In This Issue

Farm prices, by G. T. Blanch..................................................50

How good are Utah apples, by E. W. Lamborn.......................53

Open shed housing, by G. E. Stoddard and G. Q. Bateman.........54

Utah needs a new library law, by C. Fredrickson and J. A. Geddes.................................................................57

The quality of the eggs you buy, by R. H. Anderson..............58

Alpine—new winter barley, by R. W. Woodward and D. C. Dix.................................................................60

Farm families and nonfarm income, by C. E. Stewart.............62

It’s all a matter of taste, by J. Barber and R. K. Gerber..........65

Terramycin in the fattening rations of lambs, by R. J. Raleigh, L. E. Harris, and M. A. Madsen...................67
Farm Prices

GEORGE T. BLANCH

During recent months there has been much public discussion of farm prices. Apparently there are some differences of opinion about their levels, trends, and significance. This applies to prices received by farmers for commodities sold and also to prices paid for things bought, and to the relation of the two. Most of these discussions deal with generalizations rather than specifics and the major contentions can be either true or false. Whether prices currently received and paid are high or low, rising or falling, depends on: (1) the selection of the base period used for comparison; (2) the particular commodities included in the comparison, and (3) the time span used to measure changes.

The purpose of this article is briefly to clarify these points. Data for the United States as published by the Agricultural Marketing Service is used throughout.

Are Farm Prices High or Low?

Change in prices received for farm products is normal. For some products prices change throughout each market day. These changes are usually relatively small. For other products there may be but one basic price during a given year. Prices for other products follow a typical seasonal pattern. Examples include egg and milk prices which are usually lower in the spring than in late summer and fall. Other products such as perishable fresh fruit and vegetables fluctuate markedly from one year to another largely in response to changes in supply. All farm product prices respond to changes in supply and demands. At times the average of all prices may follow a trend up or down for several years.

GEORGE T. BLANCH is head of the Department of Agricultural Economics.

Changes up or down are measured from that level. The most recent index, mid-June 1956, for all farm commodities was 247, or 2.47 times the 1910-14 period.

Compared with 1910-14

Changes in farm prices are measured in index numbers. Included in the index of prices received for all commodities are the prices of all the important products produced for sale. The price received for each is weighed in proportion to its importance in the market. The index of prices paid by farmers is constructed in a similar manner. The base for the index most often used is the average of prices that prevailed during the period 1910-14. (Adjustments from this base are now made for some commodities.)

Prices paid by farmers for all goods and services have been relatively stable during the past 5 years. The index of all items in June was 286, the range since February 1951, 277 to 290. Some items have increased, others have decreased. The major decreases have been for farm produced items, livestock, feeds, and seeds.

A given quantity of all farm products will buy less for farm living and production now than in either 1910-14 or 1947-49. Some products will buy more, however. All will buy more of some things on the 1910-14 base. Purchasing power appears more favorable on the 1910-14 than the 1947-49 base.

There are so many other variables that affect the economic welfare of farmers that policy or management decisions should not be made on the basis of price comparisons only.

PRICES ARE NOT THE TOTAL ANSWER

- The dollar prices of all groups of products farmers sell are now high compared with 1910-14. The index of all commodities was 247 for June. When 1947-49 is used as the basis of comparison, the prices of most groups are low, all commodities 91, but some groups are relatively high. There is considerable variation among groups and within groups. Regardless of which base is used crop prices are relatively more favorable than prices for livestock and livestock products.

- It appears that the downward trend in farm prices may have been arrested, and that the fluctuations of the past 2 years have been seasonal and normal. In general, as prices of some products have decreased other have increased to offset the decreases.

- Prices paid by farmers for all goods and services have been relatively steady during the past 5 years. The index of all items in June was 286, the range since February 1951, 277 to 290. Some items have increased, others have decreased. The major decreases have been for farm produced items, livestock, feeds, and seeds.

- A given quantity of all farm products will buy less for farm living and production now than in either 1910-14 or 1947-49. Some products will buy more, however. All will buy more of some things on the 1910-14 base. Purchasing power appears more favorable on the 1910-14 than the 1947-49 base.

- There are so many other variables that affect the economic welfare of farmers that policy or management decisions should not be made on the basis of price comparisons only.
point. The Korean outbreak reversed the trend and a new high of 313 was reached in February 1951.

The downward trend was then resumed with drops of 20, 30, 6, 13, and 18 points during each successive twelve-month period, or a drop of 87 points from February 1951 to February 1956. From February to June of 1956 there was an increase of 21 points. Thus the farm price index in June was 247. This was 6 points above June 1955 and just the same as June 1954. Whether this increase during the past few months is more than a temporary phenomenon remains to be seen. The increases did not apply to all products. Fruit, commercial vegetables, and potatoes accounted for much of the increase. Prices of meat animals also increased slightly. Prices of poultry and eggs decreased.
Variation Among Products

A comparison of the relative prices of different kinds of farm products in June 1956, when 1910-14 is considered as the base of 100, is presented in fig. 1. The range was from a high index of 453 for tobacco to a low of 171 for poultry and eggs. Most of the indexes that were above the average of 247 were for crops. Since these data have not been adjusted for seasonal variations some groups of products appear somewhat more or less favorable than they really are. If adjusted, poultry and eggs would increase to 181 and potatoes (white and sweet) and dry beans would be reduced to 315.

The variations in price indexes would be greater were specific commodities charted. For example, Irish potatoes would be 389 and dry edible beans 201 on the bases of unadjusted 1910-14 base prices. Sheep would be 124, lambs 354, beef 288, and hogs 215. Similar variations exist among the fruits, vegetables, and other products.

As all indexes are above 100, one may be tempted to draw the conclusion that all prices are high and that growers of tobacco, potatoes, and a few other products must fast be approaching financial independence. Or in comparison with tobacco one may conclude that poultrymen must be in desperate financial conditions. Neither condition is necessarily true. The data presented show only relative changes since 1910-14. The price relations among the several commodity groups may not have been equitable or even normal during that period. In addition, the technological and economic changes in production since then may not have affected all commodities to the same extent.

Compared With 1947-49

The three-year period January 1947 through December 1949 is becoming extensively used as a base from which to measure price changes. Adjusting the June 1956 price indexes to this base removes the appearance of all prices being high, changes the relative rank of groups, but does not remove the variation among groups (fig. 1). The prices of some products still appear high while some appear low.

When the indexes are adjusted to the 1947-49 base, the June index for all farm products was 91 compared to 247 on the 1910-14 base. The groups varied from 75 for poultry and eggs to 146 for potatoes and dry beans. The index for all crops was 106, for all livestock and livestock products 79. In 1947-49 livestock and products were relatively higher than were crops. The indexes were 292 and 247, respectively, on the 1910-14 base. The higher the prices were during the base period the lower the index for a given price at the present time.

By changing from the 1910-14 to the 1947-49 base, the June 1956 prices for potatoes and beans, fruit, dairy products, wool, food grains, and feedstuffs were made to appear more favorable compared with prices for all commodities, while the prices for tobacco, cotton, oil seeds, and meat animals seem less favorable. Poultry and egg prices appear least favorable regardless of which base is used. Vegetables maintained the same relative rank.

That the mere change of base for measuring price changes doesn’t actually change the desirability of producing one product as compared with other products should require no discussion. However, it may not always be clear to one unfamiliar with the construction and use of price indexes. Also, politically significant use of such devices has been and probably will be made in relation to public policies.

What About Prices Farmers Pay?

The level of prices received by farmers is by no means the whole of the farmers’ problem. As important is the level of prices they must pay for things they must buy for use in farm production and living. What are the facts about the level and trend of prices farmers must pay? Like prices received, some are high, some are low.

