

12

44

104

95

91

94

0

9

13

48

103

89

86

89

0

12

14

51

109

106

97

100

0

Apr. 16 22

15

55

122

108

89

92

0

29

16

68

111

2

2

May 2

17

71

111

9

8

6

18

75

111

34

31

9

19

78

111

60

54

13

20

82

111

71

64

1/ In 7 days @ 68°F. Germination complete when root tip through seed coats.

Experiment Summary

Exp. *No I*

Treatment

Shot 33°F Petri Cont'd

Seed - source, name

Treatment details

Date

Germination record

Date

Sample

Treatment

No. of seeds

Germination ^{1/}

Germination

()

Tips

: Complete

in treatment

No

No. of days

Total Viable

Percents

Percents

Percent

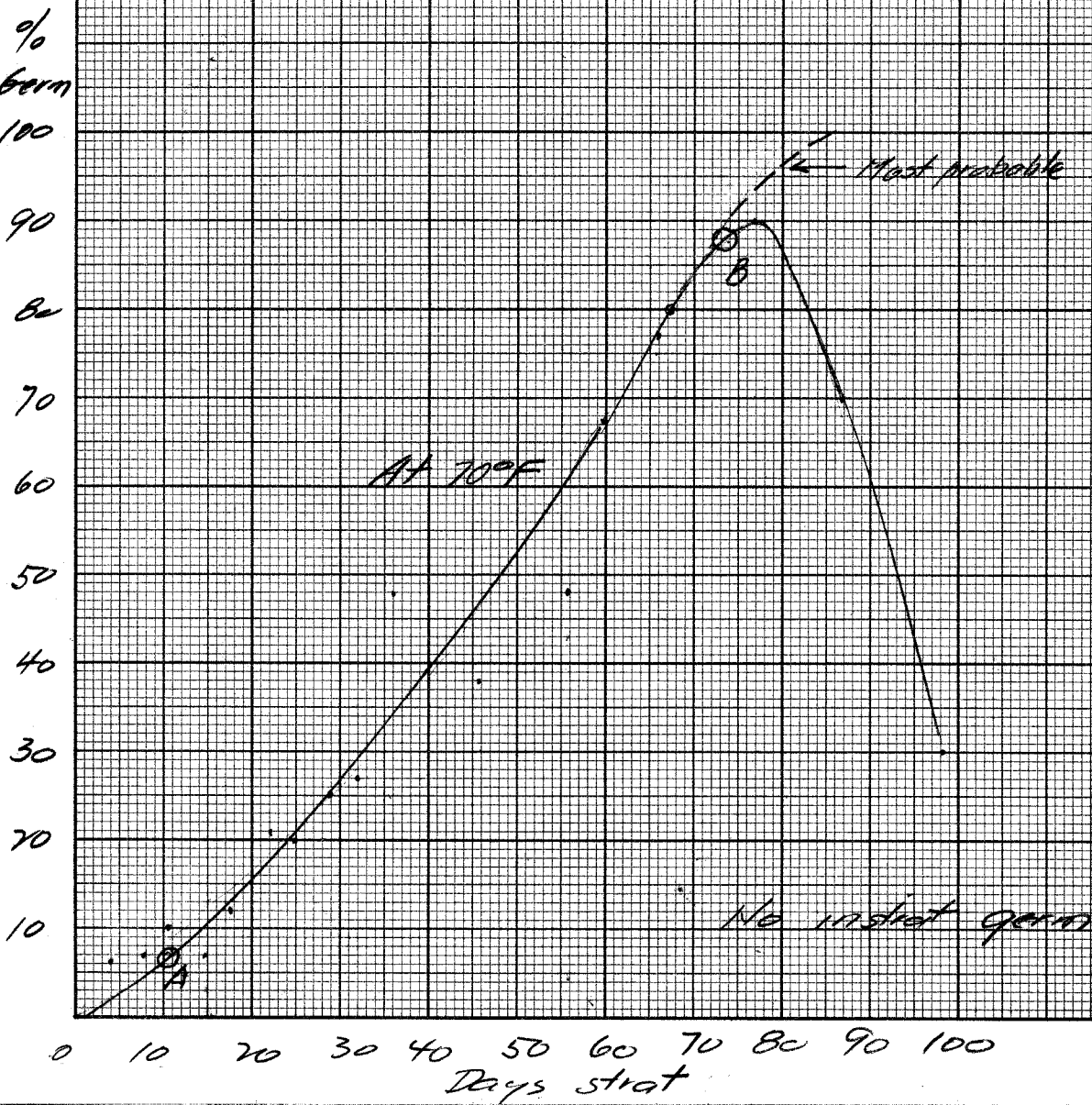
*May 16**21**85**111**Excluded**82 74**23**22**92**111**93 84**27**23**96**111**102 92**31**24**60**111**107 96**June 3**25**103**111**110 99**June 6**26**106**111**111 100*^{1/} In 7 days @ 68°F. Germination complete when root tip through seed coats.

