

Potatoes from the Valley

The Red River of the north begins where North Dakota, South Dakota and Minnesota meet. As it meanders northward, it describes the Minnesota-North Dakota boundary, traverses the Canadian province of Manitoba and ultimately empties into Lake Winnipeg. On either side of the river fan out some of the most productive lands in the world—the rich, black soils of the Red River Valley.

Here, fertile soils combine with favorable climatic conditions to produce an abundance of high quality wheat, barley and other small grains, as well as flaxseed and sugar beets. These same ideal growing conditions nurture Red River Valley potatoes.

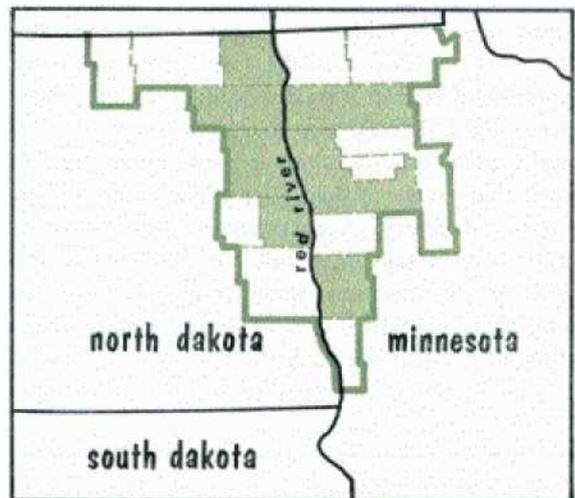
Early settlers in the Valley grew potatoes primarily for their own table needs and addressed major farming efforts to wheat raising. In the early 1900s, however, as growing urban populations provided expanded markets for potatoes and as improved transportation facilities made shipping possible, Valley farmers began the commercial production of potatoes.

From early adventures in growing and shipping Valley potatoes has evolved the potato industry of the Red River Valley as it is known today. Currently, this industry covers the growing, processing and marketing of nearly 24 million hundredweight of potatoes each year. In 1961, the Valley's 2,200 commercial growers produced nearly 12 percent of the total U. S. crop of fall maturing potatoes. This ranked the Valley third in the nation as a region growing late potatoes; only Idaho and Maine exceeded this mark.

North Dakota's Walsh County is the leading potato producer in the Valley, harvesting 5,664 thousand hundredweight in 1961. Close behind is Polk County, Minnesota, producing 4,526 thou-

sand hundredweight the same year. The major potato producing counties of this fertile northern plain can be seen on the accompanying map. Shading denotes counties producing more than one million hundredweight of potatoes in 1961. The Minnesota portion of the Valley accounted for more than 73 percent of that state's 1961 potato output. Ninety-seven percent of North Dakota's output was Valley-grown that year.

Ruddy, plump, "Red River Reds" are the principal output of Valley potato growers. Sixty-five percent of shipments out of the Valley during the 1961-1962 marketing year were red varieties (primarily Pontiacs, Norlands and Red LaSodas). These round, firm tubers are known for their excellent flavor and high dry matter content. Housewives desire them particularly for their excellent boiling and mashing qualities. As a result, the bulk of the "reds" are marketed as table stock. Principal markets are scattered throughout the central and southeastern U. S. To a lesser degree,



Valley potatoes reach consumers in the Pacific Northwest and on the East Coast.

Most table stock is washed and waxed before leaving the Valley. "Washed and waxed" is the term given to potatoes that have been washed, brushed, rinsed, graded, sized, waxed and packaged in preparation for retail sale. These operations are usually performed under one roof on an assembly line basis. The finished pack may be in 5, 10, 25, 50, or 100-pound containers made of plastic, paper, mesh or burlap.

The potatoes are "waxed" by the application of red vegetable dye, which accentuates the inherent red color of the potato skins. This process was inaugurated about 15 years ago on the demand of potato brokers who insisted that the dye enhanced eye appeal and, thus, sales. Most potato packers disfavor waxing. They feel the process is a nuisance, and, moreover, the coloring is employed by some shippers to camouflage minor bruises and skinning. Thus, quality control is not as stringent as it might be in the absence of added color. Many housewives voice disapproval of the added color that can stain hands and clothing, but consumer surveys indicate that waxed potatoes outsell the unwaxed on growers' shelves; so waxing continues.

Potatoes are graded immediately after they are washed and rinsed and before waxing. Skilled employees sort table stock tubers into three categories. U. S. No. 1 is the term given to sound potatoes of regular shape possessing no more than very slight defects. No. 2 are potatoes of generally good quality which possess minor defects such that no more than 10 percent of the potato need be trimmed. A potato requiring more than a 10 percent trim is a cull. Common potato defects are bruises, cuts, scald (undue exposure to sunlight), sprouting and skinning. Careful handling of potatoes during harvest, storage and packing is necessary to keep these injuries to a minimum.