Most prices paid do not move up and down as sharply as do prices received. The rate of rise is usually slower as is also the rate of decline. During the depression, on the 1910-14 basis, they never quite reached 100 as a low point. In only 2 years, 1932 and 1933, were they below 120. During and following World War II an upward trend continued to a high point of 260 in 1948. Essentially this level was maintained during 1949 and 1950 when farm prices dropped significantly. The high point of 290 was reached in early 1952. Since then it has been more or less stable, fluctuating between 279 and 290. June 15, it stood at 286.

Not All at the Same Level

Price indexes vary more among the items farmers buy than among the things they sell when 1910-14 is used as the base. The highest, 538, on June 15 was the index of wage rates (fig. 2). The lowest index, 152, was for interest and also for fertilizers. Motor supplies were 164. Next to highest, at 432, were taxes.

Commodities purchased for family living were slightly higher than commodities purchased for farm production–279 compared to 248. Within each of these groups were

(Continued on page 64)
Can Utah produce good quality apples?

Will they compete with apples from the Northwest?

ELLIS W. LAMBORN

Utah apple producers can grow, harvest, and market Delicious apples that compare in quality to Delicious apples grown in the Northwest. Furthermore, consumers in the markets of Utah have no bias either for or against Utah apples when they are offered for sale at the same price per pound as that charged for Northwest Delicious apples on the local retail market. Utah apples sell just as well as apples from Washington.

Apples of the Delicious variety grown in the Northwest have become generally accepted as a standard for the industry throughout most of the western part of the United States. It is the opinion of most apple producers, handlers, and consumers within the state of Utah, that if a high-quality Delicious apple is wanted, it is necessary to rely on apples shipped into the state. The Northwest apple, and particularly the Washington apple, has obtained this position through advertising, rigid production practices, and close grading of the product which is offered for sale in markets outside of the immediate area of production.

This study was undertaken to try to determine if Utah consumers will buy Utah Delicious apples when they are offered for sale in direct competition with the high-quality Delicious apples from the Northwest and other areas for the same price per pound.

Can Utah Producers Grow Quality Apples?

This study has shown that it is possible for Utah producers to grow and harvest Delicious apples with as good a quality and external appearance as the Northwest Delicious apple. In addition, the Utah producers have a definite advantage in servicing the local intermountain market. If handled properly, it is possible to place a Delicious apple on the local wholesale market with better internal quality than can be obtained with Northwest Delicious apples. This is mainly because of the shorter time needed to move apples from the cold storage plant to the retail store when the producing area is close to the consuming center.

Will Utah Apples Compete On the Market?

When Delicious apples of comparable quality (one grown in Utah and one grown in the Northwest) were offered for sale at the same price per pound, consumers in Salt Lake City had no bias either for or against the Utah fruit. The Utah fruit sold just as well as, but no better than, the fruit from the Northwest. This was true regardless of whether or not the apples were labeled as to origin and whether the apples were offered alone or in direct competition with apples from the Northwest. Consumers apparently buy apples based on appearance or eye appeal; they have no measure of internal quality.

Table 1. Type of display in each store, four stores, Salt Lake City, Utah—January-February, 1956

<table>
<thead>
<tr>
<th>Time period</th>
<th>Store A</th>
<th>Store B</th>
<th>Store C</th>
<th>Store D</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan. 4 to 18</td>
<td>Utah labeled</td>
<td>Utah labeled</td>
<td>Utah labeled</td>
<td>Northwest labeled</td>
</tr>
<tr>
<td>Jan. 19 to Feb. 1</td>
<td>Utah labeled</td>
<td>Northwest labeled</td>
<td>Utah and Northwest labeled</td>
<td>Utah and Northwest labeled</td>
</tr>
<tr>
<td>Feb. 2 to Feb. 15</td>
<td>Northwest labeled</td>
<td>Utah and Northwest unlabeled</td>
<td>Utah labeled</td>
<td>Utah and Northwest labeled</td>
</tr>
<tr>
<td>Feb. 16 to Feb. 29</td>
<td>Utah and Northwest unlabeled</td>
<td>Utah and Northwest labeled</td>
<td>Northwest unlabeled</td>
<td>Utah labeled</td>
</tr>
</tbody>
</table>

DR. ELLIS LAMBORN is associate professor of agricultural economics. His research is in the area of the consumer acceptance and marketing of Utah fruit.
OPEN SHED HOUSING

In Utah large stanchion barns are being replaced by cheaper open sheds. Cows kept in these sheds have less udder trouble and lameness or stiffness.

Open shed housing for dairy cattle has been gaining popularity not only in the drier and milder climates, but in the northern plains and New England as well. Experience and research have shown that it is the most satisfactory type of housing for dairy cattle in Utah.

The construction of open sheds is considerably less expensive than of a conventional stanchion barn. In addition, the cows appear to have less udder trouble and lameness or stiffness. They will, however, consume more roughage and require more bedding in an open shed.

In view of these findings, the following recommendations are made for establishing open shed housing.

Select a Convenient Location

Open sheds and yards should be located near the milkhouse and farmstead to allow for convenient and efficient milking, and general care. They should also be accessible from roadways so that feeding

Through careful planning in the placement of the salt-mineral box, mangers, and watering facilities with relation to the bedded area under the open shed, it is possible to feed the herd more efficiently and protect the bedded area from traffic lanes across it. The mineral box is at the end of the silage manger and is protected from the weather.
The proper arrangement of hard surfaced yards and gates makes it possible to remove manure from the yard efficiently using a small amount of man labor. This unit houses 32 cows. The shed is cleaned but once each year. The feed platform is bladed at about ten day intervals. The time required to clean the yards, turn the manure into the bed pack, and place the manure on the land amounted to nine man hours per cow per year or about 1½ minutes per cow per day.

and bedding can be hauled in and manure hauled out easily.

Sheds should face south where possible. If this is impractical, east or west facings may be used.

The area selected should be well drained in all seasons. Direction of drainage should be away from the milking unit.

**Shed Construction**

- Fifty to sixty square feet is needed per cow. Manure can be left under the shed during the entire winter. This area will allow a manure pack to develop properly.

The hay storage shed needs only a roof with the ends of the shed closed. The front and back should be left open to facilitate the placing of hay in storage and its removal for feeding. The shed should have a clearance of not more than 10 feet at the back and 18 feet in front. With these shed heights hay can be unloaded in storage with minimum man labor or unloading machinery.

Less space crowds the cows and they will require more bedding to keep them clean. Crowding may also result in injuries. Too much space reduces efficiency of manure pack and wastes space.

- Soil, sand, or fine gravel floor under shed. The floor should be placed well above the water table to increase good drainage.
- Concrete footings, walls, and pillar supports as high as manure pack will build up. The manure pack will build up 2½ to 3½ feet during a 7-month winter period. Place footings below the frost line. Walls should be 6 to 8 inches thick with
some reinforcing steel at corners and joints.

Walls should be concrete to a height of 4 feet as other materials will decay or corrode on prolonged contact with the manure pack.

Pillar supports can be made by placing a 12-inch concrete pipe on end on a footing and filling it with concrete.

- **Shed should be twenty-six to thirty feet deep.** Less depth will not give adequate protection from weather. Greater depth limits penetration of sunshine, encourages "trailing" of cows to rear of shed, and requires too high a roof in order to keep the proper slope for drainage. A 26-foot depth fits better into planning with relation to feed manger space, yards, and driveways.

- **Walls above the concrete.** Walls can be constructed of a variety of materials. Concrete is one of the best. Concrete blocks, corrugated galvanized metal, or lumber can also be used satisfactorily.

- **Roof.** The roof should have a slope of about 1:6 if constructed of corrugated metal. In areas of heavy snowfall, or where composition or single slope with back of shed away from yard so that runoff can be kept out of the yard.

