PROVINCE OF BRITISH COLUMBIA

Department of Agriculture

SIXTY-FIFTH

ANNUAL REPORT

1970

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1971

To Colonel the Honourable JOHN R. NICHOLSON, P.C., O.B.E., Q.C., LL.D.,
Lieutenant-Governor of the Province of British Columbia.

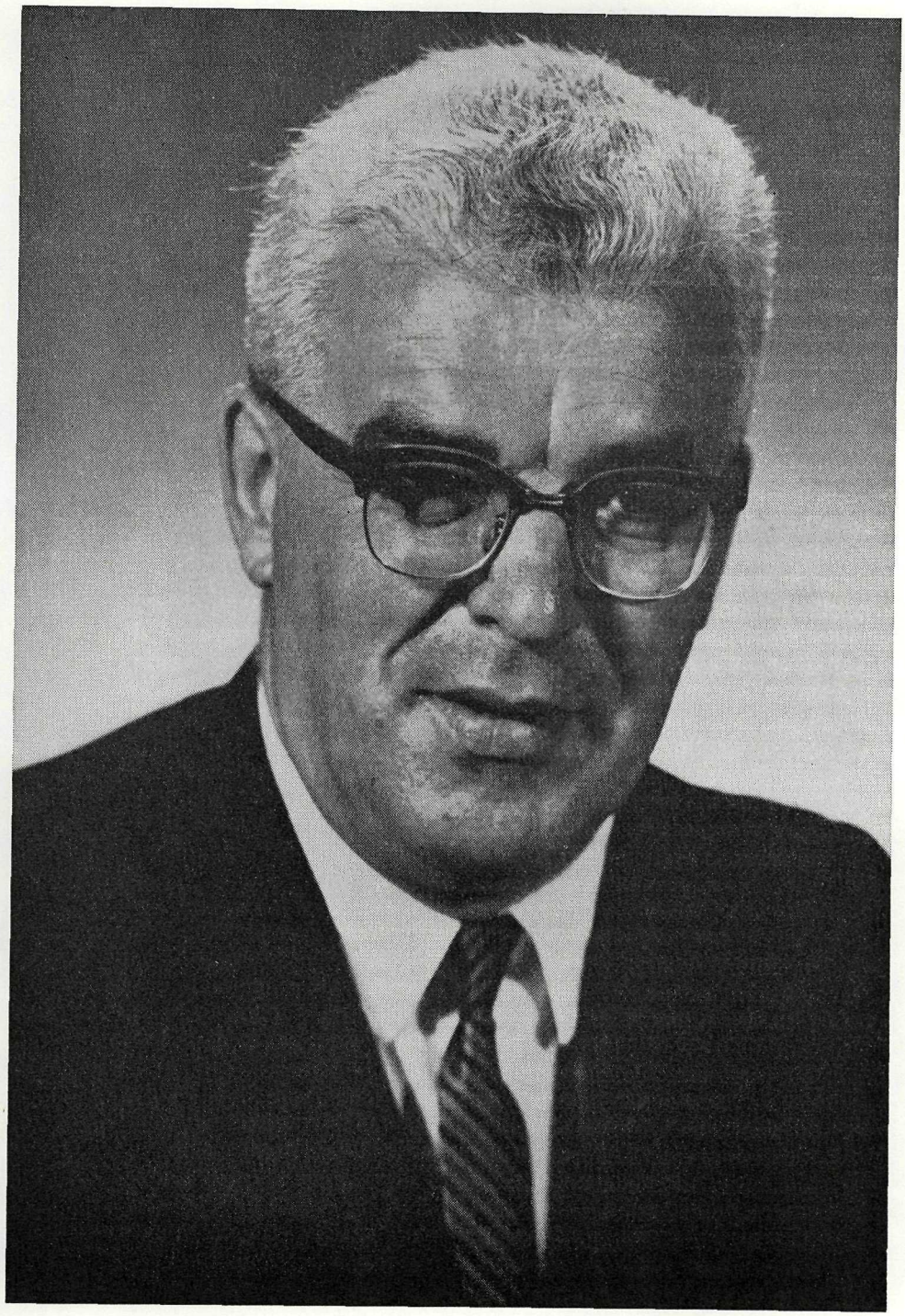
MAY IT PLEASE YOUR HONOUR:

I have the honour to submit for your consideration the Annual Report of the Department of Agriculture for the year 1970.