Prior to packaging, potatoes are sized in an effort to insure uniformity in the pack. This is done

mechanically and enables buyers to receive the size potato preferred.

In addition to "Red River Reds," large quantities of white potatoes are grown in the Valley each year. Kennebecs, Irish Cobblers, and Russet Burbanks are popular white varieties. Whites are desired by manufacturers of potato chips and frozen french fries. During the 1961-1962 marketing year, more than 3,500 thousand hundredweight of white potatoes were shipped out of the Valley—principally to satisfy processing needs.

A considerable number of Valley potato growers concentrate on the production of certified seed potatoes. The hardy, disease-free stock produced in the Valley is purchased by growers all over the U. S.—as well as by growers in the Valley. Some seed is shipped to South America, and prior to recent political flare-ups, considerable seed was sold in Cuba. Certified seed accounted for more than 17 percent of the potatoes shipped from the Valley during the 1961-1962 season. Table 1 depicts the disposition of Red River Valley potatoes grown in the Valley during the 1961-1962 marketing year. During the year, a federal diver-

TABLE 1—DISPOSITION OF POTATOES GROWN IN THE RED RIVER VALLEY — 1961 CROP

	CWT
Reds shipped from Valley	6,964,400
Whites and Russets shipped from Valley	3,711,600
Certified seed shipped from Valley	2,286,400
Certified seed planted in Valley	2,500,000
Processed in Valley	1,300,000
Federal Diversion Program	4,790,000
Other	2,437,600
TOTAL production in Valley	23,990,000

sion program was employed to channel more than 4 million hundredweight to non-food uses. This program is not in effect every year. The "other" category cited includes: potatoes consumed locally,

plus potato shrinkage in storage, plus small shipments from the Valley that were not recorded.

Cultural practices

More than 200 thousand Valley acres were devoted to the production of potatoes in 1961. The typical grower raises between 100 and 200 acres annually, with per farm acreage ranging from less than 50 on up to 1,000 or more acres. The trend is toward fewer and larger potato producers—a trend that parallels developments in other sectors of U. S. agriculture.

Large and small growers employ about the same cultural practices to produce a crop. The first week of May usually finds growers seeding potatoes. Most seeding is done on fall plowed or summer fallow land that has been thoroughly tilled just prior to planting. Into this seedbed two or four row planters disburse about twelve hundredweight of treated seed pieces per acre. Seed pieces are cut mechanically or by hand in order to obtain more plants from a given quantity of seed potatoes. The seed piece must be large enough to include an eye from which the plant may sprout and also to contain enough stored food to sustain the new plant until it can manufacture its own supply. Prior to planting, seed pieces are treated with chemicals to reduce the likelihood of disease. Seeding rate is governed by moisture availability and size of potato desired. If too many plants are grown per acre, there may not be enough moisture to mature the crop. (Virtually all Valley potatoes derive their moisture requirements solely from the 18 to 22 inches of natural rainfall received in the Valley annually.) If the plant stand is too thin, the tubers may grow excessively large and thus be undesirable to consumers.

To help insure vigorous growth, many producers apply commercial fertilizer to their potato fields. High nitrogen content fertilizers are used either at the time of planting, as a side dressing after plants have emerged, or both.

After potato plants have emerged from the soil they must be kept weed free, insect free and

disease free. Thus, most Red River Valley potato fields undergo three cultivations and three to five sprayings or dustings during the summer. Some large-scale growers use airplanes to make spraying faster and easier.

Two weeks prior to harvest, potato vines are killed. This serves to mature the potato and also to toughen potato skins to the rigors of harvest and packing. Vines are killed mechanically by machines called rotobeaters, which operate like giant eggbeaters to annihilate potato vines. Some growers apply chemical vine killers prior to rotobeating to kill the vine slowly and allow stored food to be transferred from the vine to the tubers. The result is a potato of higher specific gravity—a condition especially desirable to potato chip manufacturers.

The harvesting of Red River Valley potatoes usually begins during the first week of September. A few potatoes for the manufacture of potato chips may be dug as early as mid-August, however. In years past, horse or tractor drawn diggers lifted potatoes from the ground, separated them from the soil and dropped them back to the ground to be hand-sacked. Modern potato harvesting equipment operates like a huge, portable assembly line, with one end burrowing for potatoes and the other end emitting the harvest. In the interval, the machine has removed most of the vines and conveyed the product past workers poised to remove any remaining vines, severely damaged potatoes and foreign materials such as rocks or dirt clumps. Conveyors then bulkload potatoes into trucks keeping pace alongside the digger; when filled, the trucks deliver the product to a wash plant or to storage facilities.

