

PW-AB11-560

ENTER INFORMATION ONLY IF NOT INCLUDED ON COVER OR TITLE PAGE OF DOCUMENT

1. Project/Subproject Number

596-0108-3-60011

2. Contract/Grant Number

596-0108-C-00-6060-00

3. Publication Date

AUG.1, 1990

4. Document Title/Translated Title

PRUNING GUIDE FOR BLACKBERRIES IN CENTRAL AMERICA.

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7. Pagination

10

8. Report Number

9. Sponsoring A.I.D. Office

ROCAP

10. Abstract (optional - 250 word limit)

11. Subject Keywords (optional)

- 1. CENTRAL AMERICA 4.
- 2. BLACKBERRIES 5.
- 3. PRUNING SYSTEMS 6.

12. Supplementary Notes

13. Submitting Official

DIANE BEJARANO

14. Telephone Number

202/466-5340

15. Today's Date

AUG.17,1990

16. DOCID

DO NOT write below this line

17. Document Disposition

DOCRD [] INV [] DUPLICATE []

Prepared 8/1/90

PRUNING GUIDE FOR BLACKBERRIES IN CENTRAL AMERICA

I. Introduction

Wild Blackberries (Rubus glauca and others Rubus spp) abound in the highlands of Central America and are used principally as processed products. Although the cultivated blackberry (Rubus fruticosus) has been grown in the highlands of Central America for decades, it is relatively new as an export crop.

There are many types of commercial cultivated blackberries in the world. According to growth habit, the types vary from erect, semi-erect to trailing. There are also the thornless and the thorny types. Then there are varieties developed from inter-specific and inter-varietal hybrids. Finally, varieties are developed for different sets of climatic and edaphic conditions.

Blackberry variety trials principally in farmers' fields initiated by PROEXAG in Central America have demonstrated, so far, that the varieties developed in Texas (such as Brazos, Rosborough and Brison) are better adapted to the Central American Highlands (within the range of 1,000 to 2,000 meters above sea level) than the other varieties tried such as the Arkansas developed varieties (Shawnee, Cheyenne, Comanche and Cherokee) and the thornless varieties (as Chester). At lower elevations, the berries are not sweet and disease problems are more acute. At much higher elevations, frost problems become more severe and production declines during the cold months.

The pruning systems described below are, therefore, practices recommended (for now, based on the limited experience, so far) for the Texas developed erect varieties when planted in the Central American highlands.

II. The Normal Growth Pattern of Texas Bred Varieties (such as the Brazos) in the Tropical Highlands of Central America. (Fig. 1)A. Vegetative growth. (See Fig. 1)

Soon after planting the rootstocks, one or two primary canes (vegetative) may shoot out from the base of the stock or root. Unless topped, this primocane will continue to grow vinelike to several meters long.

From the base of this primocane will shoot out basal laterals (or secondary primocanes) which are also vegetative and will grow like primocanes. From the primocanes will shoot out more laterals (primary laterals), vegetative at the start and in time and if not topped would finally terminate in an inflorescence.

Over the years, primary canes will shoot out now and then from the base of the plant, especially (although not necessarily) after the old primocane is removed. This makes it possible to have different ages of primocanes, which means that growth and reproduction can be controlled for the periods desired.

From the roots that extend laterally from the base of the plant will shoot out primary canes in the row between plants or in the space between the rows at various distances from the mother plant.. This phenomenon occurs normally, starting in less than a year after planting. These shoots are conveniently and generally not allowed to grow and are therefore eliminated but they could also be taken out and serve as the major source of planting materials for expansion.

B. Reproductive growth. (See Fig. 1)

A lateral may shoot out from the stem of a recently planted rootstock. This thin and short lateral could be reproductive, terminating rapidly in an inflorescence. The inflorescence would develop into a few small fruits and then die out. This early production, however, is practically negligible and is probably best discouraged in favor of good vegetative growth.