CYRIL M. SHELFORD
Minister of Agriculture

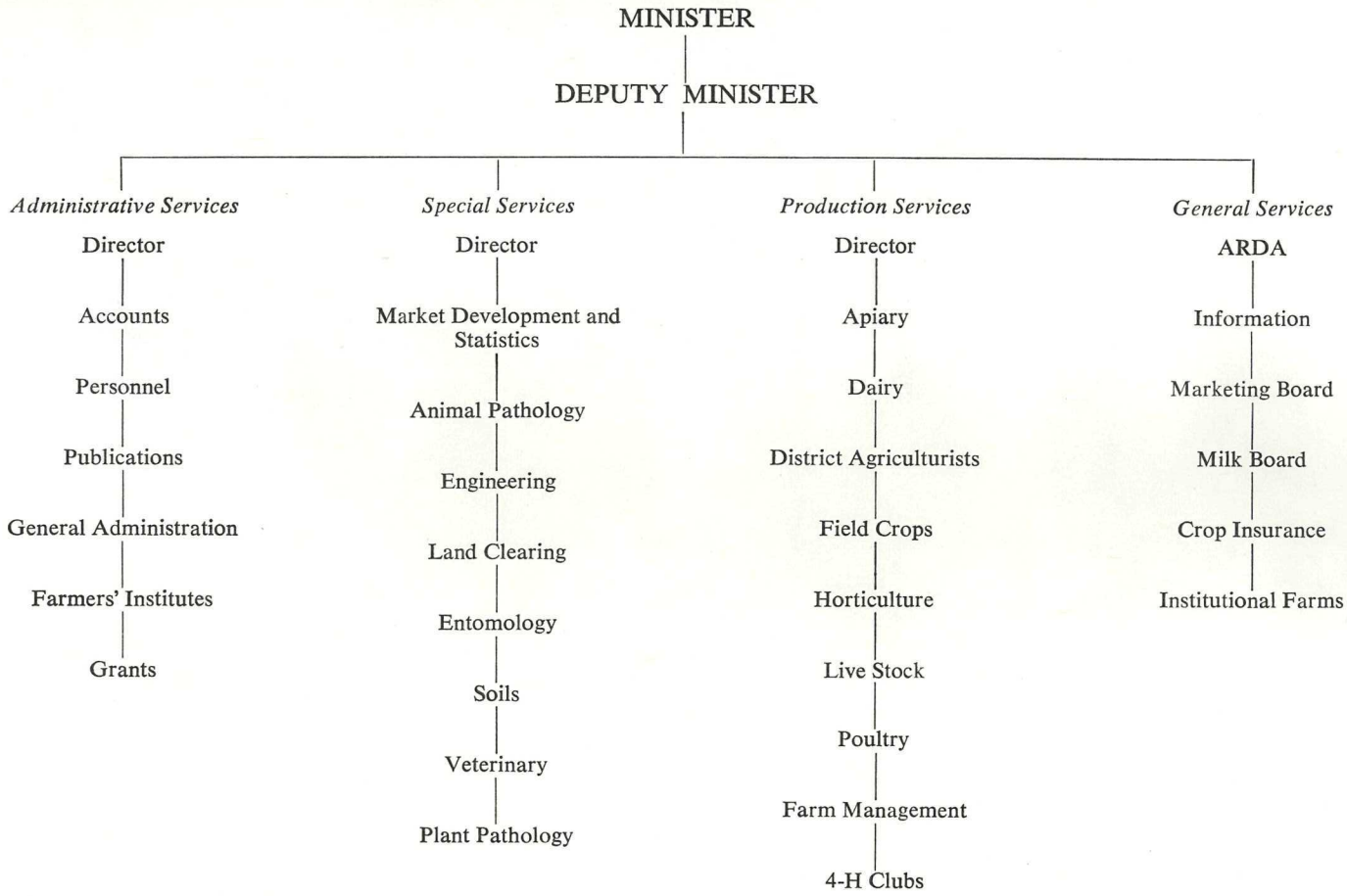
Department of Agriculture,
Victoria, British Columbia.