The total cost of planting, maintaining and harvesting a crop of Red River Valley potatoes exceeds \$100 per acre. This was reflected in a recent study of production costs of 82 Valley growers.¹ The range in size of operations was from 95 to

¹Loftsgard, Laurel D. and Maier, Melvin, "Red River Valley Potato Production Costs and Practices," 1963 Farm Research; Vol. 22, No. 9, pp. 11-13.

1,005 acres. The average cost of production for these growers was \$105.15 per acre, applied to the 1960 crop. Costs included \$25.90 of fixed costs (about evenly divided between land

TABLE 2—CAPITAL INVESTMENT AND PRODUCTION COSTS FOR RED RIVER VALLEY POTATO GROWERS

ITEM	ALL GROWERS
Average potato acreage	287 acres
Range in potato acreage	95 to 1,005 acres
Investment in production machinery and equipment (per acre)	\$56.00
Fixed costs (per acre)	
Land use ¹	12.00
Machine ownership ²	13.90
Variable costs (per acre)	
Seedbed preparation and planting	
Seedbed preparation	1.30
Seed (12 cwt. @ \$2.50)	30.00
Fertilizer	11.70
Treating chemical	.95
Planting and trucking	1.25
Labor (\$1.25 per hour)	4.55
TOTAL	\$49.75
Summer operations, up to harvest	
Chemicals and water	4.10
Repair, oil and fuel for tillage, chemical application and vine killing	2.60
Labor (\$1.25 per hour)	2.35
TOTAL	\$9.05
Harvesting	
Harvester repairs	1.70
Other repairs, oil and fuel	1.65
Trucking	7.20
Labor (\$1.25 per hour)	9.90
TOTAL	\$20.45
Total fixed costs (per acre)	\$25.90
Total variable costs (per acre)	\$79.25
ALL COSTS (per acre)	\$105.15
Average 1960 yields ³	145 cwt.
TOTAL COST PER CWT.	\$.73

¹Based on usual cash rent.

²Includes depreciation, taxes, insurance where applicable, and interest on investment for all machinery and equipment (including trucks) used for potato production. For machines such as tractors and some tillage equipment, only that portion of fixed costs attributable to potato production was charged.

³Includes all varieties.

use and machine ownership costs) and \$79.25 of variable costs. Principal variable costs per acre were: seed, \$30.00; labor, \$16.80; fertilizer, \$11.70; and trucking, \$7.20. Table 2 displays a breakdown of production costs incurred by the surveyed growers. These growers had, in addition to costs indicated, an average of \$56 per acre invested in production machinery and equipment—which illustrates the requirements for costly equipment to produce potatoes. Growers reported average yields of 145 hundredweight per acre, resulting in an average production cost of 73 cents per hundredweight.

After potatoes have been dug, a portion of the crop is marketed immediately. Table stock is washed and waxed and shipped to consumption points. In addition, some processing stock will move dry (without washing) to processors located in the Valley or other parts of the country. However, the bulk of the annual output of Valley potatoes will move into the voluminous storage facilities of the Red River Valley. In the past, most Valley storage facilities were of the underground type located on farms. These were huge cellars with earth-covered roofs. This was economical storage, but it necessitated considerable moving and handling of potatoes before they reached the market place, and this tended to lower potato quality. In addition, control of temperature and humidity was difficult. In recent years, considerable above-ground storage has been erected in the Valley; much has been concentrated near rail lines for ease of crop shipment. This storage usually offers automatic temperature and ventilation control plus a washing and waxing line in the same building. Potatoes can be transferred from storage bins to washer via flumes—channels in the concrete floor through which water may flow, gently floating potatoes to their destination. Many facilities of this type have been built by individuals who sell or lease bin space to other growers. Such growers then pay a fee of about 65 cents per hundred pounds of potatoes to have their table stock packed and mar-

keted by the connecting wash plant.

Table stock will be taken from storage and marketed during the course of the winter and spring; most of the crop will be marketed prior to the end of May.

The storage of potatoes to be processed can be considerably more complex than storage of table stock. Processors of chips and french fries need potatoes containing a high percentage of starch relative to sugar. Sugar becomes charred when subjected to hot frying oils and, therefore, potatoes with high sugar content darken prohibitively when processed. However, with correct temperature control in storage, potato sugars will break down into starch, rendering the potatoes suitable for processing. Thus, strict temperature and humidity control are essential to the proper storage of processing potatoes.

