New Vegetables For California Farms Result Of Research

(Continued from page 1)

Baby Persian is noted for its uniformity of type and size of fruit. The mature melons are almost round with typical Persian netting and weigh six to eight pounds. The quality of this variety is not as high as the commercial variety from which it was selected.

Watermelons

Striped Klondike No. 11 has uniform type and skin color, a rind moderately thick and tougher than the old commercial Klondike, deep red flesh color and high sugar content. It is one of the sweetest varieties grown at Davis in comparative trials involving over thirty varieties. It is not resistant to Fusarium wilt.

Klondike R-7 produces a comparatively small, uniform, blocky fruit weighing 18 to 22 pounds at maturity. The skin color is a dark green which is covered with a slight grayish bloom. The rind is thin and only moderately tough. The flesh is deep red, desirable in texture and very sweet. R-7 has proved wilt resistant wherever grown.

Blue Ribbon was developed because of the need for a wilt resistant variety of the Striped Klondike type. Blue Ribbon produces somewhat larger fruit than R-7 and is the sweetest variety ever grown in the variety trials at Davis. It is wilt resistant.

Tomatoes

Cal. 55 is high yielding, but rather late in maturity. The fruit though improved and well colored is inclined to be rough and very large and flat with a tough core.

Pearson tomatoes are a slightly flattened globe, deep red, smooth, with a tough skin, heavy walls and numerous cells and it seldom cracks. It is a very valuable variety for green wrap shipment.

Commercial seed growers by individual plant selection have developed Pearson to its present degree of excellence.

Onions

Red 21 is a particularly desirable strain. Red 21 has proved, repeatedly in several districts, superior to commercial stocks of California Early Red. It matures somewhat earlier, is more uniform in size and shape, color and time of maturity, and keeps better in storage than the older strains of this variety. The scale color is red, the flesh pink.

Stockton G-36 bulbs are yellow, slightly conical with top somewhat flattened and mild in flavor. It is particularly noted for its nonbolting habit in any district where grown.

Lord Howe Island leaves have a characteristic rigid, upright, habit of growth. The bulbs are deep red, oblate and very mild flavored. The variety matures about the same time as Crystal Wax or Yellow Bermuda. It is well adapted to certain districts in southern California and may be important where an early red onion is preferred.

Crystal Grano should be popular among growers who have a market for a white type of Early Grano. It is rapidly gaining favor as a green bunching onion.

Brown 5 was selected to secure a strain with uniformly chestnut brown scales that adhere tenaciously, a lemon flesh color, good keeping quality and uniform type. It is a high seed yielder.

San Joaquin is an early maturing, nonbolting, high yielding variety especially adapted to the Southwest. Its foliage is semiglossy and vigorous. Mature bulbs are light yellow, intermediate in shape between a full globe and the Grano type. The flesh is soft and mild in flavor. Keeping quality is poor. It is an exceptionally high yielding variety.

Excel is best suited to southern California or equally southern districts. It is a Bermuda type in respect to bulb size, shape and color but matures 10 to 14 days earlier than standard Bermuda types. It produces very few splits, doubles and bolters, when properly grown.

California Hybrid Red No. 1 is the first true F1 Hybrid onion ever released. Bulbs of this variety are red, almost a full globe in shape, large and extraordinarily mild and sweet in flavor. Storage qualities are poor. This variety produces an exceedingly high yield.

Calred is a mildew resistant variety, seed of which is to be released to commercial seed growers during 1947. It is intermediate in maturity, highly nonbolting, a deep, almost black, red in color with outer scales slightly lighter. Bulb shape is a deep flat and flavor is mild.

The seedstalks of Calred are highly resistant to the onion downy mildew present in California, with the foliage moderately resistant.

Lettuce

Imperial 17 is well adapted to cultural conditions in the Imperial Valley for October first to 10th planting and February harvest. It makes large well covered heads during the midwinter season when other strains are apt to be small. The interior of the head is well bleached and the base tends to be flat with inconspicuous ribs. Experience has shown this variety to be adapted only for culture in the Imperial Valley and possibly the Yuma Valley in Arizona during the period of low temperature. It will not form heads under relatively high temperature.

Glen N. Davis is Assistant Professor of Truck Crops and Assistant Olericulturist in the Experiment Station, Davis.

Peach varieties which require but little winter chilling are being propagated.

Family Selection And Progeny Testing Of Poultry Worthwhile For Higher Egg Production

An abstract of a talk delivered at the Annual Convention of the California Baby Chick Association at Santa Barbara, June 16, 1947 by I. Michael Lerner.

The 1947 production index of the University's production-bred Leghorn flock averages 220 eggs per hen per year.

Before 1933 the annual average production index was somewhere near 120 eggs per hen.

In that year the Division of Poultry Husbandry started a system of family selection and progeny testing. The production index was recorded for 12 successive years. The production index is the number resulting when the total number of eggs laid by the flock is divided by the number of pullets originally in the flock.

Production Gains

The average annual increase of the University's flock as shown by the production index was 5.6 eggs a year, taking into account the chance rises and falls of production.

Statistical analysis showed that the figure of 5.6 is accounted for by gains due to five different bases of selection: (1) the dam's own production record, (2) the record of the dams sisters—the dam's family record, (3) the record of the dam's daughters—the dam's progeny test, (4) the record of the sire's sisters—the sire's family record, and (5) the record of the sire's daughters—the sire's progeny test.

Four Factors

The amount which each of the five selection bases adds to the gain in production depends on four sets of statistics: (1) the proportion of the flock from each type of selected parents, (2) the average age of the parents, (3) the selection differential—which is the extent by which the selected parents are superior to the flock from which they originated, and (4) the heritability—the accuracy with which the hereditary constitution of a breeding bird can be identified by the standard of selection used.

The higher the selection differential and the heritability, the greater will be the improvement.

On the other hand, increased average age of the parents leads to a longer interval between generations. That means a reduction in the average gain per year.

The Progeny Test

The progeny test increases by a considerable amount, the ability of the offspring to inherit the characteristics of the selected parents. The accuracy of the estimate of the heredity of a dam is three times as great when judged on the basis of a progeny test of eight daughters than when it is made from the basis of her own record.

Graph showing the production record of the University's production-bred Leghorn flock, from 1933 when a system of family selection and progeny testing was started, to the end of the 12-year study.

The use of the progeny test must increase the interval between generations.

The question arises as to which of the opposing forces exercises the stronger pull in raising the production index.

Does progeny testing add more to the gains by increasing heritability than it reduces progress by lengthening the interval between generations?

An accurate and full answer to the question would require one of two things: (1) an actually performed long-range experiment to compare different breeding systems, or (2) some exceedingly elaborate computations.

A partial answer is found in an analysis of how much each of the selection bases contributed to the gains observed in the University flock during the 12-year period studied.

Perhaps the easiest way to visualize the effects of each selection bases is to compute the percentage of the gains due to each one of them. The figures are:

Basis of selection	Proportion of flock	Percent of total gain
Sire's sisters	100%	19%
Sire's daughters	46	25
Dam's record	100	22
Dam's sisters	100	27
Dam's daughters	32	7
		100

It may be seen that family selection accounted for more than three-quarters of the improvement—19+25+27 and 7 per cent. At the same time, progeny testing accounted for about one-third—25 and 7 per cent.

The poultry breeder can draw his own conclusions as to whether family selection and progeny testing are worth his while.

I. Michael Lerner is Associate Professor of Poultry Husbandry and Associate Poultry Husbandman in the Experiment Station.

Methods of processing and packaging whole milk powder and ice cream mix to prevent oxidation, staling, and browning are under investigational study.

Oil Spray As Weed Control In Carrot And Related Crops

A. S. Crafts

Weeding is a costly and laborious operation in the growing of vegetable crops. It usually requires much hand labor.

Certain oil fractions are selective weed killers — they will kill weeds with little or no harm to the crop.

During the war, when labor was scarce, oil spraying of carrots became a common practice in Salinas and Imperial valleys and other carrot-growing regions.

Selective Oils

Selective oils are those that contain enough unsaturates to kill the susceptible weeds but not enough to harm the more tolerant crops.

Research on the weed killing properties of oils carried on at the University Farm, Davis, explained some of the reasons why oils kill weeds, and why some oils are selective while others kill all plants, including the crop.

Certain unsaturated compounds, termed aromatics and olefins by oil chemists, are highly toxic to all vegetation. Certain plants such as the members of the carrot family tolerate much more of these than do grasses and common weeds.

Many refined oil fractions show selective properties.

Stove oil is such a weed killer in carrot and related crops but gasoline is more selective. It is more volatile and leaves less residue on the carrots. It is too hazardous to use because it is so highly inflammable.

In the East, stove oil is not produced as it is in California. There, vegetable growers experimented and found that other oil fractions, notably cleaning solvents and paint thinners, will kill weeds selectively in carrots.

Diesel fuel is too heavy, though low in unsaturates. It stays on the plants so long that both weeds and crops are killed.

The Preferred Oil Fraction

The best fraction for killing weeds in carrots, celery, and other related crops is one that boils between 300 Deg. F. and 400 Deg. F. It should contain about 20 per cent aromatic or olefinic compounds and should have a gravity rating of 40 Deg. or above on the A.P.I. scale.

Such a fraction lacks the hazards of gasoline and is free of the heavy compounds that cause injury to carrots when they are sprayed with diesel oil. It is more selective than stove oil and being more volatile it leaves less oily residue. Such oils can be used up to within six weeks of harvest.

Safety Index for Growers

The fraction just described corresponds closely to a solvent used by the cleaning industry and "350" thinner used in compounding paints. However, production of such solvents and thinners is not controlled with respect to those compounds that kill weeds.

The only safe method for measuring the weed killing power of an oil is the use of experimental test plots.

The growers' safest index is the recommendation of the producer backed up by the test plot experimentation.

Selective Oil Sprays Commercially Produced

Oil refiners are interested in producing weed killers. Two oil companies have already introduced refined oils for killing weeds selectively in carrot crops. Other oil companies undoubtedly will market similar products in the near future.

Composition of such oils, as determined by refining methods, will be controlled. Additional safeguards to the grower will be the experimental testing of such oils until the producers are certain of the weed killing properties of their products.

A. S. Crafts is Professor of Botany and Botanist in the Experiment Station, Davis.

Plant Succession following the clearing of brush from range areas is being studied to determine the best procedure for the maximum development of forage species.

ABSTRACTS OF NEW PUBLICATIONS

OLIVES

California has approximately 99 per cent of the olive acreage and production of the United States. Most California olives are more profitably pickled than made into oil.

The principal varieties grown in this state are the Mission, Manzanillo, Sevillano, Ascolano, and Barouni. Olives grow well in a wide variety of soil types, but commercial plantings in coastal regions, on areas poorly drained, on saline soils, or where boron is deficient, are not recommended.

Although the tree resists cold, lack of sufficient moisture, and poor soil conditions, the orchard **must** receive cultural care, pest control, irrigation, and fertilization. It is untrue that the olive will thrive even though neglected.

Choice of location is important. Cool, foggy weather does not favor the olive tree, and it is liable to frost injury at temperatures below 10° F. Green fruit will be damaged at about 28° F., but ripe olives will stand a somewhat lower temperature.

Olives are readily propagated from cuttings or by grafting of seedlings, a process requiring about three years before the trees can be orchard-planted. They come into bearing at about six years of age. Trees already established may be satisfactorily top-worked to new varieties.

Prospective olive growers will do well to plant only varieties known to produce well, and conform to processors' needs, in chosen localities.

The establishment and management of an olive orchard are discussed in the following circular, which also covers the botany, varieties, diseases, and pests of the fruit. This circular is now available at the College of Agriculture.

OLIVE CULTURE IN CALIFORNIA, by I. J. Condit. Ext. Cir. 135, May, 1947. (36 pages).

WEED CONTROL

The use of oil sprays for weeding carrots and related crops is discussed elsewhere in this page of California Agriculture. Complete information on this subject may be obtained from the publications listed below. This is the second in a series of circulars dealing with various phases of weed control which will replace Ext. Cir. 97, "Weed Control."

OIL SPRAYS FOR WEEDING CARROTS AND RELATED CROPS, by A. S. Crafts. Ext. Cir. 136, May, 1947. (12 pages).

DONATIONS FOR AGRICULTURAL RESEARCH

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