

A comparison of the growth habit and production of rogue and normal
tomato plants.

by

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Introduction.

Many varieties of tomato tend to produce some plants which show abnormalities and these are variously known as rogues. They differ from normal plants by having very short internodes and smaller leaves with fewer segments. The tendency for side-shoots to develop early gives a feathery appearance and, most important of all, the first truss gives sterile flowers and later trusses yield only a few small fruits.

Summary of the literature.

It was found that temperatures during the time from sowing until the cotyledons open out affected the number of rogues produced. The lower the day and night germination temperature, the lower the percentage of rogues (Anonymous, Tomatoes Bull, 77, page 21). Effects of temperature on the production of rogue plants in the variety Ailsa Craig are demonstrated in table 1.

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1. *Chlorophyll a* and *Chlorophyll b* were determined by the method of Arar and Collins (1971) using a Shimadzu 1601 UV-Visible Spectrophotometer. The concentration of chlorophyll was expressed in $\mu\text{g mL}^{-1}$.

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Table 1. Effect of temperature on the production of rogue plants in the variety Ailsa Craig. The seedlings were kept at the controlled temperatures until the cotyledons had expanded.

The day period was 14 hours and the night 10 hours (from Calvert 1955).

Treatment	temperature		Rogues (per cent.)
	day	night	
1	26 ° C	26 ° C	12,9
2	26 ° C	12,5° C	7,6
3	12,5 ° C	26 ° C	8,0
4	12,5 ° C	12,5° C	1,7

The effect of the day length and light intensity on the production of rogue plants is shown in table 2 (A. Calvert 1955).

Table 2. Showing the effect on rogue production of reduced day-length and light intensity.

Variety: Ailsa Craig.

Temperature: 30° C seed sown: 11th June - treatments continued to: 19th June (from Calvert 1955).

Day length	Light intensity	Number of plants	Rogues
16 hours	normal	91	6,6 percent
7 hours	normal	185	15,6 percent
16 hours	half normal	93	12,9 percent
7 hours	half normal	170	11,7 percent

$\mathbb{R}^n$ is a vector space over $\mathbb{R}$ with the usual addition and scalar multiplication. The standard basis $\{e_1, \dots, e_n\}$ is defined by $e_i = (0, \dots, 1, \dots, 0)$ where the 1 is in the i -th position. The dual basis $\{e^1, \dots, e^n\}$ is defined by $e^i(e_j) = \delta_{ij}$ where δ_{ij} is the Kronecker delta. The metric tensor g is defined by $g(X, Y) = \sum_{i,j} g_{ij} X^i Y^j$ where $g_{ij} = g(e_i, e_j)$. The inverse metric tensor g^{-1} is defined by $g^{-1}(X, Y) = \sum_{i,j} g^{ij} X^i Y^j$ where $g^{ij} = g^{-1}(e_i, e_j)$.

$$\begin{aligned}
 & \text{Let } X = X^i e_i \text{ and } Y = Y^j e_j \text{ be two vectors in } \mathbb{R}^n. \text{ Then the metric tensor } g \text{ is defined by} \\
 & g(X, Y) = \sum_{i,j} g_{ij} X^i Y^j \quad \text{where } g_{ij} = g(e_i, e_j). \\
 & \text{The inverse metric tensor } g^{-1} \text{ is defined by} \\
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 & \text{The metric tensor } g \text{ and the inverse metric tensor } g^{-1} \text{ are related by} \\
 & g_{ij} g^{jk} = \delta_{ik} \quad \text{where } \delta_{ik} \text{ is the Kronecker delta.}
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 \end{aligned}$$