The Honourable Cyril M. Shelford, Minister of Agriculture.



A. H. Turner, B.Comm., M.S., Deputy Minister of Agriculture.

BRITISH COLUMBIA DEPARTMENT OF AGRICULTURE



Report of the Department of Agriculture

REVIEW

While the estimated total of farm cash receipts from the sale of farm products in British Columbia has been placed at a new record high of close to $206,000,000 for the year 1970, the steadily rising costs of production have tended to hold the net-income figure down. As in other industries, the cost factor coupled with the eroding effects of monetary inflation have produced a levelling-off.

The average index of farm prices for the year (1961=100) was virtually unchanged from the figure of 125.9 established in 1969. This suggests a levelling-out of farm prices generally, following successive increases in the preceding three years.

In spite of such economic conditions there were a number of encouraging achievements on the farm front during the year. Weather conditions were generally favourable following a mild winter, and while a dry, warm summer tended to reduce yields in a number of crops, the quality of production generally was above average.

British Columbia's dairy industry, which accounts for one-quarter of the total farm income, recorded another year of increases. Milk production rose by 3.5 per cent to an all-time record of 927,500,000 pounds, and the weighted average price received by dairymen rose by 20 cents to $5.50 per hundred pounds, the highest in Canada. Sales of fluid milk and cream increased by 4 per cent, bringing the fluid utilization of all milk produced up to 58.5 per cent, also the country's highest. By the year's end the dairy-cow population stood at 81,000 head, an increase of 3,000 over the comparable 1969 figure.

Increases in numbers of heifers, steers, and calves produced a 4-per-cent increase in the Province's beef herd this year as conditions remained favourable in the industry. A highlight was the firm price levels maintained throughout the year for feeder cattle. Good yearling steers ranged from $30 to $34, while good steer calves brought an average of $40.

Prices for finished cattle varied somewhat, starting at about $28 in January, rising to over $32 in May, and closing out between $28 and $31 during the balance of the year.

Shipments of beef cattle to other parts of Canada totalled 111,090 head, but exports to United States markets declined again to only 3,120, as prices in that country dropped below Canadian levels.

A sobering note was sounded as two meat-packing concerns shut down slaughter operations during the year. This leaves only two major operators in this Province.

To some extent these closures were responsible for the 41-per-cent decline in the federally inspected beef kill in British Columbia, from 87,000 head in 1969 to 61,500 this year. At the same time, however, there was an obvious holding-back of stock as breeders continued to build up their herds.

A similar trend developed with sheep and lamb numbers as the Provincial population rose by 2 per cent over the 1969 total, while the inspected kill at Federal and approved plants declined sharply to only 10,339 head. Prices remained at or close to the levels of the preceding year.

Hog marketings rose by 24 per cent to 65,000 as production increased significantly in line with the national trend. Prices declined on an average by 15 per cent during the year, and hog quality premiums were discontinued after having been in effect since 1944.

The quality of British Columbia-bred hogs continued on a relatively high plane, with nearly 22 per cent indexing 105, or better, as compared with the national average of 13.2 per cent.

In the poultry industry average prices tended downward but increased output of both eggs and poultry meat kept total returns to the producer close to 1969 levels.

Production of eggs rose by 2.5 per cent, to 44 million dozen, but a decline of 2.7 cents per dozen in the weighted average producer price brought a lowered total income from this source. Similarly, output of 41 million pounds of broiler chicken, up 3 million over 1969, was accompanied by a price decline of more than 2 cents per pound. Turkey producers fared comparatively better as prices held fairly firm in the face of substantial upswings in production.

The fruit industry experienced average production levels this year but marketing difficulties, particularly for apples, tended to create a generally pessimistic climate among producers. The virtual wiping out of the United Kingdom market for British Columbia apples, as a result of severe foreign competition, placed a heavy strain on remaining outlets to absorb increased supplies.

Increased sales to United States markets helped substantially, but stocks on hand at the end of the year were still well above the long-term average for that date. From the 1970 apple crop it is anticipated that about 40,000 tons will have been diverted to processed products by the end of the crop year.

