GEORGESON BOTANICAL GARDEN

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Early Tomatoes Using Wallo'Water® and Kozy Coat® Season Extenders?

by
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I have to admit, the first time I saw water filled 'hot caps' (Wallo'Water®) in a garden catalog I thought, 'looks interesting, should work, but who wants to fill all those little tubes with water?' I should add, I am not the fan of tomatoes that most people are. However, I can begin to understand the desire to reduce the wait for that first luscious, juicy, red ripe tomato to come out of the garden. Nothing that anyone could grow anywhere in the world could possibly taste as good, and after a long interior winter it is so painfully hard to have to wait so long for that first tomato.

Gardeners have used water filled teepee season extenders like Wallo'Water® and Kozy Coat® in more temperate climates to plant tomatoes and other frost sensitive vegetables up to two months prior to the normal last frost date in order to insure the earliest possible harvest and increase yields. Manufacturers recommend placing water filled season extenders over the soil a full 8 weeks early in order to derive the maximum benefit. Plants are then transplanted inside the water filled teepees after they have been in place long enough to warm the soil (approximately 1 week if placed a full 8 weeks prior to the normal last frost date, less if later). In Fairbanks the normal last frost date is June 1st. However, on April 6th, 8 weeks prior to June 1st, the average daily high, mean and low temperatures are still only 38, 25 and 13ºF respectively and the average snow depth is about 13 inches. Obviously, in our area, it will be necessary to adjust the earliest date for setting out the season extenders.

In 2005, we initiated a three-year study to determine if we could use earlier planting dates to increase the yield and earliness of field grown tomatoes. We set up our study using two different types of season extenders; Wallo'Water® and Kozy Coat® are nearly identical except that Wallo'Water is made with translucent green plastic and Kozy Coat is made of translucent red plastic. The manufacturer of Kozy Coats® claims that the red color of the plastic can produce stockier plants and increased yields. In addition, we used both season extenders on bare soil and infrared transparent (IRT) mulch to see if the additional soil warming potential of IRT mulch would further increase yields.

Season extenders were placed over bare soil as soon as the snow had melted and soil had dried enough to be walked on (Apr 27, 2005; May 2, 2006) and tomatoes were planted two days later to allow season extenders to warm the soil. Tomatoes in the season extender + IRT mulch treatments could not be planted until the soil had dried sufficiently to allow rototilling and placement of IRT mulch and were planted on May 6, 2006 and 13 May 13, 2006. Treatments without the protection of season extenders, IRT mulch and bare soil, were planted on June 1, 2005 (just after the normal last frost date) and June 7, 2006 (after a series of late frosts and frost warnings). Tomato plants were started at weekly intervals in the greenhouse so that all plants were transplanted into the field approximately 7 weeks after seeding.

As I had feared, filling all those little tubes was no fun, but I had 48 hot caps to fill. In a home garden with substantially fewer plants it would not be bad at all. Did the results make it worth the effort? The answer is a qualified yes. In 2005, the highest yields were produced by tomatoes grown through Kozy Coat® and Wallo'Water® caps placed over IRT plastic mulch. Although the plants with water filled teepees had higher yields, there was no difference in earliness between the plants in teepees and the controls.

In 2006, the results were completely different; the control plots had the highest yields, even though plants grown through the season extenders began producing fruit two weeks prior to the controls. Harvesters noted that tomatoes grown in Wallo'Water and Kozy Coats® had much more vegetative growth but fewer fruits. This may have been due to the fact that tomatoes without the protection of season extenders were stressed by the cold and wet conditions and diverted their

energy into fruiting in order to insure production of viable seed. Perhaps, plants grown in the season extenders could not translate their superior vegetative growth into higher fruit yields because unfavorable weather conditions delayed their fruit production. In addition, several plants in the 2006 study plots produced fruit that was not typical of the 'Prairie Fire' tomatoes that were used for the study. If there was some contamination in the seed lot or genetic variability in 'Prairie Fire' that might explain some of the unusual and highly variable yields in 2006.

	2005	2006
Treatment	Mean Yield lb	Mean Yield lb
Kozy Coat + IRT	19.56a	2.46b
Wallo'Water + IRT	14.05ab	1.71b
Kozy Coat	9.81bc	4.14ab
Wallo'Water	5.39cd	1.84b
IRT Control	2.94d	7.57a
Bare soil control	2.51d	7.64a
values identified by the same letter are not significantly different (P<0.05)		

We had planned on leaving the teepees on throughout the growing season following the advice in literature provided by the manufacturer of Wallo'Water®. However, with the teepees in place some of the tomato plants would tip over the teepees even with the support of small bamboo stakes. In 2006 we staked each tomato plant with three heavy 3/4" x 3/4" stakes which solved the tipping over problem but fruit developing inside of the teepee were difficult to harvest and susceptible to rot. Pollination may also have been reduced inside the teepees. These problems probably increased the variability of yield data on treatments with teepees. The manufacturer of Kozy Coat® recommends the teepees be removed after the danger of frost has passed and that is probably the course we will follow in future trials.

After only two very different seasons, it is probably premature to make any recommendations about the use of these teepee season extenders. During the warm summer of 2005, their use with IRT mulch seemed to result in an obvious increase in yield and they are certainly worth a try for home gardeners. The colder, rainier summer of 2006 seemed to negate the beneficial effects of the season extenders.

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