The rogue plants have less production than normal ones. Therefore it is important to know the rogue plants in an early stage and discard them. When the plants have five or six leaves, recognition is easy but, at that stage, labour and space have been wasted on the care of worthless plants. With practice recognition is possible when the first true leaf appears. At this stage a normal seedling has one well-developed leaf with a large terminal lobe and two or three very small segments near the stalk. A rogue of the same age will have two equally developed leaves each with three lobes about equal in size. (Anonymous Tomatoes Bull. 77). On the other hand, as a general rule, rogue seedlings begin to produce their first two pairs of rough or true leaves more quickly than normal plants, and when 7 - 10 days old they can be recognized by the somewhat crossshaped formation of these two pairs of leaves. After a fortnight or so rogues cannot be mistaken even by the inexperienced eye since they are more dwarf and more "bunchy" in growth than the surrounding seedlings (Allerton, 1957).

Materials.

An experiment was set up to study differences between normal and rogue plants. Twelve normal and **twelve rogue** plants were chosen from the variety Craigrass. This is a rather new variety (Ailsa Craig green back type), which produced a very high % rogues in the Netherlands this season. The seedlings were planted in the southern part of the greenhouse, in an outside row running from east to west.

Methods.

All of the experimental plants were given the same treatment. The seeds were sown in flat boxes on the 14th of November, and germinated by the 20th of November. On the 22th of November, they were first transplanted into soil blocks, on the 13th of December they were again transplanted into plastic pots. On the 11th of Januari they were planted out at distances of 80 x 45 cm.

Results of the experiment.

The growth and the culture treatments were recorded daily. Weekly observations were also made on the development of flowers and fruits on each plant. The results demonstrate that normal plants are more fertile than rogues, but that the rogue plants have greater vegetative growth than the normal plants.

On the 15th of February the leaves below the first productive trusses were counted. This is shown in table 1. On the rogue plants the first, second and sometimes third trusses were not developed. From the third or fourth truss the rogue plants became fertile.

Table 1. Number of leaves below the first truss with fruits.

Plant no.	1	2	3	4	5	6	7	8	9	10	11	12	mean
Normal pl.	11	12	11	11	11	11	10	10	10	10	11	10	10,6
Rogue pl.	22	19	17	21	18	15	18	17	17	19	16	16	17,9

It can be seen that the rogue plants produced leaf numbers varying from 16 to 22 while the normal plants varied between 10 and 12 leaves. Moreover the numbers of side shoots of the normal and rogue plants until the 17th of April show that the rogue plants have much more side shoots than the normal ones (table 2).

Table 2. Number of side shoots on the 17th of April.

Plant no.	1	2	3	4	5	6	7	8	9	10	11	12	mean
Normal pl.	25	22	19	22	28	24	19	23	21	29	24	25	23,4
Rogue pl.	42	35	38	38	34	38	31	39	41	37	41	33	37,2

The first part of the paper is devoted to the study of the properties of the function $f(x)$ defined by the equation $f(x) = \int_0^x f(t) dt$. It is shown that $f(x)$ is a constant function, and its value is determined by the initial condition $f(0) = 1$. The second part of the paper is devoted to the study of the properties of the function $g(x)$ defined by the equation $g(x) = \int_0^x g(t) dt$. It is shown that $g(x)$ is a constant function, and its value is determined by the initial condition $g(0) = 1$.

The third part of the paper is devoted to the study of the properties of the function $h(x)$ defined by the equation $h(x) = \int_0^x h(t) dt$. It is shown that $h(x)$ is a constant function, and its value is determined by the initial condition $h(0) = 1$. The fourth part of the paper is devoted to the study of the properties of the function $k(x)$ defined by the equation $k(x) = \int_0^x k(t) dt$. It is shown that $k(x)$ is a constant function, and its value is determined by the initial condition $k(0) = 1$.

The fifth part of the paper is devoted to the study of the properties of the function $l(x)$ defined by the equation $l(x) = \int_0^x l(t) dt$. It is shown that $l(x)$ is a constant function, and its value is determined by the initial condition $l(0) = 1$. The sixth part of the paper is devoted to the study of the properties of the function $m(x)$ defined by the equation $m(x) = \int_0^x m(t) dt$. It is shown that $m(x)$ is a constant function, and its value is determined by the initial condition $m(0) = 1$.