A brighter picture emerged in the marketing of pears, with sales at a record high in Western Canada and better than average in the East and in the United States.

In the berry-crops sector production was well maintained, although the raspberry crop fell below expectations under warm weather conditions. Prices generally were reasonably satisfactory, particularly on the fresh market. Grape production reached a record high of over 9,000 tons in the Okanagan, the bulk of the crop as usual going to wine manufacture at prices somewhat above those realized in recent years.

Vegetable production was adversely affected by freezing conditions in mid-September which terminated the harvest of a number of items. Despite this setback, total returns were well maintained. This was particularly evident in the increased yields of good quality potatoes this year.

An encouraging trend in the vegetable industry has been the comeback achieved in green vegetables, under the impact of vacuum-cooling, which has served to broaden the market for such products. This year saw over 85,000 cartons of lettuce shipped to Prairie points, as far east as Winnipeg, a feat unheard of for many years. Shipped to the same market were nearly 40,000 cartons of other vegetables.

Also displaying a steady growth potential has been the mushroom industry, which produced over 3.2 million pounds this year. Prices were good, as high as 64 cents per pound to the producer on the fresh market.

ADMINISTRATION

The establishment of a toxicology section to the Veterinary Laboratory and the appointment of an animal nutritionist added new dimensions to the services provided by the Department in 1970. In addition, the consolidation of soil-testing facilities at Kelowna provided for greater efficiency in that field, while the organi-

zation of an information service brought into focus the advantages to be gained through the channelling of official releases and publications under centralized control.

A highlight of the Department's work programme this year was the participation of several branches in the Okanagan Valley Water Basin Study. This project involves a comprehensive survey of the resources and the potential of this area, of which agricultural forms an integral part. The entire study is being undertaken in co-operation with the Government of Canada and with other departments of the British Columbia Government.

Of still broader significance was the work associated with the preparation of a position paper, for submission by this Department, on the Report of the Federal Task Force on Canadian Agriculture. Included were several regional meetings designed to obtain the views of the farm community on matters dealt with by the Report.

This work culminated in the formal presentation of the position paper, in collaboration with the British Columbia Federation of Agriculture and the National Farmers' Union, to the Second Canadian Agricultural Congress at Ottawa, in November.

The Department's permanent staff numbered 350 in 1970, unchanged from the preceding year.

DAIRYING

While the number of dairy farms approved for the production of fluid milk declined by 65 units during the year to a total of 1,645, problems associated with present-day handling techniques occupied increased attention of Dairy Branch personnel.

During the year, a total of 63 permits were issued for milk tank trucks operating in the Province, and an intensive driver-evaluation programme was initiated in the Lower Mainland, designed to upgrade efficiency in milk-receiving procedures.

The Central Dairy Branch Laboratory has now obtained the equipment to determine the incidence of mastitis in British Columbia dairy herds. This will provide the necessary information if a mastitis-control programme is required.

The Bacteriological Section of the Laboratory completed a total of 14,638 sample analyses, an increase of 19 per cent over the preceding year. These involved 30,934 tests, which represented a gain of 27 per cent over the 1969 figure.

Over 90 per cent of the samples showed bacteria counts of less than 30,000 per millilitre, reflecting the very high quality of milk produced in the Province.

In the Laboratory's I.R.M.A. (Infra-red Milk Analyser) section a total of 128,917 tests were completed as compared with 71,825 in 1969. This sharp increase was brought about largely by the greater number of DHIA herds placed in the computer programme this year.

Research was undertaken to determine the relative merits of random daily tests and composite samples, as well as the I.R.M.A.-DHIA and R.O.P.-Babcock systems. Additional research projects involved fat/protein results for feeding programmes, and the determining of a suitable diluent for use in I.R.M.A. testing of high (over 10 per cent) fat products.

Commenced this year was a monthly I.R.M.A. analysis on all major finished products from all dairies. This supplements the basic analysis programme.

The Branch issued licences to 35 dairy plants and three margarine manufacturers during the year, along with one permit for the reconstituting of milk.

POULTRY

As commercial poultry producers continued to encounter rising production costs, the Poultry Branch was called upon for a greater volume of information service in regard to such matters as improvement of facilities and handling techniques.