If allowed to grow further over a longer period of time (to several meters long), the primocanes would produce a terminal inflorescence. If allowed to grow normally like this without control, the plant becomes a mass of branches and foliage, making it impossible to harvest efficiently. They are, therefore, topped to convenient height or length, and the lateral growths controlled as well.

From the primary laterals would shoot out the secondary laterals (the flowering or fruiting branch). Flowers are borne singly at the tips of the branched inflorescence, producing some 5 to 10 fruits per inflorescence. From flowering to fruit maturity may take some 40 to 45 days. After fruiting, that reproductive branch will not fruit again and is best eliminated. The next inflorescence will develop from the reproductive shoot that comes out from the node just below the one that just fruited.

With proper pruning, irrigation and general sanitation, production from the primocanes and corresponding laterals may be extended over a period of four to six months, that is, from November to April in the Central American Highlands.

III. The Recommended Planting System. (Fig. 2)

A. Distance of planting. (See Fig. 2)

Planting materials (rootstocks, root cuttings or tissue culture plants) are planted in rows 2.5 to 3.0 meters apart and 1.5 to 2.0 meters between plants in the row. The wider distances between rows is recommended for mechanized operations.

B. Trellising. (See Fig. 2)

Trellising in rows, even for the erect types, is essential to facilitate field operations, especially the harvest operations. Posts, ten meters apart in the rows, are connected by two strands of 10 to 12 guage galvanized wire, one at 75 centimeters height and the top strand at about 150 centimeters.

IV. The Pruning System.

A. Objectives of pruning:

- To control growth so that access between rows is facilitated for field operations, in harvesting especially. With the thorny vegetation of blackberries, fruits should be easily accessible to the pickers.
- To program the harvest at the desired market windows.
- To remove undesirable plant parts such as diseased and infected plant tissues/organs and spent fruiting branches.
- To concentrate on production of quality fruits rather more in number but of small fruits.

B. Kinds or purpose of pruning cuts: (See Fig. 3)

Cuts to enhance ramification. Cutting off the apical meristem eliminates apical dominance, resulting in induction of lateral growth.

Cuts to eliminate completely the branches. The cut is made at the base of the branch without leaving a stump, preventing regrowth in that branch.

C. Formation pruning. (Fig. 3)

One or two primary canes are allowed to grow from each plant or hill. From the base of these primary canes will shoot out basal laterals (secondary primocanes). A total of five or six of the most vigorous primocanes and secondary primocanes are selected to form the skeleton of the plant, eliminating the others that come up. These primocanes are spaced evenly to occupy the space in the trellis. They are allowed to grow to a little over 2 meters and are then topped or cut back to about 180 centimeters in height. Primary lateral shoots that appear close to the ground (below or within 50 centimeters from the ground level) are eliminated. The reason for this is that fruits close to the ground will tend to pick up dirt from the ground, especially during rainfall. Primary lateral shoots above 50 cm. from the ground are allowed to develop to about 40 cm long and then cut back to about 20 to 25 cm in length. The point of cut is where the stem has already started to harden. If cut at the tender (meristematic) tip, the new secondary lateral would continue to grow vegetatively rather than as a reproductive secondary lateral shoot. These secondary laterals, however, could then be cut back and will then produce or shoot out the tertiary laterals which would be reproductive shoots. From the primary laterals may shoot out vegetative or reproductive secondary laterals, depending on the maturity of the primary lateral tissues.

D. Pruning the reproductive laterals. (Fig. 4)

The first reproductive secondary lateral will shoot out from the distal nodes of the cut back primary or secondary laterals. After the last fruit is harvested from this fruiting lateral, this branch will not fruit anymore and is best eliminated. The next reproductive laterals shoot out from the nodes below. If the primary laterals are positioned horizontally or in a drooping position, several secondary laterals may shoot out simultaneously along the axis of the primary lateral instead of one at a time.

The reproductive phase may continue for several months, given favorable growing conditions, after which the primocane is eliminated (eliminating apical dominance) so that the next primocane may grow from below and start the next reproductive cycle.