The seventh part of the paper is devoted to the study of the properties of the function $n(x)$ defined by the equation $n(x) = \int_0^x n(t) dt$. It is shown that $n(x)$ is a constant function, and its value is determined by the initial condition $n(0) = 1$. The eighth part of the paper is devoted to the study of the properties of the function $o(x)$ defined by the equation $o(x) = \int_0^x o(t) dt$. It is shown that $o(x)$ is a constant function, and its value is determined by the initial condition $o(0) = 1$.

The ninth part of the paper is devoted to the study of the properties of the function $p(x)$ defined by the equation $p(x) = \int_0^x p(t) dt$. It is shown that $p(x)$ is a constant function, and its value is determined by the initial condition $p(0) = 1$. The tenth part of the paper is devoted to the study of the properties of the function $q(x)$ defined by the equation $q(x) = \int_0^x q(t) dt$. It is shown that $q(x)$ is a constant function, and its value is determined by the initial condition $q(0) = 1$.

When the plants reach the overhead wires, their tops were cut, and the dates recorded (table 3).

Table 3. Dates on which the tops of the plants reached the supporting wires.

Plant no.	1	2	3	4	5	6	7	8	9	10	11	12
Normal pl.	4.IV	4.IV	4.IV	3.IV	4.IV	3.IV	4.IV	4.IV	4.IV	4.IV	4.IV	4.IV
Rogue pl.	4.IV	4.IV	5.IV	9.IV	9.IV	4.IV	9.IV	9.IV	9.IV	9.IV	9.IV	4.IV

Another difference which has been observed when the plants had grown is that the leaves of the rogues are abnormally dark in colour, and while the leaves of the normal plants are arranged alternately, those of the rogues are mostly abnormal in that way that they have an irregular arrangement.

Furthermore, the higher trusses from the 4th trusses of the rogue plants were more branchy.

As a result of the branching of the higher trusses on the rogue plants, they have more flowers than the normal plants later on.

As for flowering, fruit-setting and fruit-ripening, however, the normal plants are earlier than the rogues (table 4, 5, 6).

Table 4. The dates of the first flowering.

plant no.	1	2	3	4	5	6	7	8	9	10	11	12
Normal pl.	24.II	27.II	27.II	24.II	24.II	22.II	20.II	27.II	20.II	24.II	22.II	27.II
Rogue pl.	28.II	27.II	27.II	27.II	27.II	27.II	24.II	27.II	27.II	27.II	24.II	27.II

Table 5. The dates of the first fruit setting (fruit diameter 1 cm).

Plant no.	1	2	3	4	5	6	7	8	9	10	11	12
Normal pl.	6.III	28. II	7.III	6.III	6.III	6.III	28. II	6.III	3.III	3.III	2.III	6.III
Rogue pl.	7.III	6.III	6.III	6.III	6.III	6.III	6.III	6.III	6.III	7.III	7.III	7.III

Table 6. The dates of the first fruit ripening.

Plant no.	1	2	3	4	5	6	7	8	9	10	11	12
Normal pl.	28.IV	28.IV	28.IV	24.IV	24.IV	28.IV	24.IV	24.IV	24.IV	28.IV	24.IV	28.IV
Rogue pl.	2. V	28.IV	28.IV	28.IV	2. V	2. V	28.IV	28.IV	2. V	2. V	28.IV	28.IV

Despite the excessive flowering of the rogues the percentage of fruit-setting as well as fruit quality was lower. Monthly totals of the number of flowers, set fruits, and ripe fruits are shown in table 7, 8, 9.

$$x^2 + y^2 = 1 \quad (1)$$

Page 1

1. The first part of the problem is to find the area of the region bounded by the curve $y = \sqrt{1-x^2}$ and the line $y = x$ in the first quadrant.

