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COMMERCIAL PRODUCTION RECOMMENDATIONS FOR SEMI-ERECT
THORNLESS BLACKBERRIES IN VIRGINIA. I. PRUNING AND TRAINING.

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I. Introduction

Commercial blackberry plantings have been made practical in the eastern U.S. by the work of plant breeders in selecting adapted, highly productive thornless blackberry cultivars. Practicality has been further enhanced by development and growth of "pick-your-own" harvesting methods.

Thornless canes are easier to handle during pruning, training, and harvesting. This is important in retaining employees for these tasks and in attracting customers to pick the fruit.

Recommended thornless blackberry cultivars ('Black Satin' and 'Dirksen Thornless') do not revert to a thorny condition, they are highly productive, and they are more winter-hardy than other thornless cultivars. Fruits are tart but use of sugar as required in recipes for other kinds of blackberries appears to result in very acceptable thornless blackberry products.

These cultivars are "semi-erect" in growth habit, i.e., shoots grow prostrate along the soil surface during the first summer after planting, but more erect shoots are produced in subsequent years. New shoots produced at or below the soil line are vegetative during their first season of growth; these "1st year canes" or primocanes become dormant during winter and are referred to as flori-canes or "2nd year canes" from that point onward. Buds become active on 2nd year canes in early spring; shoots which grow from these buds are known as "fruiting shoots" since they are the structures on which flowers and fruit will be produced.

Canes and fruiting shoots die after fruiting but this may not occur until the spring following harvest of their fruit. This means that prompt removal of canes at the end of the harvest season should materially reduce shading and other competitive effects upon 1st year shoots; reduced competition should improve the following year's crop.

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Annual dormant season pruning of new canes is required to regulate fruit loads so that plants will produce adequate vegetative growth each summer for fruit production in the following year.

Vegetative or 1st year shoots on vigorous, mature (3 year or older) plants may reach lengths of 20 to 30 feet with diameters approaching 1.5" near the plant crown. Adequate spacing is therefore required to reduce competition among plants, to simplify pruning or training, and to facilitate movement of people and equipment between rows during harvest, pesticide application, etc. Spacings of 6 to 8 feet in the row and 10 feet between rows are currently suggested.

Trellising is recommended to support heavy yields which may exceed 20 lbs. per plant in well-grown, mature plantings.

Pruning and training suggestions outlined below represent the current state of knowledge on adapted semi-erect thornless blackberry cultivars. The grower should find these suggestions useful in his production program, but he should be alert for changes as more information is accumulated on growth and fruiting habits of this crop.

II. Trellis Suggestions

- A. End posts should be 10' long (6 to 6.5' above ground and 3.5 to 4' below ground) with minimum diameters of 6 to 8". Sturdy braces or anchors are required to prevent end posts from leaning (or from being lifted in the soil) under stresses caused by wire tightening procedures or by weights of fruits and foliage on trellis wires.

Line posts should be placed 25 to 30' apart in the row. These posts should be 4" minimum diameter and 8' in length with 2' of this length in the ground and 6' above ground.

- B. Wires (9 gauge or slightly smaller) should be stretched and loosely stapled at 36 or 40" and 66 or 72" heights on line posts and securely fastened to end posts.
- C. The trellis may be constructed either before planting or during the first growing season. Construction should be complete before shoots emerge or at least before they are long enough to interfere with trellis construction activities. This will avoid damage to shoots which may, if growth is vigorous, provide a partial crop 1 year after planting.

III. Pruning and Training

- A. First year (i.e., year of planting):
 1. Remove the above ground portions of the cane (i.e., the "handle") completely after planting.
 2. Do not summer prune, avoid damage to developing shoots as these may, when vigorous, provide a crop in the following year.
 3. If broadcast herbicides are providing good weed control, leave shoots on the ground (growth habit is prostrate during the 1st summer), if weed control is poor or if sod middles have been

established, tie new shoots to the trellis as soon as they are long enough to reach the bottom wire. Shoot tips will tend to take root and produce new plants during late summer or fall; tip-rooting must be prevented (or resulting daughter plants must be removed) to maintain desired plant spacing in and between rows. Tip rooting is inhibited by regularly recommended herbicides; shoots should be picked up and tied to the trellis before rooting if no herbicides are used.