Included were requests for improved building plans which would permit lower labour inputs while reducing the pollution factors arising from manure build-ups, particularly in areas of urban encroachment. This demand was met by the Branch in co-operation with the Engineering Division, commencing in 1969, and resulted in the adoption of the deep pit layer cage-house. Over 30 such buildings have now been erected.

Continued was an extensive study of egg quality problems in association with the Canada Department of Agriculture and the University of British Columbia.

Under the Farm Management Programme, a number of poultry operators have accumulated useful accounting records, and these are in turn proving of value to the Branch in assessing various practices. Detailed production costs, for example, are providing the means whereby the Branch may base recommendations on a highly practical basis.

Following a series of complaints over the incidence of crooked toes in turkey flocks, a survey was commenced this year which brought the conclusion that the problem stemmed from faulty management practices, and was not a result of nutritional or genetic defects.

Operations at the Random Sample Poultry Test Station again produced revenues in excess of expenses, although the margin was lower than in 1969.

Projects at the Station included a continuation of the special project, in co-operation with the Canada Department of Agriculture, to develop a cross-strain Leghorn suitable for commercial use. Three British Columbia hatcheries sold commercial stock derived from this project in 1970.

The third test of commercial poultry feeds was commenced at the Station, and results of the first two were published. These showed significant performance differences among the six feeds tested as compared with the four tested initially.

In co-operation with the University of British Columbia, a project was undertaken to investigate the use of high-protein wheat in laying rations. Results were inconclusive, although in performance the high-protein wheat did not produce as well as the regular commercial feeds, indicating that wheat protein alone does not provide a balanced protein content. Testing of a new drug "Ridzol" in turkeys, to protect them from blackhead disease, gave some indication that this project provides good protection, although birds treated with it did not have as good a finish as nontreated birds. A project to evaluate a Marek Disease vaccine was also commenced, with results to be released at a later date, after the conclusion of the laying period.

To demonstrate the use of a computer in arriving at a "least cost" feed formula for broiler chickens, it was found that this can be a useful method within certain limits. The resulting formula included blood meal as the sole source of protein concentrate, but in actual testing it was determined that this ingredient, while high in protein content, is not easily digestible and is often of indifferent quality.

A test to determine the effect of wheat protein on the performance of broiler chicks, carried out in co-operation with the University of British Columbia, showed that as the wheat-protein level in a ration increases the rate of body-weight growth declines.

A light-treatment test on broiler chickens, in which the birds were subjected to only one-hour's light in four, indicated that birds on full 24-hour's light weighed slightly more at seven weeks but had a higher mortality rate and a poorer feed conversion.

In co-operation with the Federal Research Station at Agassiz, another test was commenced this year to determine the effect of cold-stressing (cooling) turkey embryos on body-weight gains to 24 weeks and subsequent hatchability. From previous tests, it appears that if cold-stressing improves both hatchability and weight gains, substantial savings could be realized through the use of fewer breeders, since each hen would produce more poults.

ENGINEERING

As its work-load increases the Engineering Branch has been developing information services for broader application to farm operators, on a group basis rather than to individuals as in the past. This has led to the development of revised published guides in farm-waste management, irrigation and drainage system design, and farm-building plans, to name a few of the more sought-after services.

The Packinghouse Equipment Modernization Programme in the Okanagan Valley was brought to a successful conclusion in 1970. This included the development of a more efficient fruit-sorting system as well as an improved packing procedure, which effected a reduction in labor inputs.

Following demonstration of plastic mole drainage line equipment, more than 100,000 feet of 4-inch line was installed on farming land this year. As farmers become more aware of the advantages of this material, particularly in the drainage of peat soils, widespread installation is anticipated.

Further work was carried out on improvements to the raspberry harvesting equipment that has been evolved, with Branch participation, during recent years.

A wide range of equipment was assembled for a two-day irrigation workshop organized by the Branch, and a more economical wheel-move system and a completely new "trickle irrigation" method was devised, the latter having particular application to tree and canefruits, in which lower water pressures are incorporated and from which increased fruit yields can be realized.

Also developed was an effective computer programme for the calculation of heating, ventilating, and insulation values for confined-type live-stock housing. Papers on this project were presented at this year's national meetings of the Canadian and American Societies of Agricultural Engineers.