$$y = \sqrt{1-x^2} \quad (2)$$

The second part of the problem is to find the area of the region bounded by the curve $y = \sqrt{1-x^2}$ and the line $y = x$ in the second quadrant.

$$y = \sqrt{1-x^2} \quad (3)$$

The third part of the problem is to find the area of the region bounded by the curve $y = \sqrt{1-x^2}$ and the line $y = x$ in the third quadrant.

$$y = \sqrt{1-x^2} \quad (4)$$

The fourth part of the problem is to find the area of the region bounded by the curve $y = \sqrt{1-x^2}$ and the line $y = x$ in the fourth quadrant.

$$y = \sqrt{1-x^2} \quad (5)$$

2. The first part of the problem is to find the area of the region bounded by the curve $y = \sqrt{1-x^2}$ and the line $y = x$ in the first quadrant.

$$y = \sqrt{1-x^2} \quad (6)$$

The second part of the problem is to find the area of the region bounded by the curve $y = \sqrt{1-x^2}$ and the line $y = x$ in the second quadrant.

$$y = \sqrt{1-x^2} \quad (7)$$

The third part of the problem is to find the area of the region bounded by the curve $y = \sqrt{1-x^2}$ and the line $y = x$ in the third quadrant.

$$y = \sqrt{1-x^2} \quad (8)$$

The fourth part of the problem is to find the area of the region bounded by the curve $y = \sqrt{1-x^2}$ and the line $y = x$ in the fourth quadrant.

$$y = \sqrt{1-x^2} \quad (9)$$

$$y = \sqrt{1-x^2} \quad (10)$$

$$y = \sqrt{1-x^2} \quad (11)$$

Table 7. Monthly totals of the number of flowers.

Plant no.		1	2	3	4	5	6	7	8	9	10	11	12	mean
February	N	8	7	11	9	7	8	7	7	9	10	10	10	8,5
	R	1	2	7	-	3	4	-	4	2	3	6	6	3,8
March	N	44	41	50	46	41	46	49	38	39	38	45	44	43,4
	R	38	42	50	-	51	51	-	47	58	39	63	44	48,3
April	N	14	20	45	22	41	20	28	27	21	21	18	18	24,6
	R	54	41	59	-	25	49	-	36	36	45	85	21	45,1
May	N	-	-	-	-	2	-	-	1	-	-	-	-	-
	R	-	-	-	-	1	-	-	-	-	1	-	-	-

Table 8. Monthly totals of the number of well set fruits.

Plant no.		1	2	3	4	5	6	7	8	9	10	11	12	mean
February	N	-	1	-	-	-	-	1	-	-	-	-	-	-
	R	-	-	-	-	-	-	-	-	-	-	-	-	-
March	N	37	36	33	38	38	39	29	36	36	31	43	34	35,8
	R	20	27	40	-	36	31	-	36	33	26	41	33	32,3
April	N	16	19	32	14	18	17	24	24	8	14	21	29	19,7
	R	36	31	32	-	17	33	-	17	15	23	41	22	26,7
May	N	7	2	31	15	23	8	9	16	14	7	6	1	11,6
	R	18	10	4	-	17	4	-	5	23	10	9	0	10,0

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100									

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340	341	342	343	344	345	346	347	348	349	350	351	352	353	354	355	356	357	358	359	360	361	362	363	364	365	366	367	368	369	370	371	372	373	374	375	376	377	378	379	380	381	382	383	384	385	386	387	388	389	390	391	392	393	394	395	396	397	398	399	400	401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420	421	422	423	424	425	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459	460	461	462	463	464	465	466
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1. The first step is to identify the problem or question that needs to be answered. This involves understanding the context and the specific requirements of the task.

Table 9. Monthly totals of the number of ripe fruits.