Potato sprouting is undesirable to buyers of table stock and processing stock. Unfortunately, potatoes have a tendency to sprout in storage, particularly when held at temperatures exceeding 40 degrees. To impede this growth, chemical sprout inhibitors can be applied as a gas to stored potatoes or sprayed on potato vines before the crop is harvested. Sprout inhibitors are applied to most of the processing potatoes and to much of the table stock grown in the Valley.

Costs of producing potatoes in the Red River Valley compare favorably with those experienced by growers in other parts of the country. Valley growers are able to capitalize on ideal growing conditions resulting from adequate natural rainfall, abundant sunshine and rich soil. Also, the large, flat, stone-free fields of the Valley facilitate a high degree of cost-cutting mechanization for the industry.

The marketing process

Despite economical costs of production, Valley potato growers have experienced meager profit margins from time to time. This has been the result of depressed potato prices, a condition prevailing for the past several seasons. Historically,

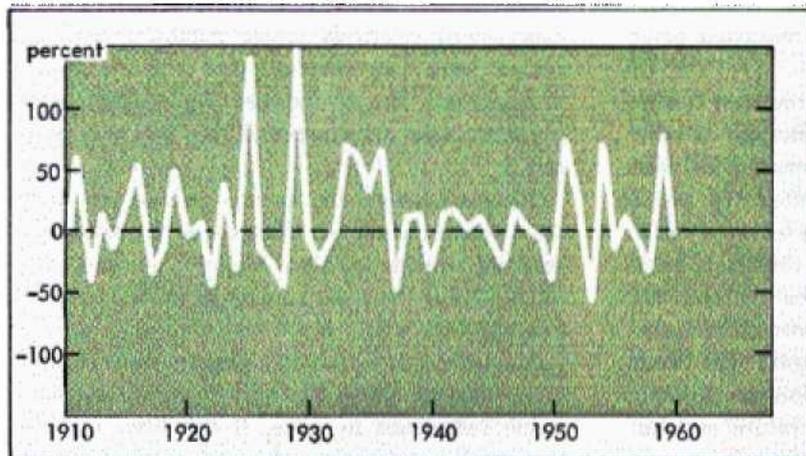
U. S. potato prices have been subjected to severe fluctuations. Evidence of this can be seen in chart I on the next page. Only the period 1943-1950 experienced relatively stable potato prices — a period when Government price supports applied to potatoes. Prices received by Valley potato growers have approximated the national movements.

Violent changes in potato prices can result from relatively minor changes in the volume of potatoes marketed. This is because consumers tend to eat almost the same amount of potatoes regardless of whether prices are high or low. The U. S. public will increase potato consumption reluctantly — responding sluggishly only in the event of extreme reductions in price. It has been observed that retail potato prices changed nearly 5 percent to incur a 1 percent change in consumption during the period 1948-1958.² To illustrate this effect, if the price of potatoes were dropped from an arbitrary \$2.00 per hundredweight to \$1.00 per hundredweight (drop of 50 percent) the average consumer would up his use of potatoes from 100 pounds per year to 110 pounds — increasing a mere 10 percent. Potato growers are thus confronted with what economists term an “inelastic price demand on the part of consumers for potatoes.” The effect is that potato prices have to be lowered significantly to encourage consumers to increase consumption even slightly. Incidentally, the same unhappy condition confronts the bulk of the agricultural sector of the U. S. economy.

Today's housewife can choose from a galaxy of foodstuffs to prepare meals. She desires and can afford to present highly varied diets. Therefore, she is reluctant to alter her menus to include more potatoes — regardless of price. In fact, American housewives have tended over the years to include fewer and fewer potatoes in their menus (chart 2). Since the early 1900s when the average American ate nearly 200 pounds of pota-

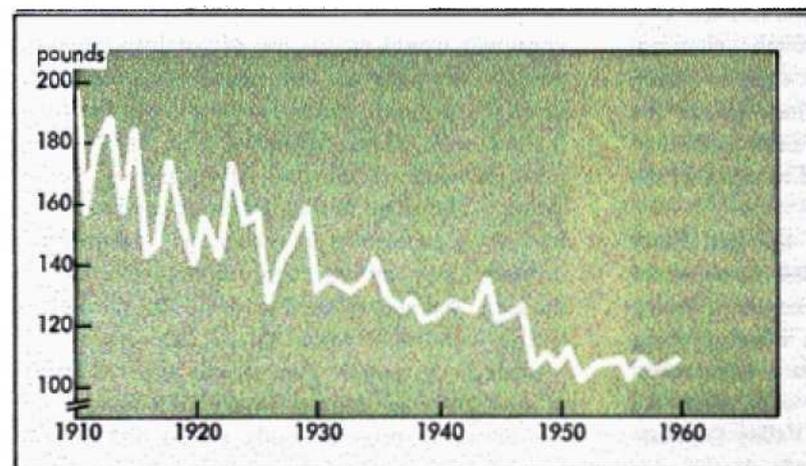
²U. S. Department of Agriculture, "An Economic Study of the U. S. Potato Industry," ERS Agricultural Economic Report No. 6; March 1962, pp. 32-33.

