

stock combinations when they are subjected to a multitude of cultural stresses in the producing greenhouse.

LITERATURE CITED

- 1 Byrne, Thomas G and Tokuji Furuta 1967 Rootstock and chemical composition of roses *HortScience* 2(1): 18
- 2 Holley, W D 1961 Understocks for greenhouse roses *Colorado Flower Growers Bul* 141
- 3 Raabe, Robert D and Stephen Wilhelm 1966 Budwood as a source of Verticillium wilt in greenhouse roses *California Agriculture* 20(10) 5-6
- 4 Roberts, A N. 1962 Scion-bud failure in field grown roses *Proc Amer. Soc Hort Sci* 80 605-614

MODERATOR FURUTA: Thank you, Ray. The third member of our panel is a commercial rose grower. It is kind of hard to keep up with him. I think he is finally going to stay home more often than not now. Mr. Walter Mertz with the Jackson and Perkins Company will discuss with us "Production of Field Grown Rose Plants." Walt.

PRODUCTION OF FIELD GROWN ROSE PLANTS

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In the propagation of field grown roses the propagator's prime role is to physically and successfully join a selected scion or clone with a preferred rootstock so that a viable plant combining the best attributes of the two components results.

The techniques of rose propagation are basically simple, highly standardized, and for the most part are quite successfully accomplished by most of the rose growing firms. However, in California today it appears that the greatest emphasis, and the major problem solving requirements, center not so much on the art of propagation, as such, but rather in the field of production.

The basic difference between propagation and production is chiefly one of dimension. The production function, as I will define it for today's discussion, is the art of propagation performed on a large or massive scale. Production of field grown roses goes far beyond the individual propagator. Field production is chiefly the responsibility of a highly qualified professional production staff organization, not an individual. The role of this staff is not the simple and fundamental task of uniting several plant parts into a viable unit, but the successful propagation of millions of such plants to meet the expanding markets of its sales organizations and to achieve this function in a profitable manner.

During the few moments that I have, I will try to accomplish two goals. First, I will outline several major trends, or perhaps I should refer to them as revolutions, which are cur-

rently in various stages of happening within the California rose industry. These have influenced, and will continue to influence, the various rose firms in their production function. Second, I will propose a number of principles of field production which I believe are applicable to the rose industry in its attempt to meet and capitalize on the current trends and developments.

First Trend: A major part of the California rose industry has recently become highly centralized geographically.

During the past twelve years there has been an important migration of many of the California rose growers into a small and highly concentrated area in the lower San Joaquin Valley a short distance north of the city of Bakersfield. In this area, with a radius of scarcely nine miles, there are now seven major rose growing firms which literally rub shoulders with one another.

I will not go into depth concerning the economic factors, population pressures and other contributing causes which literally forced these concerns to move their production from a number of widely scattered locations throughout California and Arizona. However, the reasons for their current concentration have been no accident. They are huddled together primarily due to optimum conditions of soil, water and climate which they found prevailing in the northern part of Kern County.

This site selection, based upon systematic studies seeking out optimum growing conditions, is in sharp contrast to the usual practice of choosing the owner's home town as the most obvious growing site, whether this specific area was ideally suited to the crop in question or not.

The primary result of the selection of Kern County as the new center for the California rose industry has been an important improvement in plant quality and acreage yields for the firms involved.

Second Trend: Quality production has encouraged growth. The conditions leading to improvement in plant quality and yields have encouraged this second major development, one of rapid expansion in the production quotas, in the acreages involved and in the actual size of some of the production organizations.

In 1956 there was only a single rose growing firm in the Kern County area with perhaps 20-40 acres under cultivation. Ten years later there were 650 acres of field grown roses harvested for market. Last season this had grown to 749 acres and the approaching season may see over 900 acres dug and harvested. Since the bulk of these plants are grown for two seasons our statistics can well be doubled for total acres involved in rose production in Kern County. The growth pattern has not yet reached a plateau and the total acres in roses may pass the 2,000 acre mark by the coming spring.