Plant no.		1	2	3	4	5	6	7	8	9	10	11	12	mean
April	N	2	4	1	5	3	2	2	2	6	2	7	3	3,2
	R	0	1	3	-	0	0	-	1	0	0	4	2	1,1
May	N	40	37	51	36	33	39	33	42	34	37	35	42	38,2
	R	29	28	57	-	40	31	-	34	33	28	35	37	35,2
June	N	16	15	37	24	25	14	17	16	11	10	17	11	17,7
	R	24	24	28	-	21	24	-	14	25	25	38	15	23,8

Totals of the number of flowers and well set fruits on each truss of the rogue and normal plants are shown in table 10, 11, 12, 13.

Table 10. Totals of the number of flowers on each truss of the normal plants.

plant no.	trusses						
	1	2	3	4	5	6	7
1	9	11	11	12	12	11	-
2	10	10	11	13	12	12	-
3	9	11	16	14	25	18	13
4	9	10	13	13	9	11	12
5	7	9	12	12	12	12	27
6	11	12	13	12	13	13	-
7	9	11	11	14	14	14	-
8	13	10	12	13	12	12	12
9	11	12	11	12	12	11	-
10	11	10	12	11	12	4	-
11	5	10	11	13	12	11	11
12	9	11	13	13	13	13	-

Table 11. Totals of the number of well set fruits on each truss of the normal plants.

plant no.	trusses						
	1	2	3	4	5	6	7
1	6	11	11	11	10	11	-
2	10	10	11	11	10	6	-
3	9	11	13	12	21	17	13
4	7	9	11	10	8	11	11
5	5	9	11	10	11	9	24
6	9	11	11	11	10	11	-
7	6	11	10	12	12	12	-
8	10	9	11	12	11	11	12
9	10	10	10	10	9	9	-
10	10	10	11	10	11	-	-
11	4	10	11	13	11	10	11
12	5	11	13	12	13	10	-

1. $\frac{1}{x^2} = x^{-2}$

2. $\frac{1}{x^3} = x^{-3}$

3.

4.

5. $\frac{1}{x^4} = x^{-4}$

6. $\frac{1}{x^5} = x^{-5}$

7. $\frac{1}{x^6} = x^{-6}$

8. $\frac{1}{x^7} = x^{-7}$

9. $\frac{1}{x^8} = x^{-8}$

10. $\frac{1}{x^9} = x^{-9}$

11. $\frac{1}{x^{10}} = x^{-10}$

12. $\frac{1}{x^{11}} = x^{-11}$

13. $\frac{1}{x^{12}} = x^{-12}$

14. $\frac{1}{x^{13}} = x^{-13}$

15. $\frac{1}{x^{14}} = x^{-14}$

16. $\frac{1}{x^{15}} = x^{-15}$

17. $\frac{1}{x^{16}} = x^{-16}$

Table 12. Totals of the number of flowers on each truss of the rogue plants.

plant no.	trusses										
	1	2	3	4	5	6	7	8	9	10	11
1	0	0	8	12	9	9	23	16	16	0	0
2	0	0	8	9	9	15	21	9	14	0	0
3	0	11	8	14	9	10	22	26	16	0	0
4	-	-	-	-	-	-	-	-	-	-	-
5	0	0	8	8	8	23	9	11	13	0	0
6	0	0	6	8	23	24	25	18	0	0	0
7	-	-	-	-	-	-	-	-	-	-	-
8	0	0	6	13	8	13	8	21	8	8	2
9	0	0	-	7	19	13	21	13	10	13	0
10	0	0	7	8	9	16	24	8	16	0	0
11	0	4	8	9	23	9	11	19	37	27	7
12	0	12	7	8	16	7	13	8			

Table 13. Totals of the number of well set fruits on each truss of the rogue plants.

