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Tomatoes for Southeastern Idaho

Tomatoes are one of the most popular vegetables grown in home gardens. In southeastern Idaho where the summers are cool, many gardeners have little success in producing vine ripe fruits. Failure of tomatoes in home gardens to produce ripe fruit is largely due to the use of unadapted varieties.

To identify tomato varieties suitable for gardens in southeastern Idaho, the University of Idaho Research and Extension Center at Aberdeen carried out a trial of early varieties during the summer of 1976. Seed was provided by seed companies listed on the next page, and by Prof. W.R. Simpson, U-I plant pathologist, Research and Extension Center, Parma, and Dr. Mark W. Martin, USDA horticulturist, Irrigated Agricultural Research and Extension Center, Prosser, WA.

Seeds were started in the greenhouse on April 7, and the plants were transplanted to the field on May 27. The tomato trial was in the field 103 days from transplanting to the last date of harvest.

Heat units were recorded from June 4 to September 3 because this period conforms to U.S. Weather Bureau reports. The heat accumulation was 1417 degree days on a 50°F base. This was considerably less than the normal of 1627 degree days over the same period. The difference was a substantial deterrent to the growth and maturation of tomatoes.

The tomato trial was planted in the "wind shadow" of a large laboratory building and this apparently provided enough air mixing to prevent more than minor damage from 30-degree frosts on June 14 and 26. No attempt was made to provide protection from the first fall frost on September 8, so the harvest of September 7 was final.

Knowledgeable gardeners in southeastern Idaho will protect their tomatoes by covering to extend the harvest season. Early frosts in southeastern Idaho are often followed by long periods of frost-free Indian summer, during which tomatoes ripen nicely.

Data obtained from the trial are shown in the table. In interpreting these data, the performance index (PI) in the right hand column of the table indicates that the most satisfactory performance occurs at approximately PI 9.0 or higher. Because heat accumulation at Aberdeen during this trial was approximately the same as that normally recorded at Idaho Falls, tomatoes with a PI of 9.0 or above would probably be satisfactory in that area most years. In this trial, 14 varieties had a PI of 9.0 or higher. At Aberdeen, varieties with a PI of 4.0 or above may be satisfactory in average years. Gardens in urban neighborhoods may be protected by structures and plantings and may benefit by slightly more heat accumulation than gardens in the country side. Because of this increased heat accumulation, some urban gardeners may be able to grow varieties not generally adapted to the area.

Tomato vine sizes and type are important to gardeners because they influence cultural practices such as plant spacing, trellising or staking. There are two extreme vine types. One is called *determinant* because the flowers are born terminally on the branches and fruit setting stops the growth of that branch. This makes a compact plant on which the fruits are quite closely spaced at ripening time. Many of the early tomatoes are determinant vine type.

In this trial Sub-Arctic Midi, Sub-Arctic Early, Tanana, Cold Set, Sub-Arctic Cherry, Sub-Arctic Plenty and Sub-Arctic are determinant vine type. Generally these varieties require only 4 or 5 square feet of space to grow, and the fruits tend to be fairly well supported without direct contact with the ground. Therefore, fruit rots induced by contact with the soil aren't much of a problem. These varieties are not suitable for trellising or staking.

The other type is called *indeterminant* because the flowers are born laterally and the stem can continue to elongate throughout the growing season. The indeterminant type includes an array of vine characteristics. Many of the newer varieties in this class are plants with short internodes. These tend to be compact, producing large amounts of fruit on relatively small plants. Among these are varieties like Starfire, Red Lode, Starshot, Roza, Early Bunch, Superstar, Hybrid Spring Set, Moira, Hybrid Early Salad, P-109, Sunset and Ottawa 78.

These varieties are not adapted to staking. However, they could benefit by support such as trellising to keep fruits off the ground, without restricting growth to a single main stem as in staking. Growing these types through a plastic mulch in the garden also helps keep the fruits from contacting the ground. This is one of the best ways to grow these compact-type tomato varieties in home gardens. The compact varieties generally require from 5 to 7 square feet per plant for good growth development.

Some indeterminant types have vines with long internodes. They require considerable space, about 9 square feet if grown without support. These types are best grown as staked or trellised tomatoes in home

gardens. If they are staked and pruned to a single stem, about 6 square feet of space is required per plant.

In this trial, the varieties exhibiting this extreme vine elongation were Early Girl Hybrid, Paul Bunyan, Big Early Hybrid, Hy-Top, Faribo Springtime, Saladmaster, Big Girl Hyb. VF, Burpeeana Early Hybrid, I.P.B. and the observation varieties Pixie Hybrid, Fantastic, Morton Hybrid, Moscow and Sioux.