**Yards**

An area of 150 square feet, including mangers, should be allowed in the yard for each cow.

The yards should be hard surfaced. The surfacing will soon pay for itself in fertility saved. It will also reduce udder, feet, and leg troubles.

Concrete is best for hard surfacing. Asphalt can be used, but it is less durable. Either should be placed on dry, firm, well drained base. A base of cobbled rocks will add support and permanence. A four-inch layer of concrete is sufficient for the usual farm equipment. If heavy equipment is used, a 6-inch thickness is necessary in the driveway.

A slope of about ¼ inch per foot will allow ready drainage from hard surfaced yards. The surface should be finished rough. The platform by the manger should be roughed with a barn broom parallel to manger to prevent cows from slipping.

**Mangers**

For hay feeding 2½ to 3 lineal feet of manger space per cow should be provided. Silage may be fed in the same manger or an additional manger may be used for convenience.

The manger should have a concrete floor. A flat concrete slab is simpler and more convenient than the conventional cupped manger. The manger front should be about 26 inches high for Holsteins and 18 inches high for Jerseys or Guernseys. Detailed dimensions for mangers are given.

The manger area may be covered, but the platform for cows should be left uncovered. If the platform is raised, it will be drier without daily cleanings.

It is desirable to have the manger parallel to the front of the shed to prevent lateral trailing under the shed in going to and from the manger.

**Management**

Sheds should be bedded at least once a week and droppings turned into the bedpack twice daily. Under usual weather conditions and under proper handling, 8 pounds of straw daily per cow will keep the cows clean.

Yards should be bladed off weekly.

(Continued on page 71)
Is your library service to be

This

- Open a minimum of 40 hours a week
- Book resources of county system available on call
- New books each year—4,000 to 5,000
- Periodicals—300
- Bookmobile—2 in county system
- Librarian—trained
- Librarians' salaries equal to teachers salaries
- Films, recordings, pictures regularly budgeted
- References—diversified and geared to large well-balanced library resources

or This

- Open Tuesday, Thursday, and Saturday, 7 to 9 p.m.
- Total books, mainly old fiction and old text books—5,300
- New books 206
- Periodicals 9
- Bookmobile—none
- Librarian—not trained
- Librarian's yearly salary $612
- Films, recordings, pictures—none
- References—meager

CARMEN FREDRICKSON

JOSEPH A. GEDDES

UTAH NEEDS A NEW LIBRARY LAW

Recent federal act makes money available to expand rural library service—Utah not eligible for such funds under present laws

Nowhere in the broad field of relations between state and local government in Utah is legislative neglect more pronounced than in the area of public libraries. Only three times in Utah history has the legislature taken a considered look at the libraries: once in 1897 when cities were given the right to levy a tax to support libraries; once in a confused way between 1908 and 1910 when a state library-gymnasi-

um commission was established and a little later withdrawn; and once in 1919 when county libraries were authorized. For the past twenty-seven years the existence of public libraries has been completely ignored by the legislature. In the meantime without provision for planning or leadership, Utah libraries have fallen far behind those of neighboring states that have been less neglectful.

The recent passage of the Library Service bill by Congress and its prompt signing by President Eisenhower, puts Utah on the spot in library matters. The new law re-

quires a matching of funds. It carries an appropriation of $2,050,000. This amount is to be used to set up administrative machinery and provide $40,000 of matching funds for each state which qualifies and an additional amount determined by the proportion the rural population of state is to the rural population of the United States according to the most recent census. Congressman H. A. Dixon computes the amount of federal funds this state will receive at $63,211 providing Utah qualifies for participation through enactment of favorable legislation.

(Continued on page 69)
The Quality of the EGGS YOU BUY

Grades as now marked on cartons have little meaning for Mrs. Housewife. She judges quality by thickness of white, color of yolk, and lack of strong flavor.

Mrs. Housewife cannot tell the difference between eggs of various qualities as graded by present standards. The egg which she judges as best has a thick white and a light colored yolk. It is free from strong taste. Eggs of this quality, according to the study made in Logan by the Utah Agricultural Experiment Station, can best be furnished by controlling quality from hen to consumer. The candling method now used is not a reliable measure of interior egg quality.

In the first phase of the study one dozen from each lot of eggs displayed in twelve food stores was purchased every Friday from October 29 to December 3, 1955. The twelve stores were selected at random and represented about half of the Logan food stores. The researchers marked the eggs and removed them from their original carton as soon as they were purchased. A licensed grader candled the eggs and graded them according to federal standards.

Three eggs were selected at random for each dozen weighed, broken-out, and measured in terms of "haugh units." This measure is based on weight of the egg and the height of the white and can be directly compared with federal grades. The broken-out quality determinations were completed less than four hours after the eggs were candled, so the loss of quality between gradings was kept at a minimum.

The haugh unit measure of quality was assumed to be the ideal measure for purposes of this study. It has the advantage of being more objective than other measures of broken-out quality, and is based on a quality characteristic later found to be important to consumers. For practical use, the haugh unit measure is limited by the fact that the egg must be broken in order to measure the height of the white. One purpose of this study was to measure the relation between grades of eggs as determined by candling and haugh units.

How Do Methods of Determining Quality Compare?

Of 534 eggs broken-out, 375 or 70 percent had previously been candled grade AA, 16 percent A, 11 percent B, and 3 percent C grade by a federal licensed grader (fig. 1). Quality determined by haugh units resulted in smaller proportions in AA, B, and C grades and a larger proportion in A grade.

The distribution of broken-out quality for each candle grade is shown in figure 2. Here the broken-out quality is further classified into 12 groups according to the U. S. Department of Agriculture score chart for measuring interior quality. Of eggs candled AA grade, only 61 percent were AA on broken-out basis. On the other hand, 35 and 7 percent of the eggs candled A and B, respectively, were AA grade by the broken-out method. Determination of grade by candling appears to be unreliable.

In the second phase of the study, eggs of known candle grade were delivered each Saturday morning to a sample of 30 consumers in Logan for the six-week period. Twenty-four consumers received eggs of uniform grade each week. Twenty-four received four eggs each of AA grade, A grade, and B grade. Deliveries were arranged so that consumers receiving eggs of uniform grade got higher grade, lower grade, or the same grade in successive weeks during the six-week period of the experiment.

What Is a Bad Egg?

Consumers were asked to examine each egg carefully as it was used and determine if it was satisfactory. If not satisfactory, the reason was noted, and these reasons were summarized as a basis of determining the quality characteristics consumers considered to be important.
Stale or strong taste was the reason most often given for dissatisfaction, and watery or runny white was a close second. These two reasons were given in more than half of the cases (table 1). Fifteen percent of the unsatisfactory eggs were so classified because the yolk was dark, and 11 percent because there were spots on the yolk. Reasons of lesser frequency included broken yolks, blood spots, light-colored yolks, and milky appearance.

Consumers found as much fault with AA grade eggs as with A grade eggs, although B grade eggs were less satisfactory. Grade B eggs were especially unsatisfactory because of strong taste and watery whites (table 2).

More than twice as much dissatisfaction was found among eggs of mixed grade than when the carton contained eggs of uniform grade. When eggs of varying quality are broken-out and examined together, closer scrutiny by consumers is invited. Uniformity of quality within the pack as well as level of quality seems to be important to consumers.

**Do Present Grade Standards For Eggs Conform to Consumer Desires?**

Consumers were asked to classify the eggs received into one of three categories—high, medium, or low quality. Those receiving cartons of uniform grade classified the dozen as a unit, and those receiving mixed grades classified each egg.