Third Trend: We are now in the early stages of a third major development. This might be called a "Managerial Revolution." This may well surpass in significance anything that has happened to the industry in the past.

For many generations virtually the entire nursery industry, the world over, has been both owned and managed by family organizations. Ownership and top business management may well remain in family hands for years to come, but production management today virtually demands the development of true staff organizations. The scale of operations, the complexities of production programming and calendaring, the extent of new technologies, the urgent necessity to develop labor management into a fine art at the field level and the rising costs of both labor and capitalization dictate professional and technically qualified production staff organizations.

Several Kern County firms have effectively initiated staff development. However, true staff concepts are still only partially recognized or understood by many of the rose growing firms. Hereditary factors, the price tags on technical and professional production leadership, the inevitable problems that all small organizations face when they suddenly realize they are no longer small and many other factors have tended to delay the realization of the inevitable. Effective production programming can no longer come off of a single desk, or from a single manager without inviting disaster.

Fourth Trend: The emergence of highly sophisticated production records and documentation systems is just beginning to evolve as the result of the initial application of data processing and computers to the rose growing industry. The use of computers at the field production level has started. One Kern County rose growing firm has been actively computerizing its entire operation for a period of some two years. During the past season its field production records have been fed into the system, including all field inventory data, all labor, all expenses, as well as original budgets.

Putting fairly unsophisticated field records into a highly sophisticated system has not been easy. There have been many crises, but the programming is moving forward and during the past two months data and answers have started to flow back to the production leadership. This information will include inventory documentation from the time the cutting is stuck to the time the plant is ultimately graded for market and sold. From this data will come much more effective crop management and, for the first time in the industry, accurate and detailed cost accounting. This will be available by field, by crop, by variety and by individual plant units.

The computerized crop history and cost accounting should bring much new information to the decision making function of both top management and field production management. More effective rose production will certainly result from this type of documentation, if our production management staffs

have the capacity and wisdom to utilize the sophisticated technological tools now available.

Putting a spotlight on these four important trends or dynamic developments within our industry focuses attention on the amount of flux and rapid change which confronts and involves each of us. During such periods it is highly important that we know where we are going and have some pretty good ideas of how to get there.

Principles of large scale field production of roses are just beginning to crystalize into visible and definable form. They need to be much more fully understood, more precisely defined and more widely applied. I offer the following guidelines for your consideration which are only in preliminary and abbreviated form. However these principles, or others like them, must be evolved to help us cope with the rapid changes taking place in our industry.

My first group of principles will relate primarily to the firm's top business management. These leaders must make certain highly important contributions to the production function if it is to be effective.

1. Top management should assume the basic responsibility for seeing that an adequate production site is selected. This site must possess optimum growing conditions for the crop involved. Anything less than this will undercut all other efforts to attain the high yields and quality production essential to the profit stream.
2. Top management should initiate the creation of an adequate field production staff organization. The size and complexity of this staff should depend upon the the organization's scale of operations. Managerial teams do not just happen, nor do they simply evolve out of less sophisticated types of organizations. They require intelligent intent, selection and guidance. Once selected they thrive on a favorable managerial climate with an atmosphere conducive to proper delegation of authority, acceptance of responsibility and creative achievement.
3. Top management should intelligently control the supply of tools. These consist of simple hand tools and the major capital tools. Man has been defined as a tool maker and tools have certainly contributed to his progress and productivity. To be effective manpower must be supplied by management with the tools, supplies and facilities to make its work easier, faster, less laborious, more convenient and certainly more productive.
4. Top management should take its inventory control function seriously. This consists primarily of developing the fine art of producing no more or no less than their promotional and sales organizations can effectively market. By issuing intelligent production

quotas to its production staff it gives this staff its basic work assignment. These quotas are the jumping off points for all subsequent production. This function of top management must not be taken lightly or performed too hurriedly. Poor programming at this point will reflect in a serious reduction in profits.

5. Top management should determine the nature of the field record systems and other evaluation techniques and the degree of sophistication desired to adequately support itself and its production staff.
6. Top management must set the goals and standards for plant quality. It is highly important that top management serve as a vivid example of these standards to the rest of the organization. Anything less than the highest quality standards must never be encouraged, condoned or practiced by top management. The temptations, however, to lower grades to conform to sales or to substitute indiscriminately to cover unexpected shortages may often be exceedingly strong at high levels. Top management must set the patterns of quality control by their resistance to such temptations.

My second group of principles or guidelines relate primarily to the field production staff organization, once it is created and given its work assignment.

1. First, a calendar of operations must be constructed. As soon as the production team has received its work quota, it must build a calendar of operations. More precisely, a calendar of operations must be constructed for each specific step of production or for each crop or crew activity. The production staff must apply its past experience and best planning capabilities to the construction of these calendars. They must clearly specify the optimum dates between which each seasonal activity must be performed to guarantee success. As the production quotas expand we need to realize that the calendar itself is rigid and inflexible. We have only so many working days to perform any seasonal activity in spite of the size or magnitude of the work loads or quotas.

Once a calendar of operations is made the terminal dates must not be violated. If unexpected delays occur one simply has fewer days to achieve the same work load. A new calendar is then made based upon a higher daily output in order to still complete the program as originally planned and still stay within the optimum limits of growth or dormancy patterns of the crop involved.

Almost everyone will give lip service to this principle, however, it is precisely at this point that most production programs exhibit their greatest weakness-

ses and crop losses. Sales organizations may urge us to harvest before the plants are dormant and innumerable physical problems and weather factors may delay our operations. Production management must know the optimum limits of its crops and avoid all pressures to violate them.

2. All production (and all calendars of operations) must be achieved through the use of manpower.

The production staff achieves a production quota within a specified and predetermined time limit by applying the correct number of manpower units to achieve both goals. The correct number of men is determined by past field experience, adjusted to fit improved programming and supervision, and further adjusted to mechanical or chemical technological improvements as these become available and are applied.

Manpower is not a static factor. In fact, the productivity of men is perhaps the most dynamic factor of all. The effectiveness of men depends heavily upon motivation, inspiration, a sense of meaningful accomplishment and worth, the extent of education and developed skills, the general overall working conditions, adequate tools, remuneration and certainly upon the daily weather patterns.

I consider that effective labor management, in its most positive sense, offers us a potential of productivity virtually untapped to date. We have much to learn in order to effectively achieve maximum productivity from our manpower.

At the supervisory level perhaps the most important motivating factor affecting productivity is the general managerial climate and whether this is conducive to creative achievement and individual and staff growth. It has been said that all business has is people, and if you can find better ways to develop the human potential you will make a profit. It has also been pointed out that human capital is the only basic resource. Perhaps our best resources are too close at hand to see or to evaluate. If we fail in our attempt to gain effective productivity from our manpower, we will certainly fail in our attempt to perform a massive production quota within narrow calendar limits. If we fall short here, we have simply failed in our basic production function.

In conclusion, manpower (including staff and skills) and knowledge (including past experience and adequate records) are the two primary resources available to the field production manager. The basic work load consists of the production quotas assigned by top management. These factors are brought together by planning, framed within a calendar of operations, executed through manpower supplied with adequate

tools and technologies and directed and inspired by qualified staff leadership.

We still must put a selected scion or clone on a preferred rootstock and achieve a viable and marketable plant of the highest quality. However, the events of the past ten to twenty years have radically changed the life and the role of the plant propagator in the rose industry in California.

MODERATOR FURURA: Thank you, Walt, for sharing your thoughts with us this morning. I appreciate your kind attention and I shall turn the chair back to the program chairman.

WALTER KRAUSE: Thank you Tok. Thank you panel members. We had a very fine presentation.