To meet the increasing need for effective and efficient farm-manure disposal methods the Branch, in co-operation with Federal and university agencies, devised a workable system of hog-manure treatment which appears to offer an acceptable solution to such problems by eliminating odours and sharply reducing the organic pollution factor.

Altogether, the Branch received 206 specific requests for engineering services during the year, involving expenditures estimated at more than $2½ million. Charges of $1 per sheet for farm-building plans were established December 1, 1970.

For the fiscal year ended March 31, 1970, 8,930 acres were cleared and 5,525 acres broken in the Province's land-clearing and development programme. These brought the cumulative totals to 195,966 and 98,464 acres, respectively.

VETERINARY

Completing its first full year as a separate entity, the Veterinary Branch reported that the incidence of disease in the Province continued at a low level throughout 1970.

Infectious Bovine Rhinotracheitis (IBR) and Bovine Virus Diarrhea (BVD) appeared more prevalent this year, particularly among young animals, while Vibriosis outbreaks continued to occur sporadically in beef-growing areas. Preventive vaccines were used to treat cases of IBR and Vibriosis.

Cases of lead poisoning of young horses in the Trail area and of cattle in Richmond were traced to lead emissions from nearby industrial installations. In the former, local pastures were ruled unsuitable for the raising of foals.

With the completion of testing in the North Okanagan area in December, the entire Province reached the status of a Brucellosis Free area. Calfhood vaccinations for the year ended June 30, 1970, totalled only 2,846 head.

To deal with the increasing problem of Leptospirosis in cattle, swine, sheep, and goats a Province-wide testing of blood was established to determine areas of infection and the species of Leptospira involved. At the same time, a quarantine programme was set up for the testing and treatment of affected animals where a herd problem existed. During the year, 14 farms were given provisional quarantines.

Field Veterinarians inspected a total of only 1,970 head of sheep for foot-rot prior to the animals being permitted on Crown lands, and a further 244 head being shipped under terms of the Sheep Transportation Policy.

The field staff supervised 684 public live-stock sales during the year and inspected 193,312 head of stock, a gain of 4,438 over the total of the preceding year. There were 18 public-sale yards licensed, as well as 14 yard operators and 54 auctioneers. Under revised regulations weaned calves offered for sale at these yards must now be not less than eight days old, and weaned swine must be not less than 25 pounds in weight.

The Branch provided inspection service in nine licensed abattoirs, where 20,569 cattle and calf carcasses received the "B.C. Passed" stamp, along with 30,937 hog, and 3,661 sheep and lamb carcasses. The total of poultry passing inspection amounted to 232,391 birds.

A total of 404 fur farms were licensed, made up of 179 mink and 224 chinchilla farms plus one raising marten. Fifty-two mink farms withdrew from operation during the year.

The Veterinary Laboratory processed a total of 22,650 individual specimens, involving 113,250 individual laboratory tests this year, the latter figure being 7,569 higher than in 1969. In the microbiology section there were 3,039 submissions, from which 1,187 specific pathogenic organisms were isolated. Much of the work of this section was involved with the Leptospirosis study and the Salmonella zoonosis programme.

With 825 direct submissions from veterinary practitioners and an additional 1,173 from the laboratory's autopsy room, the Histopathological Section made over 7,700 slides this year.

The Brands Division reported cattle shipments of 205,639 head from the prescribed areas of the Province in 1970, as well as 8,794 horses and 12,624 hides. Cattle shipments outward, amounted to 111,090 head to other provinces and 7,089 to United States markets. Slaughter-house records covered a total of 24,094 head. Reports of cattle missing or stolen involved 188 head, of which 33 were recovered. A further 110 were recovered during routine brand inspections.

LIVE STOCK

A highlight of the Live Stock Branch's activities this year was the increase in the training programme for artificial-insemination technicians and the expansion of facilities to provide for insemination of other live stock in addition to cattle. There were 72 technicians licensed during the year, working out of 24 artificial-insemination centres located throughout the Province. These provided a total of 75,390 first services in 1969.