If the primocane is not removed completely after producing for four to six months, it may continue to shoot out flowering laterals but the fruits becoming reduced in size. It could also prevent the growth of new primocanes and the older leaves and stem tissues would be the source of inoculi for diseases.

E. Pruning for production during the market window:

The most attractive market window in the United States for Central American blackberries would normally be from November to April. By cutting back the primocanes to the base during the month of March or April, new primocanes will emerge a couple of weeks or so later. With the pruning system indicated above, flowering from the secondary or tertiary laterals may commence in August/September, with the first harvest occurring about October or November. Production will continue until March/April. However, production may slow down within this period especially if temperatures drop down to near freezing.

The cycle is repeated with the elimination of this primocane to allow the emergence of a new primocane for the next vegetative/reproductive cycle.

F. Pruning for production the year round:

It is possible for the plant to produce all year round if there is full control of irrigation, appropriate pruning and no prolonged freeze periods. The management of the individual primocane is as described above except that they are allowed to produce for a longer period before elimination. In addition, another primocane is allowed to develop 4 to 6 months after the emergence of the first one. Consequently, when the first primocane stops producing, the second would have started production already and will continue to produce for the next few months. A third primocane 4 months after the second could then cover the year round production.

G. Pruning to maintain the row orientation over the years:

If the shoots that arise between rows were allowed to grow and produce, there would be no room between the rows to properly carry out the farm operations. These new growths between the rows should therefore be controlled or eliminated, and are best used as planting materials for expansion.

In areas with erosion problems, strips of vegetation , regularly clipped low between the rows is recommended. About a meter wide of weed free strip is maintained at the base of the plants.

With good management, a blackberry plantation may last 10 to 15 years without replanting.

(Prepared by Jose Mondonedo of PROEXAG, in collaboration with David Picha, Berry Consultant from Louisiana State University. Drawings by Omar Corrales of the University of Costa Rica. August 1990.)

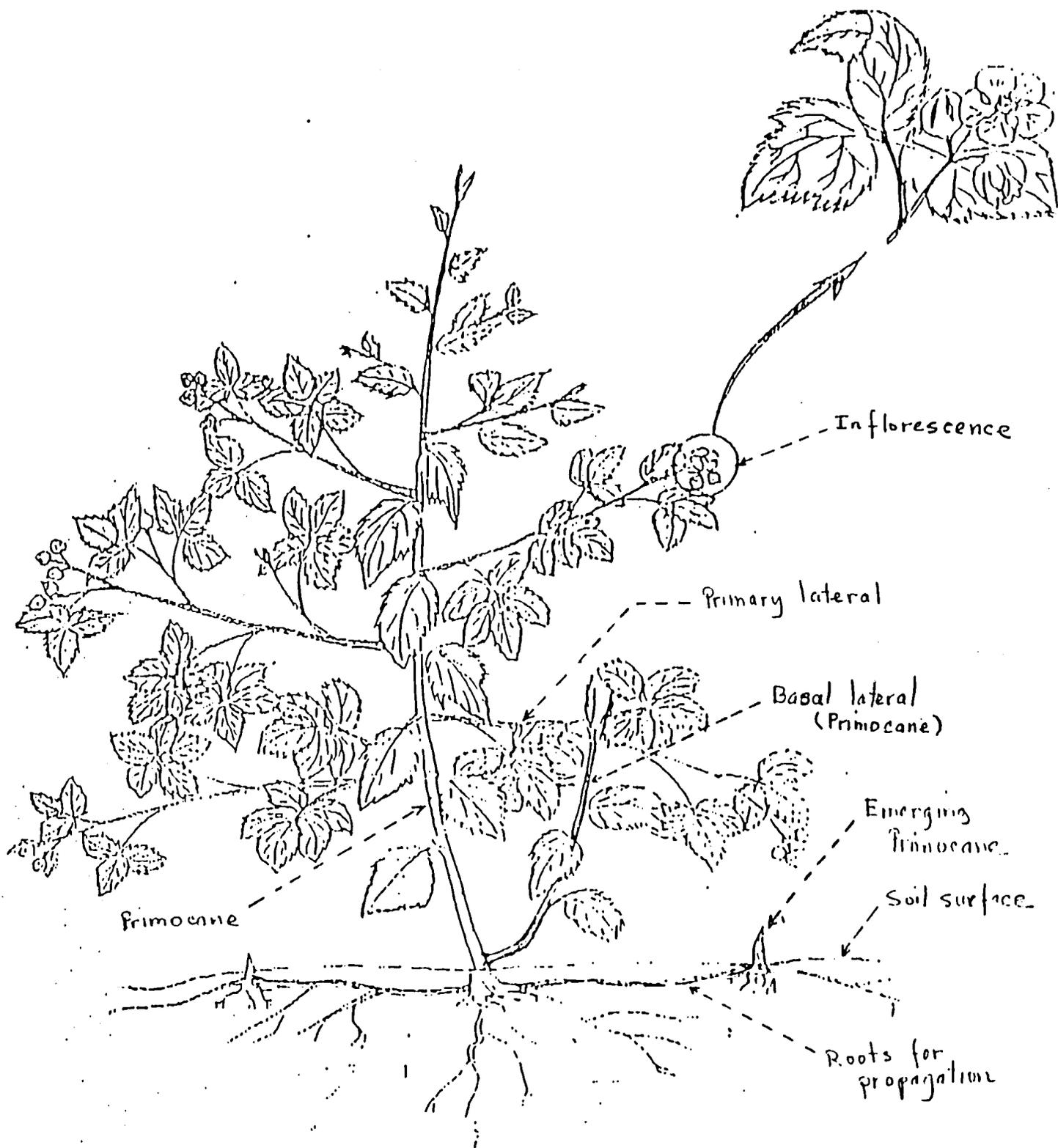


FIG. 1: THE VEGETATIVE AND REPRODUCTIVE GROWTH OF AN ERECT BLACKBERRY PLANT.