No 23

K+E 20 X 20 TO THE INCH 46 1240
7 X 10 INCHES
MADE IN U.S.A.
KEUFFEL & ESSER CO.Exp No I Strat 78°F Petri Ento. deep freeze Bancroft
1946 Lassen 1945 seed 72% viability

6/1/71

ALH

Note: Seed coats Not frozen (until near end of test, then frozen
2 or 3 times)

Experiment Summary

Exp. **No I**

Treatment

Start (27°F) 28°F Polri

Seed - source, name

Lassen 1945**72% viability?****96% according to these results**

Treatment details

Test Feb. 20 1946 - June 17, 1946

Date

1/56

Germination record

Date

Sample

Treatment
(**Start.**)

No. of seeds

Germination 1/

Germination

No

No. of days

Total Viable

Actual Calc. 77%
PercentTips : Complete
Percent

Percent

Mar 11 SP17

0 Started test

in Entomology deep freeze

Bancroft office

1

4

167

170

128

7

6

0

2

8

214

154

165

11

7

0

3

11

161

116

123

12

10

0

4

15

190

137

146

10

7

0

5

18

195

140

150

17

12

0

6

22

189

136

145

28

21

0

7

25

175

126

135

25

20

0

8

29

170

122

131

30

25

0

9

32

194

140

149

38

27

0

10

36

171

123

132

59

48

0

11

46

196

141

151

53

38

0

12

56

192

138

148

67

48

0

13

66

176

177

136

98

77

0

14

77

182

131

140

117

90

0

15

87

187

135

144

94

70

0

16

98

197

141

152

June 24 182

30

0

July 1 42

T 2956 2127 = 72% viability

1/ In 7 days @ 68°F. Germination complete when root tip through seed coats.

27° Check

ca 2 July 5/46

Germination & viability counts of seed samples taken
from 27° F on June 27 1946

Date	Days	Check 27°	No 4?	SES into 27 Mar. 8, 1946	Notes
June 27	0	684/484	732/520	figures based on count of approx. 1/4 of dish.	
July 5	8	424	508		
		71%	↑ 71% viability		

Exp I 1946 Aeration 33°F

Started Feb 21 1946

Sample		Days	Basis	Ger Start		Ger 105			
		Start		No	%	No	%		
	Feb 21	← 0	Started						52
1	Mar 15	23'	127	0	0	99	78	75	
2	" 22	30'	181	0	0	170	94	82	
3	" 29	37'	247	0	0	243	98	89	
4	Apr 5	44'	143	?	?	142	99	96	
5	" 12	51'	161	56	35	160	99	103	