Under the Artificial Insemination Assistance Policy 14, a rebate was paid on the cost of semen used in 11,503 first services provided by 15 centres engaged solely in purchase and distribution of semen in 1969. As an incentive to technicians in such centres, the sum of $2 was paid for each first service in excess of the total performed in the preceding year.

Preliminary work was completed in the changing of regulations leading to a standardized system of weighing and paying for beef carcasses where the animals are sold on a carcass basis.

Assistance was again provided for general live-stock improvement through the purchase of eight pure-bred beef bulls under terms of the Pure-bred Sires Purchase Assistance Policy for Farmers' Institutes. Premiums were paid on 19 rams sold by the B.C. Purebred Sheep Breeders at their annual sale, and transportation costs were subsidized on 247 ewes during the year.

Under the Record of Performance Policy for Swine, 126 boars and 56 gilts were back-fat probed and weighed, and showed improved index ratings over those so tested in 1969. On an average, Yorkshire boars showed a slight advantage over Lacombes in terms of less back-fat.

A total of 2,905 calves in 88 herds were tested this year in the R.O.P. Programme for Beef Cattle. These figures represent the highest participation to date under this programme.

Testing of 69 bulls at the Beef Cattle Test Station, at Tranquille, produced an average daily gain of 2.22 pounds per animal in the 1969/70 test period. Carcass evaluations of six steer progeny groups were completed during the same period.

With the appointment this year of an Extension Animal Nutritionist, recommendations on ration formulation are now available for general distribution.

At mid-year the Dairy Herd Improvement Services reported 22,908 cows in 496 herds on test, an average of 46.2 animals per herd. Average production from 20,049 completed milking periods was 12,730 pounds of milk and 489 pounds of fat for a butterfat average of 3.84 per cent. Cows of the Holstein breed made up 87.5 per cent of all those completing lactations in 1969.

Thirty of the herds on test produced butterfat averages in excess of 600 pounds. The top-producing herd, with 47 cows considered, averaged 18,901 pounds of milk and 700 pounds of fat.

To identify the birth date, sire, and dam of heifer calves in herds on test, 7,200 D.O.T. ear-tags were issued this year. This provides information from which artificial-insemination sires are proven. Of all animals on test in 1969, 61.2 per cent were produced by artificial insemination.

Of the 496 herds on test, 320 are now on the I.R.M.A.-Computer Programme, the remainder being still on Babcock test.

EXTENSION

Personnel of the Agricultural Development and Extension Branch continued this year to carry out a wide range of activities aimed at the promotion of sound farming practices. These included a continuing emphasis on staff specialization, particu-

larly in such areas as farm management and live-stock and field-crops production, in addition to the long-standing association with 4-H Club work in the Province.

Most of the staff membership is now well acquainted with the CANFARM programme following a series of workshop sessions, and a few have attained specialist status in this system of streamlined data recording.

The Fraser Valley Dairy Extension Committee again provided useful advisory service to the dairy industry in that area. The Committee, comprising District Agriculturists and dairymen, sponsored workshops and field days which attracted an encouraging degree of participation. Also sponsored were a dairy short course and a bus tour through dairying areas in the States of Washington and Oregon.

The Branch organized short courses and workshops in all major dairying regions, covering nutrition, economics, and crop production. Continued were forage-improvement and field-husbandry programmes in several areas, as well as a number of field days on Christmas-tree culture.

In the realm of communications, staff personnel were increasingly involved this year in the use of audio-visual equipment, as well as the preparation of radio tapes. The weekly television presentation at Dawson Creek was continued and the series was also telecast at Prince George. The use of 16-mm. films and 35-mm. slides was also continued as useful aids at farm meetings, and a number of district offices prepared newsletters for general distribution in the farm community.

As usual the Branch participated in a number of projects in co-operation with other agencies. These included weed control, a water resources study in the Okanagan, a beef-feeding demonstration in the Peace River, and a training course for dairy herdsmen in the Fraser Valley, as well as the continuing irrigation project at Vanderhoof.

Of particular interest was the Branch's role in offering increased advisory services to Indians in various areas of the Province. These involved general workshops on the basics of agriculture, in addition to specific undertakings in live-stock and field-crops husbandry. With the exception of a comprehensive farm-management plan now in its second year with the Cowichan band on Vancouver Island and a short course on ranch management in the Chilcotin area, these projects have centred around the Kamloops-Nicola region.

