

Storage in CO_2

Exp F Summary

Stratification in CO_2 at 36°F does not promote germination. Treated 71 days Embryos affected adversely by treatment. Thirty-one percent germination of excised embryos. Stratification of the treated seed at 36°F for 34 days gave 70 germination of healthy seedlings. Low temperature facilitated better use of O_2 by the embryo.

Seeds treated as above but aerated at 41°F for 62 days gave 96 germination of healthy seedling. The seedlings were glossy at start of germination period but gradually normalized over a 22 day germination period in the laboratory.

Wet seeds stored in CO_2 gas are gradually asphyxiated.

Exp F Effect storage in CO₂

1945

(A) Seeds soaked 24 hrs then closed in bottle 280cc containing CO₂ gas and stored at 41°F

Date Treatment

Jan 22 Seeds into CO₂ and 36°F for 71 days

April 3 Seeds out of CO₂ and 36°F and treated as follows

Sample	Days of treatment	A germination @ 36°F	B Petri dish @ 36°F	C P.D @ 16°F	D P.D @ 327	E P.D -327 excised embryo
		Basis % ger	Basis % ger	Basis % ger	Basis % ger	Basis % ger
1	6	56 (20)	66 (45)	174 (36)	173 (7)	76 (96) <small>30 H 43 UH 3 Nests</small>
2	13	52 (81)	43 (73)	174 (71)	173 (14)	The UH embryo
3	34	163 (95)	141 (80)			sprouted but died at about 1/2"

Last treatment results

	Basis % ger	Basis % ger	Basis % ger	Basis % ger	Basis % ger
Healthy	114 (70)	86 (61)	44 (25)	17 (14)	30 (31)
Unhealthy	41	31	80		
No ger	8	32	50		
Total seeds	163	141	174	173	96

✓ based on total number of seeds

Exp F

(B)

Treatment

Days	Jan 22	Seeds into CO ₂ and 36°F
71 in CO ₂ @ 36°F	Apr 3	Seeds out of above and into aeration @ 41°F
62 days of aeration	June 4	Out of aeration @ 41°F
		Basis Germination
		125
	June 4	90% germinated to 1/4" roots but roots glassy
	June 7	96% roots losing glassy appearance
22 days of ger.	June 26	(96%) near normal seedlings; should grow.

Exp (F) Effect of CO₂ on strat.

Store soaked seed @ 44°F in CO₂ for 6 to 8 weeks
 Retriated by aeration
 " " " @ 36°F " " " " " " Jan 22/45

CO₂ storage @ 36°F since Jan 22/45 @ April 3
 780 cc of CO₂
 (174) (123) (76)

Day	A	B	C	D	E
	Aeration 36°F	Retriated 36°F	66°F	377	Faised ger 377
April 3 10 AM	0	started			
" 4	1		0	0	0
" 5 9 AM	2	%	0	0	50 1/8 to 1/4 Hand UT
" 6 10 AM	3 (58)	(68)	2 3/16	0	
" 7 "	4 (56)	(66)	10	0	
" 9 8 AM	6 ← 1st sample (6 days)	(6 days)	20	2	{ 30 H 1-1 1/2" 96% 43 UH 1/8-1/4" 2 did not grow at all
" 11 8 AM	8 1 2	0-0	27	2	1
" 13	10 { 2 H 26 7	7 11	30 H	2	1 ← same as on 9th
" 16	13		34		
" 18	15 { 7 H 46 20	{ 13 H 17 G 45	38 H 75 G	4	3
" 19	16 end	end	55	8	1
	(52)	(43)			
April 16	← 2nd sample (13 days)				
" 16	0	0			
" 18	2 7 13	11 26			
" 20	4 { 18 H 24 G 81	{ 17 H 14 G 73		7	10 8
" 23	T as above end	↑ end	20 { 44 H 50 G	11	14 11
" 28					17 14
May 7			end		end

Exp. F Continued

	143 157V aeration A	149 141V shut Petri B 36°F 44°F	
May 7	out	3rd sample out (34 days)	
" 7	1 35 1/6 26	30 1/6 21	
" 9	3 65 41	33 23	
" 12	5 { 97 H 97 56 UH 10 not ger	{ 69 2 77 40 UH 40 not ger	growing points killed and attacked by fungi
June 4	{ 114 H } 99 41 UH 8 not ger 163 end	{ 86 H } 80 31 UH 32 not ger end.	

June 4
 June 7
 June 16

175 CO₂ @ 36°F from 1/22 to 4/3 - no germination
 90% 1/2 Then aerated at 41°F till June 4
 170 } glassy
 recovery from glassy appear.
 170 96% good seedlings capable of survival