Regardless of the grade received, consumers classified a similar percentage of eggs in each quality category (fig. 3). Fifty-six percent of the eggs were classified as high quality whether the grade received was AA, A, or B. Only 4 percent of the B grade eggs were classified low quality, while 8 percent of the AA grade eggs were so classified. The six consumers receiving eggs of mixed quality in the carton clas-

*(Continued on page 70)*
AN answer to farmers’ requests for a substitute crop for winter wheat acreage withdrawn because of acreage allotments has been provided by the release of Alpine barley.

This new and superior variety of winter barley will provide considerable feed under either dry land or irrigated conditions and is a good substitute for winter wheat. It was released in mid July for seeding on both dry land and irrigated farms in Utah and possibly other parts of the Intermountain Area.

Hybrid Selected for Winter-Hardiness
The new Alpine winter barley is a selection from a cross of Colorado 3063 by Winter Club and Purdue 21. First of all the Colorado 3063 was a strain taken from a cross of Coast by Lion. The resulting strain was crossed with Winter Club and a number of good selections isolated. One of the best of these was then crossed with Purdue 21, a
strain of considerable winter hardiness. From this cross breeding a number of promising strains were produced, and the Alpine was chosen for commercial production.

**Characteristics of Alpine**

Alpine is a semi-club, rough-awned, white kerneled variety which grows rather tall under irrigation but which has a stiff straw and seldom lodges. It is one of the easiest of all commercial varieties to thresh, and it tillers freely to form a dense vegetative growth especially valuable in controlling weeds.

Alpine will not compete with winter wheat in surviving hard winters, but it is the best variety available. There are other varieties more hardy, but they will not yield nearly as well.

The new barley must be compared with the only available and commonly-grown barley — Winter Club. In a series of tests made throughout Utah and many parts of the nation Alpine shows an average winter survival in five years of testing of 61 percent compared to 34 percent for Winter Club.

Average yield during the same period and at the same stations was 49 bushels per acre as compared to 38 bushels per acre for Winter Club. Yields ranging from 20 to 55 bushels have been obtained on dry land farms of Utah and other states. Top yield of 128 bushels per acre was recorded on the fertile and irrigated Cache Valley Farm of Kenneth and Nolan Ballard.

Farmers growing the new Alpine winter barley may expect occasional failure or poor stand because of open ground, swelling, snow mold, and fungus, but serious losses have not occurred more often than once in six or seven years.

The year 1955-56 was extremely hard on winter barley seeded on wet lands late in November.

The better planting period for Alpine appears to be between September 16 and October 10, although exceptions are possible.

Fall-sown Alpine barley should be planted at the rate of 60 to 75 pounds to the acre with slightly more seed for irrigated areas especially if late planting is necessary or if weed control is a problem.

(Continued on page 72)
Fig. 1. Number of farms with off-farm employment and income, Utah, 1949 and 1954. Based on U.S. Census

CLYDE E. STEWART

U t a h has many small farms. In 1954, 53 percent of our 23,000 farms had sales of farm products valued at less than $2,500. Thirty-five percent of all farms had sales of less than $1,200; the average value of sales for this group was $470.

Small farms contribute relatively little to the market supply of farm products. Farms with sales of less than $2,500 produced only 9 percent of the products sold in Utah in 1949. There were 8,500 farms with sales of less than $1,200 in 1949. This latter group sold less than 3 percent of the total farm production in the state.

If these farms are so small and farm income so low, why do families remain on them? Are these small farms as inefficient as is often thought? Let us examine them further.

The United States Census groups farms into nine economic classes. We shall discuss the four groups having the lowest farm income. Classes V and VI are the smallest of six commercial farm classes. Class V farms have gross sales that range between $1,200 and $2,499. Class VI farms have sales ranging from $250 to $1,199. Operators of these farms work off the farm less than 100 days during the year and their nonfarm income is less than the value of their farm products sold.

Part-time farms have the same amount of sales as class VI farms. But farmers on part-time farms work off the farm 100 days or more or have nonfarm income that is

This is the third and last of a series of articles on farm size and value based on census data written by DR. STEWART who is economist with the Production Economics Research Branch, Agricultural Research Service, U.S. Department of Agriculture. Dr. Stewart is stationed on the Logan campus and works cooperatively with the Utah Station.
Farm Families and Nonfarm Income

greater than income from farm products. The fourth class, residential farmers, sell less than $250 worth of farm products.

Many Utah Farmers Have Off-farm Income

Farmers get nonfarm income from many sources. The main source in Utah is work off the farm. This work includes employment by other farmers as well as by businesses and public agencies. Exchange labor is not counted.

In 1949, about 30 percent of all farmers in Utah had nonfarm income that amounted to more than their sales of farm products (fig. 1). This proportion had increased considerably by 1954. Many of our so-called "commercial" farms were in this group.

You may be surprised to learn that in 1954, nearly 65 percent of our farmers did some work off their farms for wages or pay (fig. 1). About 45 percent of all our farmers worked more than 100 days off their farms in that year. These percentages have increased somewhat since 1949. Work off the farm gives an indication of the income which these people combine with their small farm incomes.

On the other hand, about 9 percent of the part-time farmers and nearly 16 percent of the farmers on residential farms did not work off the farm in 1949. We have no indication of other sources of income received by these people. Some may have had retirement income. Those without outside income had only a subsistence living.

About 80 percent of our part-time farmers worked 100 days or more off their farms. Nearly the same proportion of residential farmers worked similar amounts off their farms.

Almost 90 percent of our part-time farmers had nonfarm income greater than farm income in 1949. Seventy-eight percent of the residential farmers reported nonfarm income greater than farm income. This suggests that many residential farmers may be in full or semi-retirement.

Farmers in commercial class VI appear to be in lowest income position of any farm group in the state. Their gross farm sales are between $250 and $1,199, the same as for part-time farms. But unlike part-time farmers, class VI farmers have relatively small nonfarm incomes. About 5 percent of our farmers are in this class.

Off-Farm Income Varies Among Areas

The United States Census divides Utah into three economic areas (fig. 2). Area 2 (Davis, Salt Lake, Utah, and Weber Counties) contains nearly half of our low-income farms in the state. More than 60 percent of the 8,100 farms in this area are in the four low-income groups. About 55 percent of the farms in area 3 and 40 percent of the farms in area 1 are in the four low-income groups.

But area 2 includes much of the nonfarm population and business activity of the state. Thus more than half its farmers had other income that was greater than farm sales. This contrasts with 30 percent in area 1.

All three areas had large numbers of farmers working off their farms in 1954. The percentages ranged from 60 in area 1 to 68 in area 2. Fifty-seven percent of all farmers in area 2 worked off their farms more than 100 days while 37 percent in area 3 did so.

Military and industrial developments in the larger cities in area 2 offer opportunities for work off the farm. They also help solve the income problem on small farms.

However, in area 3 where outside opportunities for work are more limited there are also many part-time and residential farms. The income problem of these small farms is much more acute than in the other two areas.

What Are the Motives of People on Small Farms?

Farm mechanization and large off-farm employment opportunities are strong forces in our economy tending to increase size of farms. At the same time, more off-farm work opportunities and shorter working hours probably have encouraged part-time and residential farms.

Many forces are subjective in nature and cannot be measured in terms of money. Some farmers resist moving out of farming even with the prospect of higher incomes elsewhere. Lack of information about work opportunities and costs of moving are important factors. Many farmers prefer to farm and want to enlarge their farms, but lack capital or land to buy or rent. Some people may like to operate a small farm because it gives them more time for leisure. Ownership of land even though small gives many people a sense of security that they cannot realize elsewhere.

We have seen that many of our farmers operate land in combination with off-farm employment. Frequently, this arrangement gives a profitable return. About 55 percent of farmers with gross sales of less than $2,500 worked off their farms 100 days or more. More than 70 percent of this same group did some work off their farms in 1949.

One would expect to find a large number of retired farmers among the part-time and residential classes. However, only 12 percent of them do no work off their farms.
The average part-time farmers is only 46. Residential farmers average age 48 years, although 13 percent of them are over 65. This makes no great contrast with commercial farmers—average age 48, 10 percent over 65.

That the small farm was acquired as a supplementary operation may be suggested by the average tenure—13 years part-time, 12 years residential. The average residence on a commercial farm is 16 years. This indicates a less permanent basis for the small farm operation. Coupled with its prevalence in an area known to be more industrial suggests a two-income plan on the part of the farmer.

However, as noted before, class VI commercial farmers present a special problem. They are older, have been on their farms longer and are not benefiting noticeably from off-farm employment although their gross sales are below $1200.

This is one group that invites further study as to their motives for remaining on the small farm and how they live on their income. They represent an economic problem and may need assistance in solving it.

Are We Anticipating the Change?

We have looked briefly at an important segment of Utah’s agriculture and economy—the people and resources that make up our small commercial and part-time and residential farms. Along with the favorable features of this segment of our agriculture, problems have arisen and new problems are emerging. In 1949, this group comprised 52 percent of our farm numbers. It held 10 percent of the private land in farms in Utah. These farms produced only 9 percent of the gross farm income. But this kind of agriculture is growing in Utah, especially in terms of farm numbers, land use, and people. Are we anticipating the possibilities of this vast economic and social change?
If the ambition to establish a juice processing plant in Utah should be realized, which of the many flavors and blends would catch the public eye? This was the question recently asked students and faculty in the Utah State Agricultural College's cafeteria by an experiment station research team. The answer is as diverse as taste preferences themselves—results show only small differences in the ratings of the 21 juices tested.

This study, a part of research being done on the use of Utah-grown fruits, continues the taste studies carried on during 1955 and 1956 with a small panel of the Foods and Nutrition Department and reported in the March Farm and Home Science. The 21 single juice or blended fruit drinks were judged among the best in the preliminary study.

All juices and purees used in the drinks, with the exception of pineapple and orange, were prepared during the summer and fall of 1955 and stored until the study in May. At that time, blends of more than one fruit were made. Single-juice products had previously been prepared, pasteurized, and bottled.

A brief description of the 21 fruit drinks is given in table 1. In their
preparation, all juices were filtered and otherwise clarified to produce clear, sparkling products. Ascorbic acid was used during the preparation of pear and peach purees as well as apple juice to prevent discoloration. Apple juice was made from the raw, grated apples. All of the other fruits, with the exception of cherries and berries in some cases (as indicated in the description) were heated before extracting juice or pulping for puree.

In preparing the beverages, the most characteristic acid in the particular fruit was added to juices or purees lacking enough acid. In some cases there was adequate acid in the fruit.

The fruit drinks were distributed during the lunch period in the cafeteria line to those interested in participating. Judges received 3 randomized samples of not more than ½ cup each so that they would not tire of juice before completing the judging. They were asked to judge the juices before eating lunch. Each judge was given a score sheet and asked to rate each sample in one of the following categories:—like extremely—like very much—like moderately—like slightly—neither like nor dislike—dislike slightly—dislike moderately—dislike very much—dislike extremely. Judges were also asked to comment on the samples and to list those samples.

(Continued on page 71)

Table 1. Description of the experimental fruit drinks

<table>
<thead>
<tr>
<th>Sample number</th>
<th>Fruit drink</th>
<th>Description</th>
<th>Sugar* Gm./100 ml.</th>
<th>Total acid Gm./100 ml.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Apple</td>
<td>Apple juice made from a blend of Rome Beauty, Starking Delicious, and Jonathan varieties; malic acid added; pasteurized.</td>
<td>11.6</td>
<td>0.57</td>
</tr>
<tr>
<td>2</td>
<td>Cherry (Montmorency)</td>
<td>50 percent Montmorency cherry juice; 50 percent sugar syrup; pasteurized.</td>
<td>15.9</td>
<td>0.81</td>
</tr>
<tr>
<td>3</td>
<td>Apricot nectar</td>
<td>50 percent Moorpark apricot puree; 50 percent sugar syrup; citric acid added; pasteurized.</td>
<td>16.2</td>
<td>0.74</td>
</tr>
<tr>
<td>4</td>
<td>Peach nectar</td>
<td>58.5 percent Elberta peach puree; 41.5 percent sugar syrup; citric acid added; pasteurized.</td>
<td>16.2</td>
<td>0.65</td>
</tr>
<tr>
<td>5</td>
<td>Pear nectar</td>
<td>50 percent Bartlett pear puree; 50 percent sugar syrup; citric acid added; pasteurized.</td>
<td>16.0</td>
<td>0.65</td>
</tr>
<tr>
<td>6</td>
<td>Prune</td>
<td>67 percent Italian Prune juice; 33 percent sugar syrup; malic acid added; pasteurized.</td>
<td>15.4</td>
<td>0.74</td>
</tr>
<tr>
<td>7</td>
<td>Prune-apple</td>
<td>63 percent pasteurized Italian prune juice; 37 percent pasteurized apple juice (Rome Beauty, Starking Delicious, Jonathan); sugar and malic acid added.</td>
<td>15.0</td>
<td>0.75</td>
</tr>
<tr>
<td>8</td>
<td>Grape</td>
<td>75 percent Concord grape juice; 25 percent sugar syrup; tartaric acid added; pasteurized.</td>
<td>15.0</td>
<td>0.60</td>
</tr>
<tr>
<td>9</td>
<td>Grape-apple</td>
<td>50 percent pasteurized Concord grape juice; 50 percent pasteurized apple juice (Rome Beauty, Starking Delicious, Jonathan); malic acid and sugar added.</td>
<td>15.0</td>
<td>0.60</td>
</tr>
<tr>
<td>10</td>
<td>Black raspberry-apple</td>
<td>33 percent pasteurized Munger black raspberry juice (from frozen berries, pressed raw); 67 percent pasteurized apple juice (Rome Beauty, Starking Delicious, Jonathan); citric acid and sugar added.</td>
<td>13.0</td>
<td>0.62</td>
</tr>
<tr>
<td>11</td>
<td>Red raspberry-apple</td>
<td>33 percent pasteurized Washington red raspberry juice (from frozen berries, pressed raw); 67 percent pasteurized apple juice (Rome Beauty, Starking Delicious, Jonathan); sugar added.</td>
<td>13.0</td>
<td>0.72</td>
</tr>
<tr>
<td>12</td>
<td>Strawberry-apple</td>
<td>50 percent pasteurized Lindalicious strawberry juice (from frozen berries, pressed raw); 50 percent pasteurized apple juice (Rome Beauty, Starking Delicious, Jonathan); citric acid and sugar added.</td>
<td>13.0</td>
<td>0.62</td>
</tr>
<tr>
<td>13</td>
<td>Cherry-apple</td>
<td>33 percent pasteurized Montmorency cherry juice; 17 percent pasteurized Lambert cherry juice (from frozen cherries, pressed raw); 50 percent pasteurized apple juice (Rome Beauty, Starking Delicious, Jonathan); malic acid added.</td>
<td>15.0</td>
<td>0.74</td>
</tr>
<tr>
<td>14</td>
<td>Apricot-pineapple</td>
<td>50 percent Moorpark apricot puree; 17 percent canned pineapple juice; 33 percent sugar syrup, citric acid added.</td>
<td>15.0</td>
<td>0.74</td>
</tr>
<tr>
<td>15</td>
<td>Peach-black raspberry</td>
<td>40 percent Elberta peach puree; 15 percent pasteurized Munger black raspberry juice; 45 percent sugar syrup; citric acid added.</td>
<td>15.0</td>
<td>0.74</td>
</tr>
<tr>
<td>16</td>
<td>Apple-pineapple</td>
<td>75 percent pasteurized apple juice (Rome Beauty, Starking Delicious, Jonathan); 25 percent canned pineapple juice.</td>
<td>11.3</td>
<td>0.54</td>
</tr>
<tr>
<td>17</td>
<td>Apricot-orange</td>
<td>42 percent Moorpark apricot puree; 29 percent orange juice (frozen Florida orange juice concentrate, diluted); 29 percent sugar syrup; citric acid added.</td>
<td>15.0</td>
<td>0.74</td>
</tr>
<tr>
<td>18</td>
<td>Apricot-pear</td>
<td>21 percent Moorpark apricot puree; 21 percent Bartlett pear puree; 58 percent sugar syrup; citric acid added.</td>
<td>15.0</td>
<td>0.65</td>
</tr>
<tr>
<td>19</td>
<td>Pear-pineapple</td>
<td>40 percent Bartlett pear puree; 25 percent canned pineapple juice; 35 percent sugar syrup; citric acid added.</td>
<td>15.0</td>
<td>0.65</td>
</tr>
<tr>
<td>20</td>
<td>Peach-prune</td>
<td>40 percent pasteurized Italian Prune juice; 33 percent Elberta peach puree; 27 percent sugar syrup; citric acid added.</td>
<td>15.0</td>
<td>0.74</td>
</tr>
<tr>
<td>21</td>
<td>Cherry (Bing)</td>
<td>50 percent Bing cherry juice; 50 percent sugar syrup; malic acid added; pasteurized.</td>
<td>15.0</td>
<td>0.74</td>
</tr>
</tbody>
</table>