4. During the late dormant period (i.e., just before buds begin to swell in the spring) retain 2 or 3 of the most vigorous canes (remove all others), train and tie these shoots to the trellis in a uniform "fan" pattern. Head canes and laterals back to remove dead or small diameter (less than 1/4") wood and shorten retained canes to 7 or 8 feet in length for the 1st fruiting season.

B. Second year:

1. Strip buds from the lower part (i.e., within 18 to 20" of the soil) of each retained cane after buds have swollen and produced 1/2" to 1" of new growth. This will eliminate fruiting shoots whose berries would otherwise have contacted the soil and become unsalable. Chemical pruning agents have been used in some regions and local testing may permit us to recommend such practices in the future. Stripping buds from the lower canes may be omitted where labor supply or costs are limiting factors, but this may affect plant capacity to maximize per acre yields of salable fruit.
2. Remove shoots (canes) which were retained in dormant pruning, as soon as harvest has been completed for the year; usually in mid- to late August, depending upon the cultivar.
3. Do not summer prune new shoots in the usual case. Summer pruning has not been sufficiently evaluated and seems unnecessary for available cultivars. There may be increased danger of cane blight if summer pruning is done too soon before, during, or after periods of rainfall or irrigation, etc.
4. Prevent rooting of shoot tips, during late summer and fall, by tying shoots up; use of a recommended herbicide program may coincidentally prevent tips from taking root.
5. During late dormancy, select and retain 5 to 8 of the most vigorous canes produced during the preceding year for production of fruit in the following summer. Adjust the number of canes per plant according to the amount of growth which occurred during the previous summer. Train canes in a fan pattern away from the crown and place ties where canes cross each trellis wire. Lateral shoots may be shortened to lengths of 10 to 20 inches, or if they are vigorous and originate below the bottom wire, they may be pruned longer and tied to the upper trellis wires as though they were main canes. Head-back as necessary to prevent competition among plants, but allow shoots of adjacent plants to overlap a foot or two at their ends.

C. Third year and after

1. Strip elongated buds from the basal 18 to 20" of each cane after bud activity becomes noticeable in the spring (see comments under B-1 above).
2. Do not prune during summer except as noted (in 3 below and B-3 above) for the second year of growth.
3. Remove canes which bore fruit as soon as all fruit have been harvested for the year.
4. Prevent tip rooting as for previous years.
5. Leave 5 to 10 canes per hill during dormant pruning; shorten laterals, tie and train canes as in B-5 for the second year. Be sure to adjust cane numbers according to the vigor and amount of vegetative growth which occurred in the preceding year. Plants which bore heavy fruit loads while producing numerous canes or long laterals with diameters of 1/4 inch and larger at locations 6 to 8 feet from the plant crown during the previous year should be pruned to the highest number of retained canes (including long laterals used as canes - see B-5 above). Lower vigor plants should be pruned to retain fewer canes. Low vigor may indicate that pruning was not severe enough in the previous year. Low vigor may also be caused by insufficient rainfall and irrigation, insufficient nitrogen (or other) fertilization, or by the effects of insects (esp. red raspberry crown borer) and diseases.

Excessive vigor may be observed as a result of: pruning which was too severe during the previous season; too much nitrogen; or too much rainfall and irrigation. Excessive vigor may also be observed when winter injury reduces or eliminates cropping in the previous year. In the latter case, the grower should be cautious in adjusting his pruning methods since such vigorous vegetative growth is not likely to recur when a full crop load is present on the plant.

Notes: