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THE AUTHOR

Roger W. Pease, author of *Some Effects of Location on West Virginia Nurseries Marketing Ornamental Plants*, is Assistant Agricultural Economist in the West Virginia University Agricultural Experiment Station.

WEST VIRGINIA UNIVERSITY
AGRICULTURAL EXPERIMENT STATION
COLLEGE OF AGRICULTURE, FORESTRY, AND HOME ECONOMICS
H. R. VARNEY, DIRECTOR
MORGANTOWN

Some Effects of Location on West Virginia Nurseries Marketing Ornamental Plants

ROGER W. PEASE

Introduction

IN 1955 the West Virginia University Agricultural Experiment Station made its first survey of nurseries specializing in woody ornamental plants. Data from it have furnished material for determining some probable effects of locality on marketing nursery products and services under West Virginia conditions.

Conditions existing in this State may not be indicative of conditions elsewhere, and there are so few nurseries and cities in West Virginia that the conclusions drawn in this bulletin are subject to further verification.

Definitions

To avoid confusion, definitions of some terms used are given below. Where feasible, these definitions correspond to those followed by the State Department of Agriculture.

Ornamentals Nursery: A concern growing and selling (or giving away) any nursery crops customarily used to provide shade or to beautify premises. The term *ornamentals nursery* will be condensed to *nursery* for the sake of brevity.

Christmas Tree Nursery: A concern growing and selling (or giving away) live Christmas trees to be used later as transplants.

Christmas Tree Plantation: A concern growing Christmas trees and selling (or giving away) cut trees only. A Christmas tree plantation is not considered a nursery by the State Department of Agriculture and does not register as such in West Virginia. If a Christmas tree plantation sells (or gives away) any live Christmas trees, it is reclassified as a Christmas tree nursery.

Services: Landscaping; tree surgery and care; planting and (or) maintaining grounds, gardens, and ornamental plants.

Full-Time Nursery: An ornamentals nursery using the full-time services of at least one man throughout the growing season (at least nine months). The owner may or may not engage in other occupations.

Part-Time Nursery: An ornamentals nursery not using the full-time services of at least one man throughout the growing season.

*Type A Nursery:** A full-time ornamentals nursery financed by, or incidental to, some enterprise other than the performance of services.

*Type B Nursery:** A full-time ornamentals nursery financed by, or incidental to, the performance of services.

*New Nursery:** A full-time ornamentals nursery which, as of 1954, had been registered for less than six years with the State Department of Agriculture. A new nursery may be either Type A or Type B.

*Established Nursery:** A full-time ornamentals nursery which, as of 1954, had been registered for more than ten years with the State Department of Agriculture.

Scope of the Survey

Neither Christmas tree plantations nor Christmas tree nurseries were included in the Agricultural Experiment Station survey because the Christmas tree and ornamentals industries are dissimilar. The Christmas tree industry markets primarily dead, cut trees; the ornamentals industry markets living shrubs and trees, with roots intact. Different soil requirements, marketing methods, and cultural practices are involved. Nurseries also were excluded if they handled only plants which customarily are used for the production of edible fruit or nuts.

Of the 174 nurseries registered with the State Department of Agriculture in 1954, 59 were excluded, and information could not be obtained from eight others which for various reasons had discontinued operation. Of the 59 excluded from the survey, 30 were registered as Christmas tree nurseries; 18, when interviewed, were found to have handled only Christmas trees in 1954; and eleven were registered as handling only berries and nut trees.

Location of Nurseries

Figure 1 shows the approximate locations of the 107 nurseries surveyed. It divides the State arbitrarily into five general areas, the unshaded sections representing areas where nurseries are concentrated. Fifty-nine nurseries were located in Area I; and Tyler was the only county in that area which did not contain a nursery. Forty-four nurseries were in Area II, a belt of twelve counties crossing the southern part of West Virginia. Two nurseries were located in Area III, composed

*A complete classification of nurseries is not used in this bulletin.

FIGURE 2. Location of full-time nurseries in West Virginia.

ing-out stock, a volume more than 20 times as great as the 14,228 plan sold by the 56 part-time nurseries. These figures include both wholesa and retail sales.²

Only two owners of full-time nurseries reported that they had fu time employment elsewhere. Among the operators of part-time concer all of the men had employment in other occupations, and thr women divided their time between homemaking and their nurseries.

Part-time concerns may have been handicapped by at least thr apparent factors: much of the owners' working time was spent in oth occupations; the nurseries were not worked on a regular, eight-hour bas and the owners' places of employment usually restricted freedom choice in locating nursery projects. Under these circumstances it wou be difficult to determine favorable or unfavorable characteristics of cation for part-time concerns; and therefore they will be excluded fro further study in this report.

²Compiled from sales data reported by nurserymen for the year 1954.

Location of Full-Time Nurseries

Figure 2 shows the approximate locations of the State's 51 full-time nurseries. Distribution approximates that previously shown in Figure 1. However, all of the nurseries lie within Areas I and II—the southern east-west belt, and the northern block of counties which now is split into three comparatively isolated sections.

Four Factors of Location

There are at least four factors of location which might be important to nurserymen in marketing ornamental nursery crops. First, it is possible that a location in the vicinity of a U. S. highway is advantageous to any nursery and vital to one concentrating on cash-and-carry sales derived from through traffic. Second, it might be vital that nursery sales-areas be on, or within sight of, paved highways, whether federal, primary, or secondary. Third, nurseries located in thickly populated sections, irrespective of large cities, might market at a distinct advantage. Fourth, a location in or near a comparatively large city might be important. An examination will be made of the State's full-time nurseries in regard to these four characteristics, to discover if one or more of the characteristics have exerted apparently causal influences.

US HIGHWAYS

Figure 3 shows the State's U. S. highways in relation to its full-time nurseries and to the five general areas shown in Figures 1 and 2. It is apparent that through-highways converge and intersect where nurseries cluster in Cabell, Kanawha, Ohio, Wood, Marion, and Mercer counties. However, as of the 1950 Census, the average population of these six counties was 105,401, almost three times the average county population of the State; and at least one of the State's 10 largest cities is within each of these counties. The construction of hard-surface U. S. highways received its impetus after automobile traffic had become relatively important, and heavy traffic to and from centers of trade probably caused highways to converge. Dense populations, irrespective of large cities; and comparatively large cities, irrespective of thickly populated general areas, may have caused both the clustering of nurseries and the convergence of U. S. highways. Therefore, it should not be assumed that the association of clustering nurseries and converging U. S. highways is a cause-and-effect relationship.

In West Virginia it is difficult to determine the importance of U. S. highways to nurseries which concentrate on cash-and-carry sales derived from through traffic. Probably such nurseries should lie outside of congested city traffic; their display areas should be conspicuous

FIGURE 3. The relation of full-time nurseries and U. S. highways.

from several hundred feet along the highway; they should offer ample facilities for parking; and they should display ornamental plants in containers suited to keep them undamaged during transportation over long distances. In 1951 only two nurseries maintained cash-and-carry retail outlets which qualified in all of these respects. One had been in operation only a year. It reported that its cash-and-carry sales were 10 per cent of its total retail sales, and of this 10 per cent the volume of sales derived from through traffic was unknown. The other qualified retail outlet had been in operation six years. The owner reported that about 85 per cent of his total retail sales were made at the outlet; but only 10 per cent of these were cash-and-carry. He could not determine what percentage of the cash-and-carry sales had been derived from through traffic.

PAVED HIGHWAYS—FEDERAL, PRIMARY, OR SECONDARY

Although location on U. S. highways seems to have been incidental, rather than causal to the success of nurseries, visibility of sales areas from

paved highways of some kind might be important. However, 19 of the State's 51 full-time nurseries did not maintain their sales areas within sight of paved highways—federal, primary, or secondary; and four were located more than one mile from the nearest hard-surface road. The 19 nurseries whose sales areas were not visible from a highway sold almost 74,000 more plants than did the 32 nurseries whose sales areas were visible. The average numbers of plants sold retail by the two groups were almost identical, 2,685 and 2,635 respectively, but the wholesale average of the non-visible group was almost eight times as large as that for the visible group. In West Virginia it apparently is not vital that nursery sales areas be seen from paved highways.

THICKLY POPULATED AREAS

Location within thickly populated areas irrespective of large cities might be associated with the presence of nurseries.

In Figure 2 it was shown that Areas I and II contained all of the State's full-time nurseries; but 10 cities with populations of more than 19,000³ also lay within these two areas, and three of the ten were centers of the only urbanized areas in the State.³ After the total population of these cities and urbanized areas had been discarded, the densities of population in Areas I and II were about 87 and 82¹ people per square mile, respectively.

In Areas III and IV, where no nurseries were located, the population densities were approximately 38 and 35² people, respectively. Thus, the two areas containing all of the nurseries were more than twice as thickly settled, irrespective of large cities, as were the two areas lying between them and east of them.

In Area V, the block of six southwestern counties, there were no cities with populations of more than 9,000³, but the density was 111³ persons per square mile. Thus, if the population of large cities is discounted, these six counties composed the most thickly settled sections of the State. However, they contained no nurseries.

If the various areas are contrasted on the basis of the numbers of owner-occupied homes per square mile, results are roughly similar. Areas I and II, where all the nurseries are located, had approximately 13³ and 1³ owner-occupied homes per square mile, but Areas III and IV had less than half as many, approximately 6³ each. Area V had about 10, almost as many as Area II, but it contained no nurseries.

Under West Virginia conditions, therefore, thickly populated areas, irrespective of large cities, may or may not be associated with the presence of full-time nurseries.

³Population figures given in this report are based on the U. S. Census of 1950.

FIGURE 4. Relation of full-time nurseries to cities with 8,000 or more residents.

Figure 4 shows the approximate location of full-time nurseries in relation to West Virginia cities with populations of 8,000 or more, reported in the 1950 Census. In the case of Huntington, Charleston, and Wheeling, population figures for the urbanized areas were used. Populations are given in thousands, and nurseries within or close to city limits are shown clustering around the population figures. Calipers were used to locate nurseries ten miles or more from the centers of cities, and these caliper distances are consistently less than corresponding travel by road. Locations and caliper distances were taken from the official West Virginia Highway map issued in 1952 by the State Road Commission.

In 1951 there was at least one nursery within or close to each of the ten cities with populations of more than 19,000; but half of the six smaller cities contained no nurseries and were close to none. The presence of nurseries is associated in West Virginia with cities of 19,000 or more residents but not necessarily with cities smaller than 19,000.

Possible Service Areas

To reduce investment costs and overhead expenses, and to obtain desirable soil and water conditions, it is probable that some nurserymen located their firms comparatively far from city limits. Those too far away may have failed or concentrated on wholesale marketing, whereas the more accessible concerns expanded their retail sales. Thus ornamentals service areas may have been determined by the success or failure of nurserymen. Large cities, served by extensive highway and utility systems, may have exerted broader service areas than did small cities.

Adjusted City Populations

The populations shown in Figure 4 misrepresent the relative sizes of the city areas listed. Figures for Huntington, Wheeling, and Charleston include both incorporated areas lying within the State and outlying West Virginia sections which are part of the urbanized areas. Because the 1950 Census gives no similar figures for cities with populations of less than 50,000, populations shown in Figure 4 for the other West Virginia cities include only incorporated areas.

Adjusted populations for the State's ten largest cities were prepared. The populations of Huntington, Wheeling, and Charleston were not changed, but in the case of the other cities, outlying incorporated or unincorporated places with 1,000 or more residents were included if they were within one mile of city limits. Distances, city limits, and outlying towns were taken from the State Road Commission's map. The Census lists South Parkersburg as a separate, unincorporated town, but the Commission's map names only Parkersburg. In the adjusted populations South Parkersburg and Parkersburg were combined because both were incorporated as Parkersburg after the 1950 Census had been completed.

Projected Service Areas

Possible service areas for the State's ten largest city areas were calculated. Outlying nurseries were located on the Road Commission's map and distances from cities were measured by caliper. The locations of three nurseries calipered respectively, 55, 50 and 42 miles from the nearest large city. They were excluded from any projected service area. All other nurseries were within 30 miles of some central city, and only in the case of Huntington and Charleston were distances greater than 20 miles. Possible service areas seem to increase in size as the populations of central city areas grow larger.

Twelve population brackets were chosen, ranging from 20,000 to 140,000, each bracket including a 10,000-population spread. For the

first bracket a radius of 25 miles was allotted to a service area. This radius was increased by five miles for bracket two, and for each subsequent bracket it was lengthened by half of the preceding increase. Decimal fractions were carried to the nearest tenth.

Figure 5 shows adjusted population figures and projected service areas. Weirton and Wheeling; Morgantown, Fairmont, and Clarksburg overlap so extensively that they will be considered henceforth as exerting only two service areas—Wheeling and Clarksburg. Three nurseries lay outside of any projected service area; and forty-eight, or more than 9 per cent, lay within the seven projected areas. However, the areas were calculated arbitrarily to fit existing conditions.

If the central cities have furnished common opportunities for nurserymen starting in business; if these opportunities apparently were sufficient elsewhere; and if the three full-time nurseries lying outside of any service area found substitutes for these opportunities, at least two conclusions might be drawn: First, city areas of more than 20,00

FIGURE 5. Adjusted population figures and projected zones of influence.

apparently have exerted service areas which have offered opportunities important to the success of nurseries. Second, nurseries outside of these zones have developed and prospered without these opportunities. After examining the procedures of these outlying nurseries, other nurserymen might use successfully the same or similar practices in areas of West Virginia where there are no full-time nurseries at present.

Services in City Areas Larger Than 20,000

In 1954, eleven of the full-time nurseries within projected service areas had been registered less than six years. Three belonged to Type A, financed and established by enterprises other than services. They were excluded from further study. The other eight were Type B. Of these, seven reported an average of 99.9 per cent reliance on services for the sale of their nursery stock, and the eighth divided its sales between services and peddling. Apparently most new West Virginia nurserymen depend on services both to provide income and to procure sales while their nurseries are being started.

At the time of the survey, 60 per cent of the State's 23 established nurserymen (registered more than ten years) had branched into wholesale marketing, and over 39 per cent maintained some form of specialized retail outlet. Yet they reported an average of more than 55 per cent reliance on services for retail sales. Only two did not rely on services. One of these sold his entire crop wholesale and the other operated his nursery incidentally to an orchard.

Evidently it is not by chance that more than 94 per cent of the State's full-time nurseries have centered around large cities, for these cities have furnished a common opportunity for performing services, both to nurserymen starting in business without substantial capital backing and to established nurserymen obtaining much of their income from retail sales.

Services in Cities with Populations Smaller than 20,000

There are no available data for determining the extent of service opportunities in West Virginia cities of various sizes or the percentage of these opportunities which a new Type B nursery might expect to exploit. How many full-time nurseries have started and failed or become part-time concerns also is unknown. In 1954, however, there were at least two indications that in a small city service opportunities have been inadequate.

First: Only three of the State's full-time nurseries were located outside the service areas projected in Figure 5. Two were near a city with 2,643 residents and the other close to one with 9,121. All three reported that

their incomes from the performance of services were incidental to the rest of their nursery businesses; and the average of their reported retail sales was less than 6 per cent of the plants they sold. The other 94 per cent was marketed wholesale. All three concerns belonged to Type A. Two were subsidiaries to larger nurseries, and the owner of the third had full-time employment in an enterprise other than the nursery business.

Second: Since 1930, as the populations of central city areas passed 20,000, nurseries appeared and survived. The 1940 Census reported that the combined populations of Beckley and its contiguous town of Mabscott was 14,325; in 1950 their population reached 21,062. In 1950 there were two full-time nurseries within Beckley's projected service area. One had been in business five years and the other, four. If a steady population increase is assumed, the population of Beckley's city area reached about 20,298 in 1949, the year the first nursery appeared.

In 1930, Bluefield's population was 19,339; in 1940 it was 20,641. No West Virginia town larger than 1,000 is contiguous to Bluefield. In 1950 the oldest full-time West Virginia nursery in the Bluefield service area reported that it had been in business since 1938. If a steady increase is assumed, Bluefield's population reached 20,378 in that year.

In the Clarksburg service area the combined populations of Clarksburg, Morgantown, and Fairmont passed 20,000 between 1900 and 1910. Parkersburg reached 20,000 in 1920; both Charleston and Huntington in about 1908; and Wheeling soon after the Civil War. Data are not available to show when the first successful full-time nurseries started in these five service areas.

Nurseries Outside Projected Service Areas

Trends of the past may not continue in the future, but circumstances which may cause trends to change often are discernible in the past. The three nurseries which lie outside of any projected service area may offer clues for future nurserymen. By affiliating with, or contracting to, large established nurseries; by concentrating on wholesale marketing; by recognizing that services and retail sales probably will be incidental, if present at all, nurserymen may find it feasible to locate areas of the State which are isolated from established service areas. If cheap land and labor, accessibility from a hard-surface road, desirable soil and water conditions, and a climate favorable to specific ornamental plants might become as important in determining the location of nurseries as opportunities for performing services have been in the past.

Summary

In West Virginia, in 1954, there were no full-time nurseries in thickly populated areas that did not have at least one city whose incorporated area contained more than 19,000 people; and there was no apparent relation between location of sales areas within sight of highways and volumes of plants sold.

Ninety-four per cent of the State's full-time nurseries were clustered in the general vicinities of cities whose incorporated and contiguous areas contained more than 20,000 people. New, full-time nurseries relied almost exclusively on the performance of services for obtaining both retail sales and an income. Established nurseries procured more than half of their retail sales of plants by performing services in connection with these sales.

City areas of more than 20,000 seemed to offer service areas within which service opportunities were adequate. Apparently service opportunities were inadequate in city areas smaller than 20,000; but a few nurseries were prospering in remote locations by marketing wholesale and by affiliating with large nurseries or operating incidentally to other enterprises.