*Sugar—dextrose plus sucrose
Terramycin in the Fattening Rations of Lambs

Antibiotic had little effect when added to ration of lambs already treated for common ailments

ROBERT J. RALEIGH, LORIN E. HARRIS, AND MILTON A. MADSEN

Terramycin added to feed of lambs did not increase rate of gain, feed efficiency, dressing percentage, or carcass grade in two separate feeding trials conducted by the Utah Station. However, the lambs used had been vaccinated for sore mouth and over-eating disease before the tests were made. They had also been treated for internal parasites. Any benefits from the terramycin in preventing or overcoming detrimental effects from these diseases would have been minimized by the treatments given.

How the Tests Were Conducted

During 1954 the lambs were divided into three groups with equal numbers from each breed in each group. They were weighed every two weeks and records were kept of the feed consumption for each two-week period. The basal ration consisted of alfalfa 50 percent, barley 26.5 percent, wheat 10 percent, dried molasses beet pulp 10 percent, molasses 2.5 percent, and 1 percent salt-mineral mixture. All diets were pelleted. The pellets were \( \frac{3}{4} \) inch in diameter by \( \frac{1}{2} \) to 1 inch in length.

Group 1 received the control diet containing no terramycin. Group 2 received ten grams and group 3 twenty grams of terramycin per ton of feed. The antibiotic was pre-mixed with about 50 pounds of feed and then incorporated into the entire batch. The feeding period lasted 84 days after which the lambs were slaughtered and carcass data obtained.

Small Differences in Weight Gain

Differences in weight gain between the three groups were not significant. The lambs that received no terramycin made an average daily gain of 0.30 pounds, those receiving 10 grams per ton of feed 0.23 pound, and those receiving 20 grams per ton of feed 0.24 pound (table 1).

The average daily feed consumption was 3.09, 2.81, and 2.89 pounds for groups 1, 2, and 3, respectively. Feed efficiency or rate of gain was not enhanced by the terramycin. There were no differences in dressing percentage, carcass grade, or wool growth among the three groups.

In the 1955 test the lambs were divided into two groups, group 1 receiving no terramycin and group 2 receiving 10 grams per ton of feed. The basal diet was the same as the previous year and the feed was mixed and pelleted in the same manner.

The average daily gain for both groups was 0.37 pound. Average daily feed consumption was 3.45 pounds for group 1 and 3.53 pounds.
for group 2 (table 2). There were no differences in dressing percentage, carcass grade, or wool growth between the two groups.

At the time of slaughter all lambs and their carcasses were examined by a veterinarian. No gross physiological changes were found which could be attributed to the diets.

Various antibiotics including terramycin have proved valuable in the diets of pigs, calves, and chickens. Experiments to determine their value in lamb fattening rations have given conflicting results. More trials need to be conducted to determine other levels and possibly different antibiotics which may be beneficial. The Utah Agricultural Experiment Station is continuing its investigation of this problem.

**UTAH APPLES**

(Continued from page 53)

quality. Internal quality, of course, may effect repeat sales.

If the Utah producers want to share in this market for high-quality, high-priced Delicious apples, it is only necessary that they grow and prepare the fruit for market which will meet the critical standard set up by the consumer.

**Consumer Acceptance Tested**

In order to test consumers' acceptance of Utah Delicious apples in competition with Northwest Delicious apples, four stores in Salt Lake City were selected for the controlled experiment. Four different types of displays were used in the experiment. As shown in table 1, these were: (1) A display consisting of Utah apples alongside Northwest apples, and each display labeled as to variety of apples and state of origin; (2) A display of labeled Utah Delicious apples; (3) A display of labeled Northwest Delicious apples; and (4) A display consisting of Utah apples alongside Northwest apples with each display labeled as to variety of apples, but no label as to state of origin.

The displays were arranged in such a way that at any one time each type of display could be found in one of the four stores, and over the eight-week period the test was conducted, each display was in each store for a period of two weeks. In order to eliminate positional bias, the position of the displays was changed at the end of the first week in those stores where position was thought to be a factor.

At harvest time the Utah apples to be used in the experiment were graded and sized to the 88 count per box Northwest standard. The official inspection noted 82 percent extra fancy and a little undersize, but the external appearance of the Utah apples compared favorably with the Northwest apples. The Utah apples were then placed in cold storage until needed to stock the displays. The Northwest apples for use in the experiment were obtained through regular channels of trade by the stores involved in the experiment.

At all times the price charged for the Utah apples was the same as that charged for the Northwest apples. This price remained at 19 cents per pound throughout the eight weeks of the experiment.

There were, as has been stated, four displays (one in each store) where Utah Delicious apples were placed alongside a display of Northwest Delicious apples, and both displays labeled as to state or origin as well as variety. Under these conditions, there was no significant difference between the sales of Utah and Northwest Delicious apples (table 2).

There was one store where Northwest Delicious apples outsold

<table>
<thead>
<tr>
<th>Group</th>
<th>Terramycin per ton of feed</th>
<th>Daily gain</th>
<th>Daily feed intake</th>
<th>Daily terramycin intake</th>
<th>Feed per 100 pound gain</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>none</td>
<td>0.30</td>
<td>3.09</td>
<td>0.00</td>
<td>1037</td>
</tr>
<tr>
<td>2</td>
<td>10</td>
<td>0.23</td>
<td>2.81</td>
<td>14.05</td>
<td>1238</td>
</tr>
<tr>
<td>3</td>
<td>20</td>
<td>0.24</td>
<td>2.89</td>
<td>29.90</td>
<td>1199</td>
</tr>
<tr>
<td>Average</td>
<td></td>
<td>0.26</td>
<td>2.93</td>
<td></td>
<td>1158</td>
</tr>
</tbody>
</table>

**Table 2. Sale of Utah and Northwest Delicious apples offered side by side, displays labeled as to state of origin, four stores—Salt Lake City, Utah, Jan.-Feb. 1956**

<table>
<thead>
<tr>
<th>Store</th>
<th>Period</th>
<th>Utah</th>
<th>Northwest</th>
</tr>
</thead>
<tbody>
<tr>
<td>Store A</td>
<td>First</td>
<td>866</td>
<td>861</td>
</tr>
<tr>
<td>Store B</td>
<td>Fourth</td>
<td>1346</td>
<td>1880</td>
</tr>
<tr>
<td>Store C</td>
<td>Second</td>
<td>2417</td>
<td>1840</td>
</tr>
<tr>
<td>Store D</td>
<td>Third</td>
<td>474</td>
<td>374</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>5103</td>
<td>4955</td>
</tr>
</tbody>
</table>

FARM AND HOME SCIENCE
the Utah Delicious 1,880 pounds to 1,346 pounds. This was during the fourth time period when the apples used on the Northwest display were actually highly colored Canadian apples. In the other three periods the Utah Delicious apples outsold the Northwest Delicious apples so that when the sales during the four periods were totaled, the Utah apples sold best by about 150 pounds.

There was one two-week period in each store when Northwest Delicious and Utah Delicious were offered for sale side by side with no label attached as to state of origin. Under these conditions, there was one store where the Utah apples greatly outsold the Northwest apples with a total of 1,907 pounds compared with 1,280 pounds (table 3).

There was one store where the sales from the two displays were about equal, and two stores where the sales of Northwest apples exceeded the sales of Utah apples. When the sales for the four stores were combined, the Utah Delicious outsold the Northwest Delicious by about 300 pounds, but this again was not a significant difference.

In comparing the sales of Utah Delicious apples with Northwest Delicious when each was offered for sale alone, there were two stores where the Utah apples sold best, and two stores where the Northwest apples sold at the fastest rate (table 4). A combination of the four stores indicates that the Northwest apples outsold the Utah apples by about 500 pounds. Again, this difference was not significant.

During the eight weeks that the experiment was conducted in the four stores, the sales of Utah Delicious amounted to 17,600 pounds, and the sales of Northwest Delicious apples 17,642, or practically the same amount.

### NEW LIBRARY LAW

(Continued from page 57)

It is the opinion of the Utah Superintendent of Public Instruction's office that there is no way Utah can qualify for these funds until the legislature meets and sets up suitable state machinery. It appears that the first $40,000 is not available to Utah during 1956.

The crucial condition which concerns Utah is set up in the act in section 3. "There is hereby authorized to be appropriated for the fiscal year the sum of $2,050,000 which shall be used for making payments to the states which have submitted and have approved by the Commissioner of Education . . . state plans for the further extension of public library services to rural areas without such services or with inadequate services."

Utah has no state library planning agency and alone among the states has had no experience in planning for those without library service. With more than 200 incorporated places less than 50 public library units exist. Those without planned provision for library service are three counties with no libraries, populations living outside of incorporated limits, or in communities too small to operate libraries. To these must be added open country populations. Coming under the act are not only those who now have no library facilities but also approximately nine-tenths of all Utah public libraries which now provide inadequate library services.

In library planning, Utah is far behind other states. In 1952 a study conducted by the American Library Association for the U. S. Office of Education covering twenty-two items of planning showed Utah to be the only state which was doing nothing on all twenty-two items.

Is it not time for the legislature to recognize that the chief tool of learning which the schools can transfer to boys and girls is the training needed to go to a library where the resources of civilization are accumulated, organized, and

### FOR SEPTEMBER 1956

69
made ready for immediate use, and to be able to get from it the books and periodicals that he requires? Here at these storehouses of knowledge, those who know how to use these great tools become partakers and users of the knowledge available in a broad, rich culture.

No fact has been more clearly demonstrated than the necessity for the state to assume partnership with communities in building good public libraries that reach all the people through a planned state-wide program. No city library can be expected to launch a state-wide program, nor can a county library, or a regional library. It is the state’s job and should be recognized as such. Once the state assumes this responsibility it must do so through machinery it sets up. Four things become necessary before a good state-wide program can emerge.

• A state library agency must be set up.
• A state library must be established.
• A permissive multi-county organization of library administration is necessary to make possible strong community library outlets.
• Funds must be provided and reasonably equalized.

EGG QUALITY

(Continued from page 59)

sified a higher percentage of eggs (almost 70 percent) as high quality. It might be argued that a quality classification by consumers would be influenced by the quality of eggs to which each was accustomed. If so, the proportion of eggs classified as high, medium, or low may not be significant. More important, however, is the lack of relation between the grade of eggs delivered to consumers and the quality classification made by them. This indicates either that characteristics important to consumers are not adequately considered in the grading of eggs, or that the grading methods used are inaccurate.

As a further check of present grade standards, consumers were asked to indicate the change in quality delivered from one week to the next. When eggs of higher grade than the previous week were delivered, only 31 percent of the consumers indicated the grade was higher; 53 percent indicated no change; and 16 percent indicated a lower quality (fig. 4). There was no significant difference in distribution of replies whether the grade delivered was higher, lower, or the same as the previous week.

How Should Egg Quality Be Measured?

Thickness of egg white, color of the yolk, and presence of blood spots seem to be the egg quality factors considered to be important by consumers which lend themselves to objective measurement. While taste was of utmost importance to consumers, it is not practical to use as a criterion of quality. The “haugh unit” method of measuring interior egg quality is based entirely on the thickness of the white in relation to the weight of the egg. Other broken-out score charts consider the height of the egg white as an important quality factor, but they also consider other judgment factors which are less objective.

What Does All This Mean?

It is assumed that eggs fresh from the hen more nearly meet consumer preference and that handling practices will not improve their quality. If this is true, a program to retain the quality of eggs from the time they are laid would be preferable to the present method of separating eggs of variable qualities resulting from different handling methods.

Quality control could be maintained in two ways:

(1) Separation of eggs by visible and measurable factors, such as size and shell soundness. These can be separated mechanically, and machines are now being perfected to detect blood spots electronically. Until such machines are available, flash candling for blood spots may be necessary.

(2) Compliance to egg handling practices could be enforced by a periodic sample check on a broken-out basis of each producer’s eggs.

Before handlers undertake such a quality control program, addition-

| Table 1. Reasons given by consumers for dissatisfaction with eggs of various grades—175 dozen eggs delivered to 30 consumers in Logan, Utah, fall 1955 |
|-----------------|---|---|---|---|
| Reason given for dissatisfaction | Grade of eggs | |
| Stale or strange taste | AA | A | B | All grades |
| Watery or runny white | 9 | 4 | 21 | 28 |
| Dark colored yolk | 8 | 10 | 14 | 26 |
| Spots on yolks | 2 | 12 | 4 | 15 |
| Broken yolks | 8 | 3 | 3 | 11 |
| Blood spots | 2 | 2 | 4 | 7 |
| Light-colored yolk | 2 | 1 | 1 | 3 |
| Milky appearance | 1 | 1 | 2 |
| All other | 2 | 1 | 2 |
| All reasons | 35 | 33 | 54 | 100 |

| Table 2. Production of eggs various grades found to be unsatisfactory to consumers—Logan, Utah, fall 1955 |
|-----------------|---|---|---|---|
| Type of pack delivered | Grade of eggs delivered |
| AA | A | B | All grades |
| 199 dozen eggs of uniform grade | 3.3 | 3.6 | 6.0 |
| 36 dozen eggs of mixed grade | 11.1 | 8.0 | 14.0 |
| All eggs | 4.9 | 4.7 | 7.9 |
al research is needed to find out how to sample a given lot of eggs to check quality adequately. Handling practices which will retain the original quality of eggs must also be ascertained. Such practices should retain as much of the original quality of the egg as possible and still be practical and economical.

**UATH FRUIT JUICES**

(Continued from page 66)

which they would purchase if available commercially.

In this study each sample appeared in a group of 3 with every other sample, once. Each sample was judged a total of 50 times. Three days were required to complete the study. Provided no person judged more than once, 350 persons participated in the study. Undoubtedly some people did judge more than once, but the chance of their getting the same sample to judge twice was small.