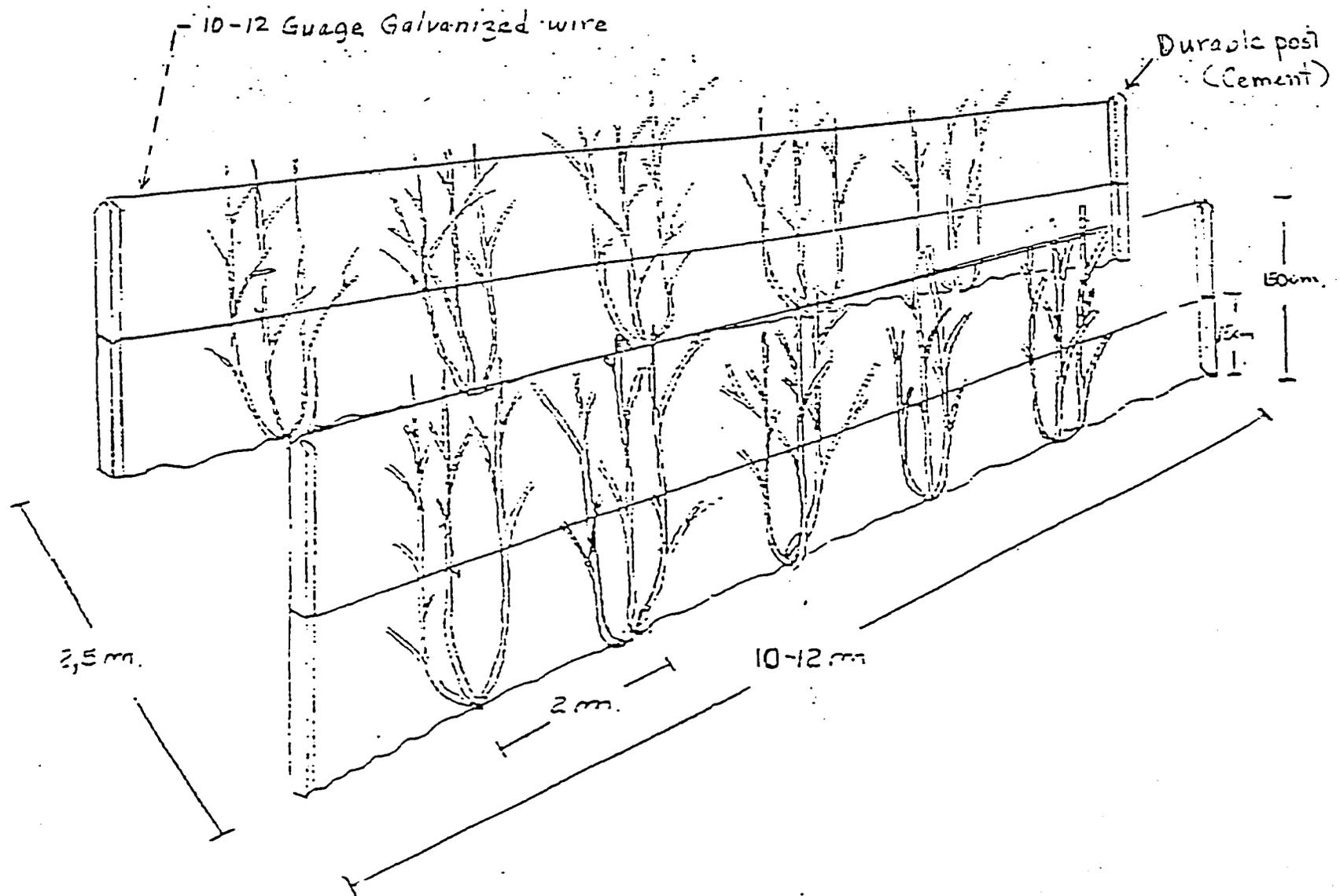


FIG. 2: BLACKBERRY PLANTING SYSTEM FOR CONTROLLED PRODUCTION.