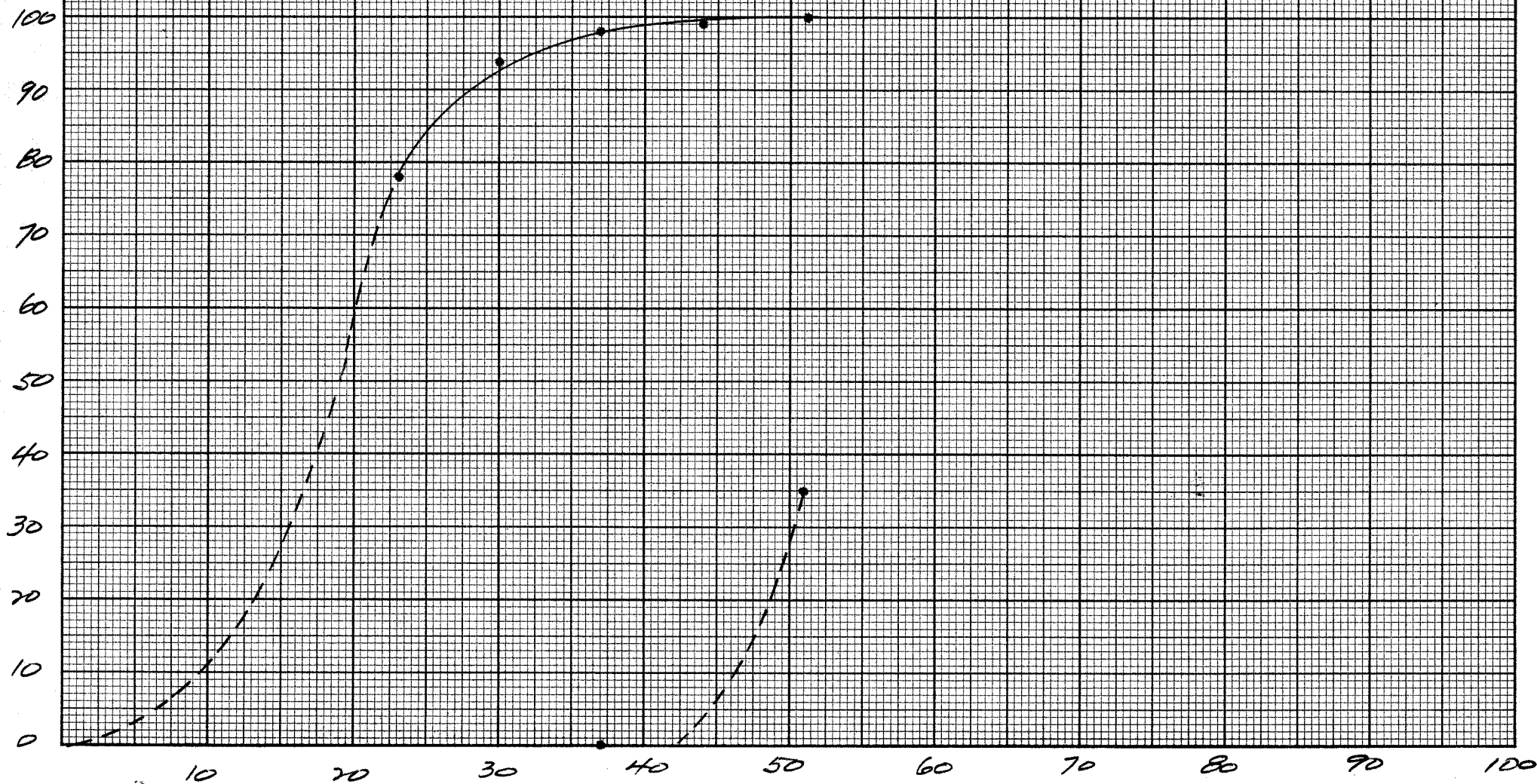
Aeration Exp 1 1946

Seed 33°F

June 9 1969

(Lassen Seed 1945)

germination



Days stratifications at 33°F

KEUFFEL & ESSER CO.

MADE IN U.S.A.

1/2 X 10 INCHES