Chart 1—Year-to-year percentage variations of potato prices, U. S., 1910-1960*



*Percentage changes relative to the price index of all farm products.
Source: U. S. Department of Agriculture.

Chart 2—U. S. per capita consumption of potatoes, 1910-1960



Source: U. S. Department of Agriculture.

atoes a year, consumption has been declining. By 1950, per capita consumption was down to 105 pounds annually. During the 1950s, the secular decline in potato consumption seems to have abated, despite continued minor variances in year-to-year consumption.

The volume of potatoes available can fluctuate considerably from year to year. Per acre yields can be altered by the vagaries of weather, disease and insects. For example, favorable conditions in 1950 gave rise to yields of 190 hundredweight per harvested acre in North Dakota. Five years later yields were but 90 hundredweight per harvested acre. These fluctuations are admittedly unusual. However, even slight yield variations, coupled with consumers' inelastic price demand for potatoes, plus a declining or stable per capita consumption of potatoes can and has given rise to severely depressed prices on occasion. In past years, this development has triggered producer response in the form of reduced output the following year. This adjustment was easily accomplished when many production costs were of a variable nature (mainly labor - hand cutting, hand picking, etc.). A cutback in production would cancel the bulk of costs incurred by producers. If the cutback was sharp enough, supplies came into line with demand and better

prices resulted. Modern day potato growers find this adjustment more difficult to accomplish. As was noted in table 2, fixed costs constitute a considerable share of the cost of raising a potato crop. In addition, substantial investments in potato machinery and equipment (as much as \$56

per acre) dictate that this equipment be utilized. Perhaps of even more importance are the heavy investments in potato storage and conditioning houses, costs which can be covered only with use. Faced with these relatively higher fixed costs and proportionately lower variable costs, the potato grower finds it prudent to continue to produce, even at price levels lower relative to those prevailing at a time when fixed costs were of less importance. As variable costs constitute a smaller and smaller part of total costs, growers, in the short run, may accept lower prices—and still be able to cover variable costs plus some fixed costs. Thus, short run production adjustments downward are not as quickly or easily accomplished as in past years.

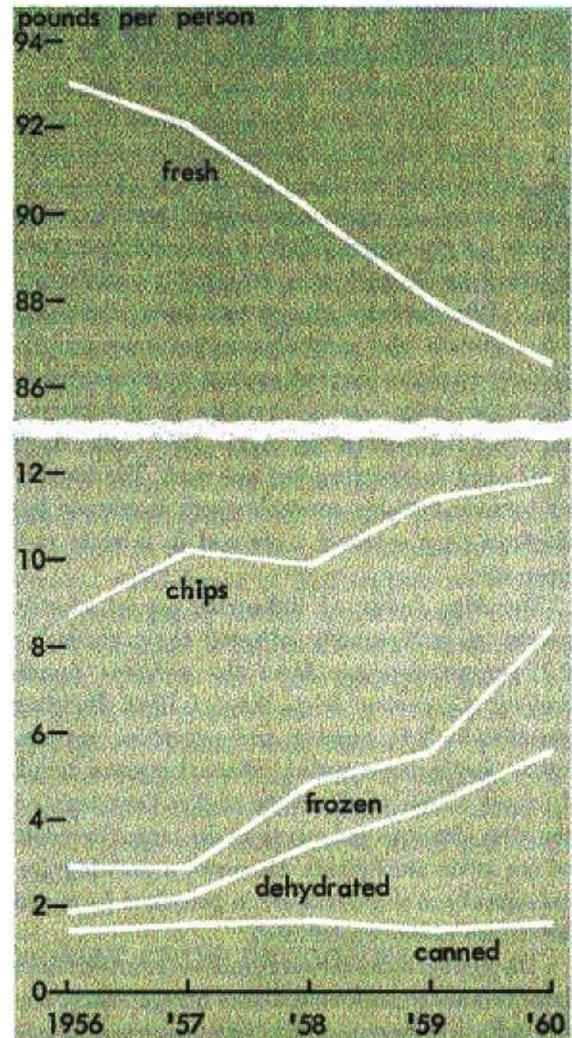
On occasion, the potato industry has experienced “boom” years when producer prices were very good (again the results of consumers’ inelastic price demand). Some growers feel that unusually high prices in the future will be rare, reasoning that consumers may buy processed potato products rather than pay high prices for fresh potatoes. Thus, the added markets for potatoes provided by the processing industry may serve to even out price fluctuations somewhat, but not necessarily to arrest a declining price trend.