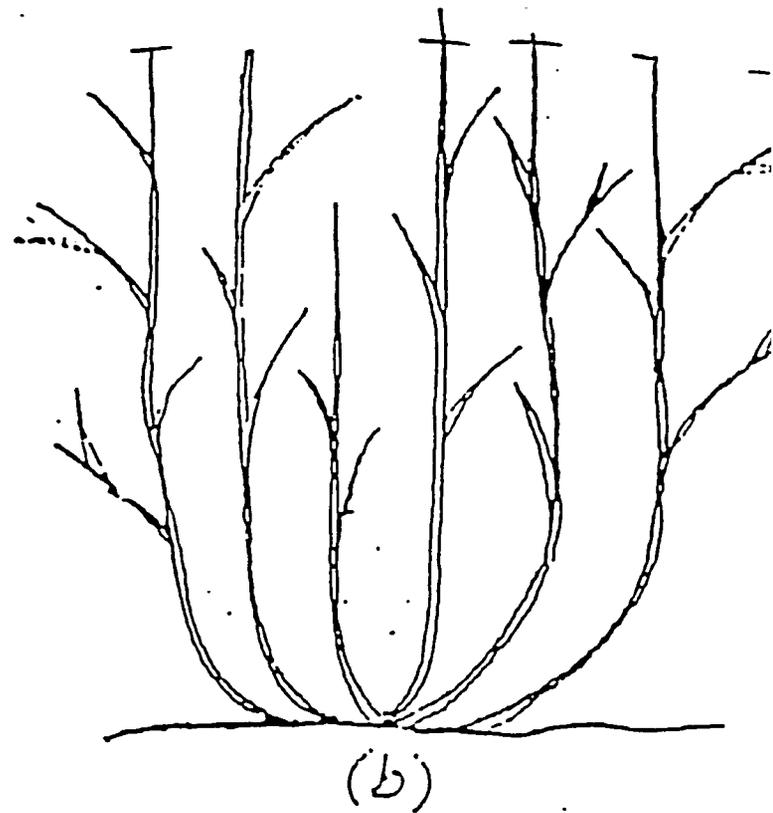
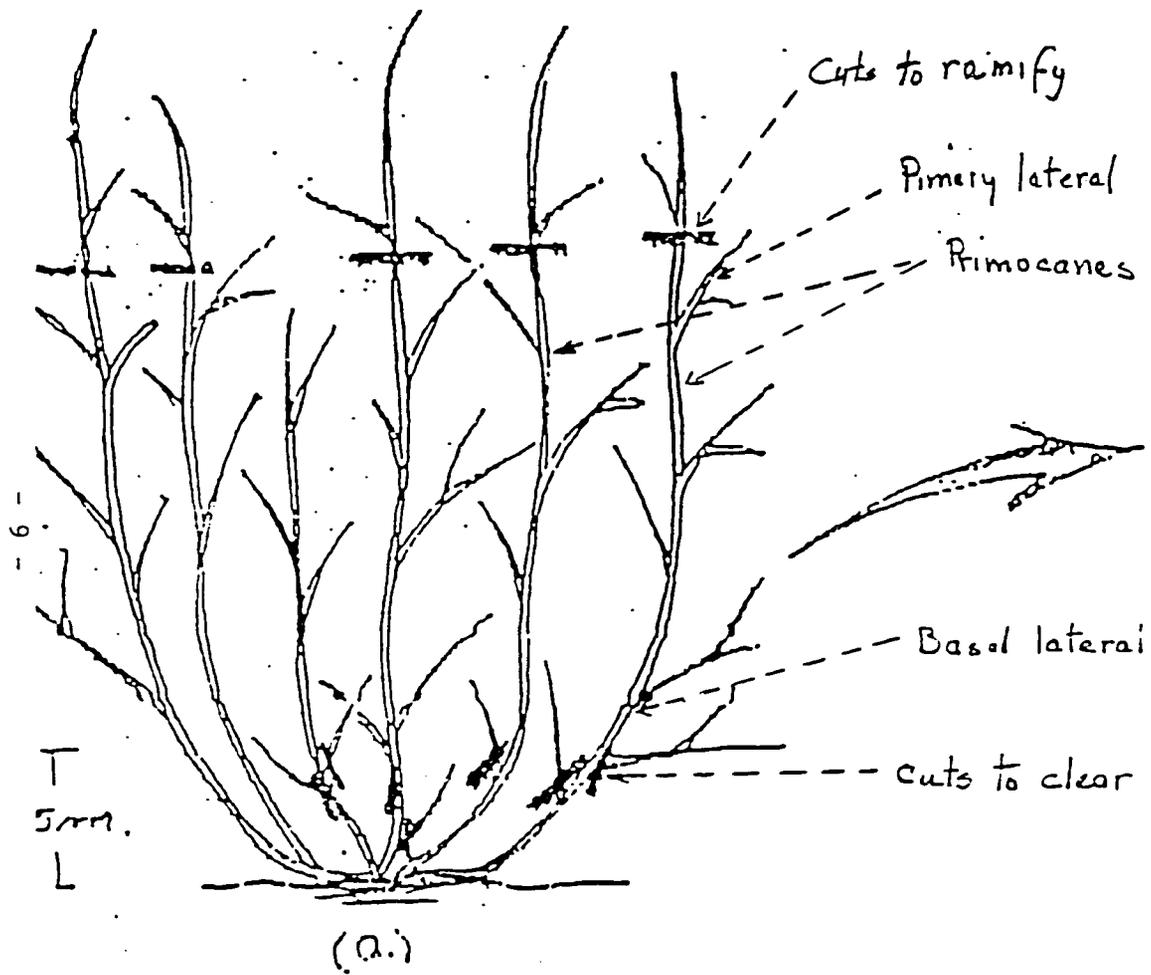


FIG. 3: FORMATIVE PRUNING IN ERECT BLACKBERRIES.