Two of these indeterminant types, Pixie Hybrid and I.P.B., are relatively small sized and require only about 5 square feet for Pixie and 6 square feet for I.P.B. if not staked. If staked, the space requirement is about 2/3 of unstaked plants. The principal advantages of staking plants are larger average fruit size, better ripening of fruits and support of fruits above the soil surface. This procedure may or may not be of benefit to the gardener depending upon the length of season in the area where the tomatoes are grown and the amount of time the gardener can spend in the staking process.

1976 TOMATO TRIAL DATA

Variety	Source	First ripe fruit	Fruit per plant	Average fruit weight (oz)	Ounces per plant	Performance index (PI*)
Hyb. Early Salad	Burgess	8-3	82.3	0.7	57.6	21.3
Sub-Arctic Cherry	Mountain	7-26	70.6	0.4	28.2	12.7
Sub-Arctic Midi	Mountain	8-3	43.3	1.2	52.0	19.2
Sub-Arctic Plenty	Mountain	7-26	43.1	0.7	30.2	13.6
Faribo Springtime	Farmer	8-3	36.4	1.3	37.7	13.9
Sub-Arctic	Gurney	7-26	35.7	0.8	36.5	16.4
Sub-Arctic Early	Mountain	7-26	33.9	0.7	23.7	10.7
I.P.B.	Mountain	7-23	30.8	1.1	33.9	16.3
Tanana	Farmer	8-3	24.3	1.0	24.3	9.0
Rocket	Mountain	7-26	23.4	1.8	42.1	18.9
Pixie Hyb.	**	8-11	19.8	1.6	31.7	9.2
Fantastic	Poc. Ghse.	8-25	19.0	1.9	36.1	5.4
Early Girl Hyb.	Burpee	8-11	14.0	3.3	36.5	10.6
Cold Set	Gurney	7-30	13.3	2.0	26.6	10.9
Starshot	Stokes	8-11	11.7	2.2	25.7	7.5
Saladmaster	Martin	8-17	11.5	1.5	17.3	4.0
Hyb. Spring Set VF	Burgess	8-11	10.8	3.2	34.6	10.0
Burpeeana Early Hyb.	Burpee	8-11	9.4	2.9	27.3	7.9
Sunset	Farmer	8-17	8.5	3.8	32.3	7.4
Golden Delight	**	8-27	6.9	3.8	26.2	3.4
Superstar	Parma	8-11	6.3	3.1	19.5	5.7
Sunnybrook Earliana	Burpee	8-11	5.9	2.8	16.5	4.8
Early Bunch	Martin	8-11	5.7	2.9	16.5	4.8
Moira	Stokes	8-27	5.5	2.9	16.0	2.1
Hy-Top	Gurney	8-17	5.5	3.9	21.5	4.9
Red Lode	Parma	8-17	5.1	4.2	21.4	4.9
Ottawa 78	Stokes	8-17	3.7	2.7	10.0	2.3
Morton Hyb.	**	8-27	3.4	3.5	11.9	1.5
Earliana	**	8-27	3.0	–	–	0
Ultra Girl VFN	Stokes	8-17	2.9	4.0	11.6	2.7
Starfire	Stokes	8-11	2.9	3.9	11.3	3.3
P-109	Parma	8-11	2.8	2.6	7.3	2.1
Moscow	**	9-2	2.6	–	–	0
Veebrite	Stokes	8-27	2.5	2.6	6.5	0.8
Big Early Hyb.	Burpee	8-17	2.3	3.6	8.3	1.9
Sioux	**	8-27	1.6	4.0	6.4	0.8
Roza	Martin	8-30	1.5	3.7	5.6	0.6
Paul Bunyan	Farmer	8-17	1.5	3.6	5.4	1.2
Payette	**	9-2	0.8	–	–	0
Better Boy VFN	Stokes	9-2	0.2	4.0	0.8	0.1
Big Girl Hyb. VF	Burpee	none	–	–	–	0

*$\frac{\text{Ounces fruit per plant} \times \text{Length of harvest period in days}}{100}$

**Observation plots of five plants only, from local plant sources.

The following companies supplied seed samples for this trial: Burgess Seed & Plant Co., P.O. Box 3000, Galesburg, MI 49053; W. Atlee Burpee Seed Co., Box 748, Riverside, CA 92502; Farmer Seed & Nursery, Faribault, MN 55021; Gurney Seed & Nursery Co., Yankton, SD 57078; Mountain Seed & Nursery Co., Rt. 1, Box 271, Moscow, ID 83843; Stokes Seed Co., Box 548, Buffalo, NY 14200.

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