plant no.	trusses										
	1	2	3	4	5	6	7	8	9	10	11
1	0	0	8	10	7	9	17	9	14	0	0
2	0	0	8	9	9	15	13	5	9	0	0
3	0	9	8	13	9	9	18	7	3	0	0
4	-	-	-	-	-	-	-	-	-	-	-
5	0	0	8	8	8	23	8	5	10	0	0
6	0	0	5	8	18	15	16	6	0	0	0
7	-	-	-	-	-	-	-	-	-	-	-
8	0	0	4	13	8	12	6	10	1	5	1
9	0	0		7	16	11	14	5	7	11	0
10	0	0	7	8	9	15	6	6	8	0	0
11	0	0	8	9	21	9	19	13	14	5	2
12	0	12	6	8	12	7	7	3	0	0	0

As a result normal plants are more productive than the rogue plants, and their fruit quality is much better (table 14).

Table 14. Monthly totals of number and weight (in grams) of harvested fruits per normal plant.

plant no.		1	2	3	4	5	6	7	8	9	10	11	12	Total
April	gram	150	265	125	335	190	140	170	150	485	105	450	265	2830
	number	2	4	1	5	3	2	2	2	6	2	7	3	39
May	gram	3360	2930	3605	2500	2630	3515	2670	2990	2650	3330	2375	3605	36160
	number	40	37	51	36	33	39	33	42	34	37	35	42	459
June	gram	1215	1110	1580	1325	1920	775	1565	1025	590	640	1320	670	14035
	number	16	15	37	24	25	14	17	16	11	10	17	11	213
Total	gram	4725	4305	5310	4160	4740	4430	4405	4165	3725	4075	4145	4840	53025
	number	58	56	89	65	61	55	52	60	51	49	59	56	711

$$f(x) = \frac{1}{2} \ln \left(\frac{1+x}{1-x} \right) \quad \text{for } |x| < 1$$

10

$$f(x) = \frac{1}{2} \ln \left(\frac{1+x}{1-x} \right)$$

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Table 15. Monthly totals of number and weight (in grams) of harvested fruits per rogue plant.

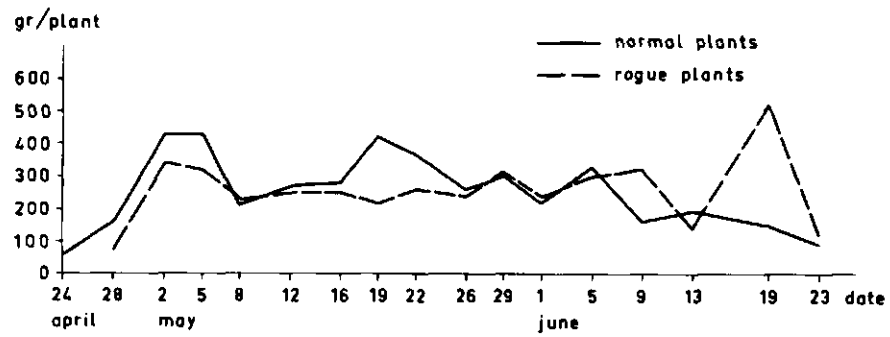
plant no.		1	2	3	4 ^x	5	6	7 ^x	8	9	10	11		
April	gram	0	85	240	-	0	0	-	55	0	0	245	145	770
	number	0	1	3	-	0	0	-	1	0	0	4	2	11
May	gram	2320	2280	2785	-	3175	2370	-	2235	2500	2185	2325	2540	24715
	number	29	30	44	-	40	31	-	34	33	28	35	37	341
June	gram	1605	2080	1885	-	1525	1670	-	1020	1635	1910	2365	1005	16700
	number	24	24	28	-	21	24	-	14	25	25	38	15	238
Total	gram	3925	4445	4910	-	4700	4040	-	3310	4135	4095	4935	3690	42185
	number	53	55	75	-	61	55	-	49	58	53	77	54	590

^xThese plants are not harvested because they were lost.

Mean yield per plant for each harvest is shown in graph. 1.