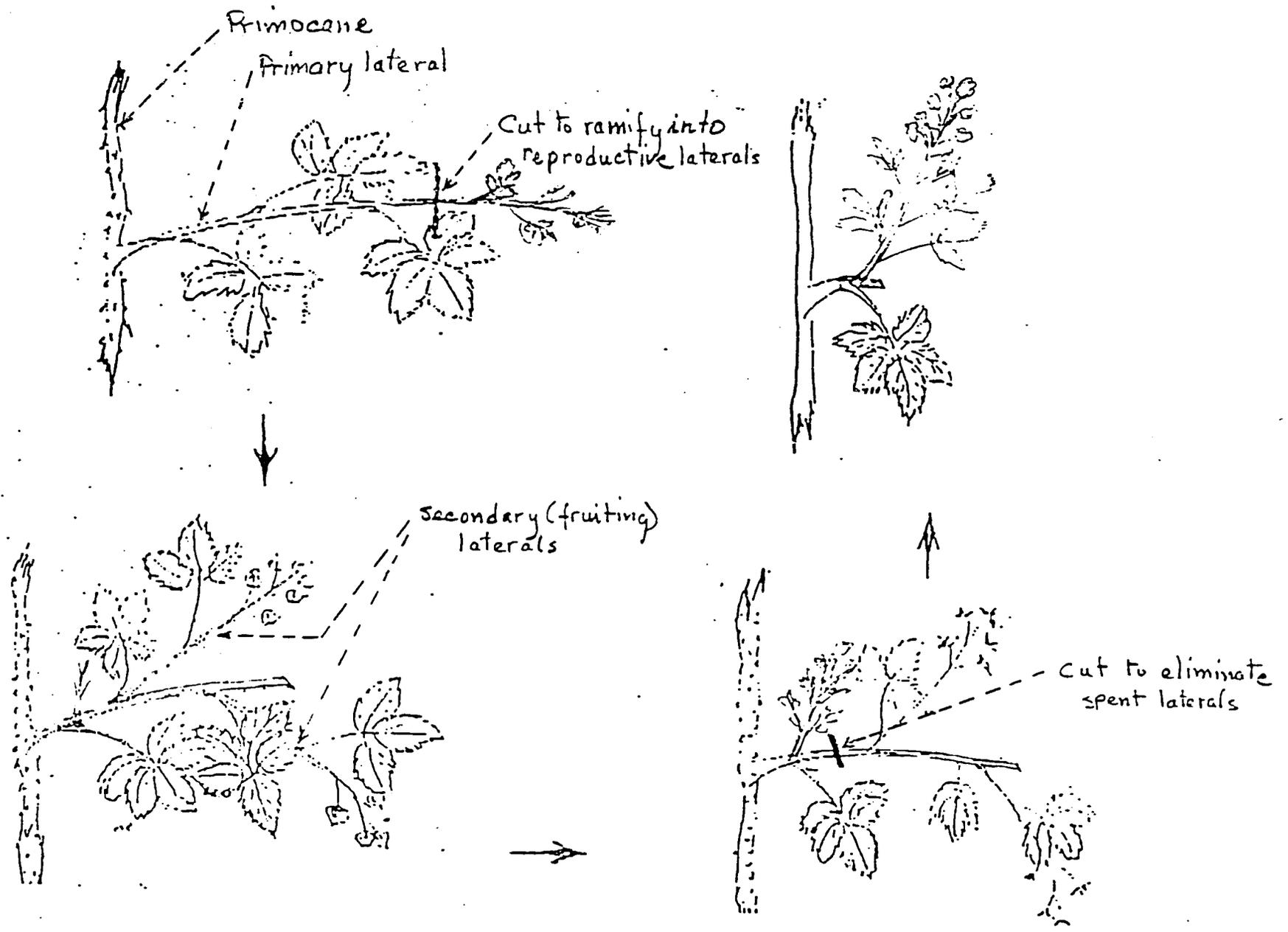


FIG. 4: PRUNING OF THE REPRODUCTIVE LATERALS.