Valley potato growers are sobered—but not discouraged—by these less-than-optimistic considerations pertaining to their industry. They quickly point to advantages enjoyed by the Valley relative to other potato-producing areas in the country. Perhaps the most important of these is the ability to produce potatoes economically. As was noted earlier, the Valley can produce potato solids as cheaply as anywhere in the country. Also extremely important is the fact that the Valley produces a potato desired by manufacturers of potato products. Many people predict a bright future for processed potato products. Indeed, in recent years processed potatoes have been replacing fresh in consumers’ diets. Improved quality plus the all-important factor of convenience of preparation lend to the growing popularity of

these products. Chart 3 illustrates a steady decline in fresh potato consumption from 1956 to 1960, while the use of processed potato products in-

(Continued on page 12)

Chart 3—U. S. per capita consumption of potato products, 1956-1960



Source: U. S. Department of Agriculture.

Current conditions . . .

Measures of recent economic and financial trends in the Ninth district indicate continued forward momentum at a reasonably satisfactory pace. District employment has been displaying some growth plus normal seasonal improvement. Recent data also suggest modest improvement in district average weekly earnings in manufacturing (up 3.1 percent in April 1963 over April 1962) and in hours worked per week. The number of persons drawing unemployment insurance has declined on a seasonal basis and in relation to a year ago.

The May index of industrial use of electric power, on a seasonally adjusted basis, showed a 0.7 percent decrease from the previous month and up 8.7 percent from May of 1962. Building permits, both in number and valuation, are currently displaying a strong seasonal upward trend. Iron ore shipments from the region have been on the slow side thus far owing to the large carryover of ore at the steel plants. However, a growing percentage of ore shipments are in pelletized form and hence are more concentrated.

District agricultural conditions so far in 1963 have been unusually favorable. It has been an early season with adequate moisture in most areas. Wheat and early planted spring grains have a good start, and this appears to be true also of corn and soy-

beans. Range conditions in the Dakotas and Montana are well above average. The current outlook for livestock feeding and grazing, consequently, is excellent in the district in sharp contrast to the situation in the central and southern plains regions. A recent report on farm land value trends indicates a substantial increase in district states during the year ended last March 1.

Perhaps the best single over-all measure of district economic activity is the bank's monthly estimates of personal income. The latest figures are for April, which show the beginning of the normal seasonal pickup. For the first four months of 1963, personal income has averaged 6.4 percent above the same period a year ago. For the U. S., a comparable comparison is a plus 4.5 percent.

The district's banking scene continues to exhibit a favorable outlook. During May there was an above normal rise in total member bank credit. On a seasonally adjusted basis, loans and investments both increased, with the investment increase continuing to be concentrated in non-U. S. Government securities. It is pertinent to observe that the bulk of the May credit expansion took place in country banks.

Seasonally adjusted total deposits at district member banks increased during May by an amount comparable to the record May increases of

1954 and 1961. Again, as has been the case in the recent past, the deposit increase continues to reflect a strong growth in time deposits.

May was witness to a slight decline in the reserves of district member banks. However, this does not show up in district member bank borrowing behavior—district member bank daily average borrowing in May was almost \$5 million less than the April daily average figure.

In the bank's June 12 opinion survey of current business conditions, a larger percentage of respondents indicated "improvement probable" than at any time during a recent 12-month period. In general, it may be concluded that the survey respondents are more optimistic now about business conditions than earlier this spring and substantially more optimistic now than they were during the past winter.

In the predominantly commercial areas of the district, about two-thirds of the survey respondents felt that improvement in business conditions was probable or fairly certain. This compares with only half of the respondents who felt this way in early April and one-fifth on the survey taken last February.

In the predominantly farming areas, the survey respondents were even more optimistic concerning current business prospects, due largely to excellent crop prospects.