Results of the study are presented

<table>
<thead>
<tr>
<th>Fruit drink</th>
<th>Average preference rating</th>
<th>Number of persons indicating it available commercially</th>
</tr>
</thead>
<tbody>
<tr>
<td>9 Grape-apple</td>
<td>7.3</td>
<td>24</td>
</tr>
<tr>
<td>11 Red raspberry-apple</td>
<td>7.2</td>
<td>12</td>
</tr>
<tr>
<td>8 Grape</td>
<td>7.1</td>
<td>16</td>
</tr>
<tr>
<td>4 Peach nectar</td>
<td>7.0</td>
<td>12</td>
</tr>
<tr>
<td>15 Peach-black raspberry</td>
<td>6.9</td>
<td>6</td>
</tr>
<tr>
<td>19 Pear-pineapple</td>
<td>6.9</td>
<td>7</td>
</tr>
<tr>
<td>5 Pear nectar</td>
<td>6.8</td>
<td>10</td>
</tr>
<tr>
<td>14 Apricot-pineapple</td>
<td>6.7</td>
<td>7</td>
</tr>
<tr>
<td>17 Apricot-orange</td>
<td>6.7</td>
<td>11</td>
</tr>
<tr>
<td>1 Apple</td>
<td>6.6</td>
<td>11</td>
</tr>
<tr>
<td>10 Black raspberry-apple</td>
<td>6.6</td>
<td>7</td>
</tr>
<tr>
<td>16 Apple-pineapple</td>
<td>6.6</td>
<td>10</td>
</tr>
<tr>
<td>13 Cherry-apple</td>
<td>6.6</td>
<td>4</td>
</tr>
<tr>
<td>21 Cherry (Bing)</td>
<td>6.5</td>
<td>8</td>
</tr>
<tr>
<td>20 Peach-prune</td>
<td>6.5</td>
<td>11</td>
</tr>
<tr>
<td>3 Apricot nectar</td>
<td>6.5</td>
<td>7</td>
</tr>
<tr>
<td>12 Strawberry-apple</td>
<td>6.4</td>
<td>8</td>
</tr>
<tr>
<td>18 Apricot-pear</td>
<td>6.3</td>
<td>2</td>
</tr>
<tr>
<td>2 Cherry (Montmorency)</td>
<td>6.3</td>
<td>9</td>
</tr>
<tr>
<td>7 Prune-apple</td>
<td>6.2</td>
<td>6</td>
</tr>
<tr>
<td>6 Prune</td>
<td>5.9</td>
<td>4</td>
</tr>
</tbody>
</table>

*7.0 = like moderately
6.0 = like slightly

In table 2, with samples arranged in decreasing order of preference. In obtaining numerical scores, a value of 9 was assigned to the top rating (like extremely) and 1 to dislike extremely.

The average ratings of the fruit drinks are not very different from each other, falling within a narrow range—like slightly to like moderately. Since the beverages used in the study were all pre-selected as good ones, it is not surprising that they were all liked about equally well. It is possible that Montmorency cherry was rated down because of unfamiliarity with its flavor.

Comments on the drinks were scattered and showed no definite trend. Some of the comments received were: too thick, too sweet, or too tart. Less than half the judges answered the question concerning interest in purchasing beverages if they were made available commercially.

Of some interest is the ascorbic acid content of the drinks (calculated to a small serving—1/2 cup). There was little in any of them except 4, 15, and 20 (peach blends), small servings of which would still contribute less than 1/5 of the day's requirement of vitamin C.

It should be pointed out that such fruits as were used in this study are not of value in the diet chiefly for their vitamin C content (which is small), but rather for other excellent nutritional contributions. The vitamin A value of apricots, for example, far outweighs their small vitamin C content.

Further indication of the popularity and acceptability of fruit beverages made from Utah-grown fruits might desirably be carried out by making them available to the public for purchase and noting their sales appeal.

**NEW PUBLICATION**


The results of studies reported in this bulletin show that highest seed yields are obtained with optimum moisture and nitrogen fertility levels, although excessive moisture is to be avoided. In these seed studies there was no response to phosphate fertilizer.

**OPEN SHED HOUSING**

(Continued from page 56)

ly or as the weather permits. Manure from yards is excellent for pastures because it does not contain straw. A concrete manure saucer provided adjacent to the yards is convenient. Manure can be bladed from yards to manure saucer when weather permits. It can then be hauled to the field at a later time with little loss of fertility.

Water should be available at all times in the yards. Reinforced concrete tile set on end can be used successfully as a watering trough. Where the water inlet pipe comes through the base, danger of freezing is minimized. Overflow should go down through the base to minimize freezing.

A covered mineral box can be placed in the yard. Several compartments in the box will provide an even distribution of mineral.

**CONTRIBUTIONS TO RESEARCH**

February 15 to August 15, 1956

<table>
<thead>
<tr>
<th>Company</th>
<th>Contribution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Naugatuck Chemical Company</td>
<td>48 pounds Aramite for mite control studies</td>
</tr>
<tr>
<td>S. B. Penick &amp; Company</td>
<td>Ryanicide 100 for insect control studies</td>
</tr>
<tr>
<td>Phillips Petroleum Company</td>
<td>1 ton ammonium nitrate for fertilizer studies</td>
</tr>
<tr>
<td>Rohm &amp; Hass Company</td>
<td>Kelthane for research in entomology</td>
</tr>
<tr>
<td>Western Phosphates, Inc.</td>
<td>1 1/2 tons treble superphosphate for fertilizer studies</td>
</tr>
</tbody>
</table>
CONTRIBUTIONS TO RESEARCH
February 15 to August 15, 1956

United States Steel Corporation Columbia-Geneva Division $105,000 for study of the effects of fluorides on plants and animals
4 tons ammonium sulfate for fertilizer studies

Utah Turkey Federation $7400 for study of staphylococcus in turkeys

Shell Chemical Corporation $3766 for studies on the effects of insecticides on sheep
Dieldrin for insect control studies

Utah Poultry Hatcheries and Breeders $3420 for progeny testing of laying hens

Amalgamated Sugar Company Utah Idaho Sugar Company $2000 each for irrigation and fertilizer studies on sugar beets

Salt Lake Oil Refining Company Charles Pfizer and Company, Inc. $1500 for plant nutrition studies
$1200 for livestock nutrition studies

United States Smelter, Mining, and Refining Company $1200 for studies of zinc nutrition of plants

American Can Company Utah Canners Association $500 each for tomato and lima bean improvement

Utah Crop Improvement Association $425 for grass seed production studies

Vellicol Chemical Corporation $400 for insect control studies. Heptachlor, endrin, chlorodane for insect control studies.

Allied Chemical and Dye Corporation Genite EM-923 for research in entomology

American Cyanamid Company Malathion emulsifiable liquid, E-21-X, Marathion and Thimet for insect control studies

California Spray Chemical Corporation Chlorparafin for research in entomology

Dempster Mill Manufacturing Company Anhydrous ammonia applicator for fertilizer studies

Dow Chemical Company 98 pounds Ovotran for mite control studies

Fort Dodge Laboratories, Inc. Leptospira pomona antigen for making blood tests for Leptos pirosis in poultry

Geigy Agricultural Chemicals Diazinon and Chlordanebistrate for insect control studies

Lederle Laboratories Chronic respiratory disease antigen and positive uninome chicken serum for study of chicken diseases

Wilson & George Meyer Company 11/2 tons of treble superphosphate for fertilizer studies

Other contributions are listed on page 71.

NEW PUBLICATION

The authors found sprinkler irrigation suitable to many areas in Utah, especially to the steep foothill areas where the water supply can be obtained at higher elevations so that pumping will not be necessary to develop pressure. However they found many systems in use poorly designed and operated to meet requirements for efficient irrigation.