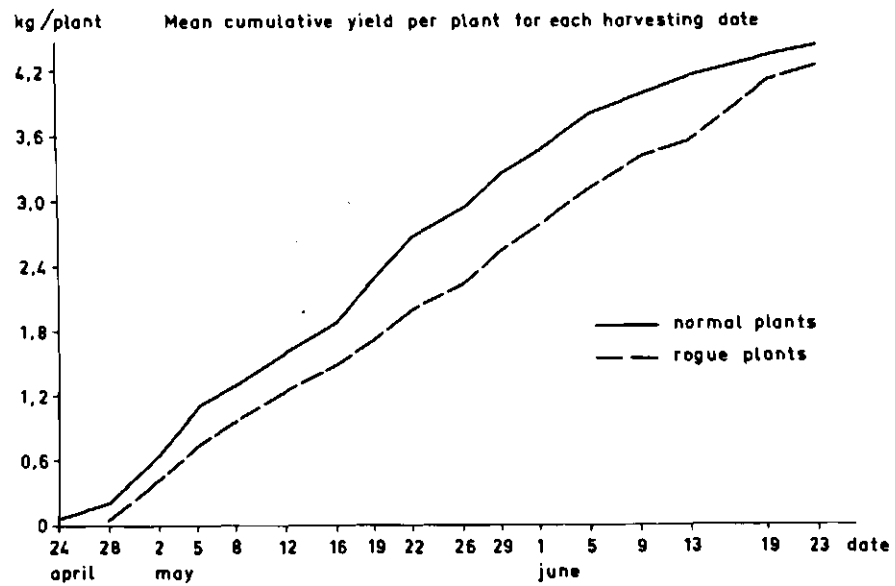
Mean cumulative yield per plant for each harvesting date is shown in graph. 2.

Mean yield per plant for each harvesting date



67.198.

Graph. 1



67.199.

Graph. 2

Monthly mean of first and second quality yield in grams of normal and rogue plants are shown in table 16.

Table 16. Monthly mean of first and second quality yield in grams per normal and rogue plant.

Months	normal plants(in grams)		rogue plant(in grams)	
	first quality	second quality	first quality	second quality
April	235,83		77,00	
May	2367,00	646,25	2045,00	426,00
June	572,50	597,00	600,00	1070,00
Total	3175,33	1243,25	2722,00	1496,00
Percent.	71,9 %	28,1 %	64,5 %	33,5 %

Discussion:

As it is seen on the tables above, there are rather big differences in earliness, quality and productivity between rogues and normal plants. Normal plants are earlier than rogues about 3 - 4 days, therefore they have 400 gr more production per plant than the others in the first two months. Early in the season when prices are high, it is possible to get more proceeds from normal ones. During the same period, normal plants have 480,83 gr per plant more first quality production. This number can be very important for a large culture.

On the other hand, in Turkey, it is possible to buy fresh tomatoes from outside culture between May and January. After this season of heavy production there is a great shortage, which makes prices very high. Therefore it would be very profitable for a grower, to obtain a good yield in this period.

the first of these is the fact that the α and β rays are not deflected by a magnetic field, and the γ rays are not deflected by an electric field.

The second of these is the fact that the α and β rays are deflected by a magnetic field, and the γ rays are not deflected by an electric field.

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The thirteenth of these is the fact that the α and β rays

are deflected by a magnetic field, and the γ rays are not deflected by an electric field.

The fourteenth of these is the fact that the α and β rays

are deflected by a magnetic field, and the γ rays are not deflected by an electric field.

The fifteenth of these is

However, in this time tomatoes must be raised in the greenhouse, and it is the high cost of building that makes it necessary for the grower to get good returns. So it is important to discard rogues in the culture of tomatoes.

Reference.

1. Allerton F.W. - Tomato Growing - Faber and Faber Limited 24 Russell Square London 1957.
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3. Anonymous - Tomatoes - Ministry of Agriculture, Fisheries and Food - 1962 - Bulletin no. 77.

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