The following selected topics describe particular aspects of the district's current economic scene:

DISTRICT BANKING DEVELOPMENTS

Seasonally adjusted district bank credit expanded during the month of May by \$36 million. This represents a significant advance when contrasted to the month of April, when bank credit fell by \$17 million on a seasonally adjusted basis. This May increase is roughly comparable to the increase which took place during May of last year. The expansion of district member bank credit was con-

centrated in loans; they increased by \$25 million during the month. This rise is approximately equal to that which took place during May of last year and, at the same time, is significantly larger than the average May change of recent years. On a seasonally adjusted basis, the \$11 million rise in investment appears, as in the recent past, to be concentrated in holdings of non-U. S. Government securities. Country banks accounted for 92 percent of the \$36 million increase in district bank credit.

In May, total deposits at district member banks increased, on a seasonally adjusted basis, by \$38 million. This represents the third largest May deposit increase experienced by district banks in the last decade. As was the case with bank credit, the increase in total deposits was concentrated in country banks. They accounted for \$37 million of the \$38 million increase. The bank data further suggest that the deposit gain, as in the recent past, was concentrated in time deposits.

Daily average excess reserves of district member banks fell during May by approximately \$1.5 million. Despite this apparent tightening of the reserve position of district banks, their daily average May borrowing from Federal Reserve banks amounted to \$1.9 million as contrasted to a daily average April figure of \$4.2 million. As a result of these changes, district member bank free reserves increased in May to a level about \$1 million greater than the daily average April level. This enhanced free reserve position is reflected in daily average net Federal Funds transactions of district member banks. In May daily average net purchases amounted to \$26 million, in contrast to daily average net purchases of \$28.5 million in April.

WHEAT CROP PROSPECTS

The late spring crop conditions reports indicate that the Ninth district wheat crop output in 1963 will be down about 9 percent from last year although 2 percent greater than the average output

WHEAT PRODUCTION

	WINTER WHEAT			ALL SPRING		
	Average 1957- 1961	1962	Indicated 1963	Average 1957- 1961	1962	Indicated 1963
	(million bushels)					
Minnesota	.7	.5	.4	22.1	17.5	22.4
Montana	48.0	37.1	46.0	31.4	41.2	37.6
North Dakota***	112.2	158.5	117.3
South Dakota	12.4	4.9	10.6	26.1	24.9	23.3
4 States	61.1	42.5	57.0	191.8	242.1	200.6
United States	997.7	816.4	854.5	227.5	275.4	229.6

*Production negligible.

of the 1957-1961 period. The lower expectation compared with last year is due to an anticipated reduction in spring and durum production from the bumper crop of 1962. All spring wheat production is predicted to be about 200 million bushels, or 17 percent under 1962. That figure, however, is 5 percent greater than the 1957-1961 average. The most noticeable decrease is expected in North Dakota where the wheat crop is likely to be one-fourth less than last year; this forecast re-

flects a substantially smaller durum crop than that which reached record levels last year. The output of all spring in Montana and South Dakota is also expected to be smaller this year with an indicated drop of 9 percent and 6 percent, respectively. All of the district states with the exception of South Dakota are expected to produce spring wheat in excess of the 1957-1961 average output.

Winter wheat production in the district is expected to recover from last year's severely reduced output. An increase of about 13 percent over last year is predicted, with output in South Dakota likely to be double last year's figure and Montana's output almost one-fourth higher. The final outcome of this year's winter wheat crop, of course, depends on whether or not a rust infestation reoccurs.

The mid-June crop reports indicated generally good conditions throughout the district. The major exceptions are in northwestern Montana where drouth conditions prevailed this spring and in southwestern Minnesota where dry conditions reduced the prospect for small grains and hay to some extent.

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(Potato article: continued from page 9)

increased significantly. If this trend continues, and many feel that it will continue or even accelerate, increased numbers of Valley potatoes will find their way to market in packages. In anticipation of increased demand for processed potatoes, a number of processing plants have been established in the Valley. Some have been built by large food retailing companies who recognized that the Valley can provide a dependable source of high-quality, low-cost potatoes plus an almost unlimited potential for production expansion. Other processing plants have been erected by local residents who banded together to form processing corporations. A total of twelve potato processing plants are currently located in the Valley. Two are capable of turning out frozen french fries packaged for ulti-

mate consumption at home or in restaurants. Five plants can produce dehydrated mashed potatoes or potato slices, or both; one plant turns out starch for use in the paper industry. Potato flour is the product of two installations, and potato chips are manufactured by two plants in the Valley. Because of the perishability of the product, it is expected that most potato chipping plants will be located near consumption centers and not in the Valley. However, because of desirable chipping qualities, Red River Valley potatoes will undoubtedly continue to move from the Valley to chippers throughout the central and southern U. S.

