

A NOTE ON EXPERIMENTAL STUDY OF NATURAL RADIATION ON THE VEGETABLE SEEDS IN ANTARCTICA

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Antarctic environment, in addition to extreme cold, is also full of ultraviolet rays during the day time. These two factors, coupled with others, make Antarctic environment a harsh stressful condition, which makes lives very difficult in the region. However, the prevailing environmental stress leaves many facts to be assessed in academic interest in plant sciences. During the 15th Indian expedition to Antarctica, an experiment was therefore, formulated with different varieties of vegetables seeds. In this experiment, tomato, capsicum, chilli, bean, squash lettuce and cabbage produced under normal environment were exposed for 7 to 20 days to natural conditions of Antarctica (**Fig.1**). The minimum and maximum average temperatures were -1.8°C to $+3.0^{\circ}\text{C}$ and



Fig. 1: Treatment of natural radiation on materials of different vegetables

average sun intensity varied from 159.10 to 171.69 cal/cm²/day during the period of exposure (Table-1).

Table 1: Meteorological observations at Maitri

Crop/variety	Exposed date		Total days	Av. Temperature°C		Av. Sun intensity Cal/cm ² /day
	From	To		Max	Min	
Pusa Ruby	03.01.96	21.01.96	17	+3	-1.7	168.70
	23.01.96	31.01.96	08	+2.5	-1.2	666.20
	02.02.96	20.02.96	19	+3.5	1.9	174.20
HT-8	04.01.96	21.01.96	16	+3	-1.7	168.70
	23.01.96	31.01.96	09	+2.5	-1.2	166.20
	02.02.96	20.02.96	19	+3.5	-1.2	174.20
HT-6	03.01.96	21.01.96	16	+3	-1.7	168.70
	23.01.96	31.01.96	09	+2.5	-1.2	166.20
	02.02.96	20.02.96	19	+3.5	-1.9	174.20
Best of all	03.01.96	21.01.96	17	+3	-1.7	168.70
	23.01.96	31.01.96	08	+2.5	-1.2	166.20
	02.02.96	20.02.96	19	+3.5	-1.9	174.20
Capsicum	03.01.96	21.01.96	17	+3	-1.7	171.69
HC-201	23.01.96	31.01.96	08	+2.5	-1.2	166.20
HC-202	02.02.96	20.02.96	19	+3.5	-1.4	174.20
Chilli	03.01.96	21.01.96	17	+2.7	-1.9	170.10
Pusa Jwala	25.01.96	31.01.96	07	+2.5	-1.2	166.20
Chilli Pant	02.02.96	20.02.96	19	+3.5	-1.9	174.20
C-1						
Bean	03.01.96	21.01.96	17	+3	-1.7	168.70
Pusa	01.02.96	22.02.96	20	+3.5	-1.9	174.20
Contender	-	-	-	-	-	-
Pusa Parvati	-	-	-	-	-	-
VL-Baumi	-	-	-	-	-	-
Squash	03.01.96	21.01.96	17	+3	-1.7	168.70
Australian green	01.02.96	21.02.96	20	+3.5	-1.9	174.20
DARL Sel						
Lettuce	05.01.96	23.01.96	19	+2.1	-1.8	159.10
Cabbage	01.02.96	21.01.96	20	+3.5	-1.9	174.20
Cross type						

The objectives of the experiment were:

1. To assess the effect of ultraviolet irradiation on genetic properties of different vegetables.
2. To assess the effect of cold treatment on various physiological processes.
3. To develop the lines for different desirable traits specially cold tolerance, disease resistance and field-adaptability.