As might be expected, this new industry is experiencing growing pains. In some instances, marketing channels have not been clearly defined, and

technical and financial problems have arisen. The quality of the product is good, however, and consumer acceptance is growing; Valley processors feel their industry will expand and prosper.

The Valley potato industry is not without needs, though. One of the principal questions plaguing growers of table stock is, "How can we assure ourselves of receiving a fair and reasonable price for our potatoes after they are grown?" It is estimated that potato buyers may obtain table stock from about 800 sources in the Valley. The majority of these sources are individual growers who have facilities to wash and pack their annual crop, or growers who have their crop custom packed while retaining the selling function themselves. These growers vie among themselves to obtain outlets for their potatoes. Buyers recognize the many individual sources of potatoes in the Valley, which makes it possible for them to shop for price advantages when making their purchases. Most growers cannot afford to hold the crop for extended periods and, therefore, cut their price rather than risk losing the sale to neighbors. Thus, growers acting to protect themselves undermine prices for the whole Valley. Several grower-shippers reasoned that a substantial increase in the value of potatoes sold could have been realized by Valley growers this past year — if it had not been for the price erosion described above. This increase in price could have been effected without a measurable decline in volume of potatoes sold, they contend. Their contention is corroborated by the earlier discussion of consumer demand for potatoes.

As the buying of potatoes tends to become concentrated in the hands of fewer, large volume purchasers, many grower-shippers feel that adequate prices can be maintained only by concentrating selling efforts in the hands of fewer, larger shippers. This has been accomplished to a degree with the establishment of large wash plants and storage facilities in recent years. A number of growers lease or buy storage space from the wash plant operator and allow him to market their pota-

toes. The operator has at his command a large volume of potatoes and is thereby prepared to handle large orders or special orders. He is also in a better position to hold price than are individual growers.

Some growers feel that this does not go far enough — that buyers are still in a bargaining position more favorable than that of the growers. As a remedy, they propose a producer marketing association. Such an association would assume the task of marketing potatoes grown by members. It would also dictate quality controls to growers. Proponents of such a plan feel that advantages for growers would be better, more equitable prices, more stable prices, and stringent quality control, resulting in a better Red River Valley potato capable of attracting new consumers.

The quality of potatoes shipped from the Valley has long been a concern of many growers. Back in 1947, the Red River Valley Potato Growers Association was formed in an effort toward quality improvement and promotion of Valley potatoes. Voluntary contributions gave the organization its start. Research facilities were built and turned over to the U. S. Department of Agriculture, which inaugurated studies aimed toward improved potato quality through more careful handling during harvesting and packing. In 1951, enabling legislation by Minnesota and North Dakota and approved by two-thirds of the Valley growers, set up the Red River Valley Control Board, which was empowered to dictate more stringent quality controls to growers. At the same time it was authorized that an assessment of $\frac{1}{2}$ cent (later 1 cent) be levied on each hundredweight of potatoes shipped from the Valley. The money is used for promotion of Valley potatoes and continued research into improved cultivation and handling of potatoes.

Continued attention to quality improvement of potatoes shipped from the Valley is essential. As one grower put it, "With a wide variety of good quality processed potato products now available, consumers must be supplied with a fresh Red River Valley potato that is of better quality than ever. If

the housewife is dissatisfied with our product, she will buy processed potatoes or potatoes grown in other parts of the country — potatoes enjoying excellent reputations built on unswerving high quality." In this regard also, it is the hope of Valley growers that potato breeders at the Universities of Minnesota and North Dakota will be successful in their efforts to develop new varieties of potatoes possessing even more desirable fresh market characteristics than varieties currently grown in the Valley.

Valley potato growers also want to serve more effectively the expanding needs for processed potato products. To aid in this effort they have requested that a potato processing research laboratory be established in the Valley. The labora-

tory would be a joint undertaking of the Minnesota and North Dakota agricultural experiment stations and the USDA, with housing for the project supplied by the Red River Valley Potato Growers Association. Work would be directed toward improving the quality of processed potato products through development of potato varieties better adapted to processing and through improved methods of producing, handling and storing potatoes for processing.

People associated with the potato industry of the Red River Valley recognize problems confronting the industry. They also recognize advantages and opportunities of this important Valley industry. They look to the future with optimism.

JAMES HAMMILL

Oil study available

Copies of the report **Petroleum Resources and Production Facilities in the Upper Midwest** are now available upon request from the Research department of this agency. The brochure, completed under the auspices of the Upper Midwest Economic Study and the Federal Reserve Bank of Minneapolis, is part of a joint undertaking by the Upper Midwest Research and Development Council and the University of Minnesota.



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