SOIL SURVEY

In the Lower Fraser Valley this year, the Soil Survey Branch was involved with four separate projects: The preparation of an interim detailed soil-survey report and soil map covering 110,000 acres in the Coquitlam-Pitt Meadows-Maple Ridge area; a soil survey in detail of the Alta Lake region, encompassing 9,700 acres; the remapping and reclassification of 26,500 acres in the lowlands of Sumas and the western part of Chilliwack Municipalities; and the mapping at a reconnaissance scale of 125,000 acres in the Stave Lake area.

Apart from some further checking in the alpine areas and minor soil sampling, the above mapping essentially completes the reconnaissance soil survey covered by the Langley and Vancouver map-sheets, and will be incorporated into a final over-all soil survey report for the Lower Mainland.

To further characterize soils occurring in this area some 250 soil samples were taken from 30 soil profiles, and, in co-operation with the University of British Columbia, some of the Lower Fraser soils were examined and sampling-sites located for research studies to determine their physical characteristics.

Projects in the South Okanagan-Similkameen area included a detailed survey of 23,000 acres between the Ashnola River and the United States border, the map-

ping in detail of 10,000 acres in the Oliver-Osoyoos area, and a reconnaissance soil survey encompassing some 930,000 acres of the uplands of the Penticton map-sheet.

The mapping of 50,000 acres this year, completed the semidetail soil survey of the Creston Flats and adjoining benchland, and tentative agricultural capability ratings have been assigned to the map units.

A reconnaissance soil survey was carried out on approximately 3,930,000 acres, and preliminary field work completed on the area of the Nelson map-sheet.

A reconnaissance soil survey of the eastern half of the Bonaparte River map-sheet, covering 1,909,000 acres north of Kamloops, was carried out, and in the Quesnel Lake region an exploratory soil survey of 939,000 acres was made in sufficient detail to permit soils rating for agriculture and forestry capabilities only.

Soil maps of the Prince George-Vanderhoof area were brought to the final stages of completion this year, and the reconnaissance soil survey of the Smithers-Hazelton area was checked and soil profiles sampled in preparation of a soil-survey report publication.

A detailed soil survey of the southern part of Spallumcheen District Municipality was completed, with soil capability for agriculture ratings applied.

To develop a single comprehensive biophysical classification map for interpretive use by agencies in agriculture, climatology, recreation, forestry, and present land use under the Canada Land Inventory, a project was undertaken near Kamloops this year.

Interpretive soil capability classification work was carried out in several parts of the Province for application in both agriculture and forestry.

In the Okanagan, the Branch provided advisory assistance in both irrigation and drainage matters, particularly the former, which included advice on all phases of water handling and soil-moisture relationships. Estimates of available water-storage capacity and maximum application rates were made on a total of 1,036 soil samples submitted by farmers, and a further 120 from irrigation designers and other agencies. Advice was also furnished on soils and irrigation problems to other agencies of Government, both Federal and Provincial.

The Branch was also involved in the Okanagan Water Basin Study, particularly with respect to waste treatment, which involved the determination of irrigation return flows and preparation for lysimater study of sewage-effluent disposal.

Standard drainage surveys were conducted on 29 farms, comprising 1,177 acres in the Fraser Valley, where drain construction was completed on 778 acres during the year. Assistance was given in the formation of two drainage and irrigation districts having a combined area of 3,200 acres.

The Branch's laboratory completed 7,200 chemical analyses in 1970, and physical analyses of 50 samples collected in the Fraser Valley.

Tables and maps were prepared in which Lower Fraser Valley soils have been grouped according to their fertility and fertilizer requirements.

MARKETS AND STATISTICS

Continuing interest in commodity-marketing boards on the part of primary producers in various parts of British Columbia occupied an increasing amount of the Branch's attention during 1970. Out of this came the formation of the British Columbia Grape Marketing Board following a plebiscite supervised by the Branch, in which a substantial majority of the producers concerned endorsed a draft marketing scheme for the regulation of grape marketing in this Province.

Considerable time was expended in advisory services to this Board, and in directing initial negotiations with the six commercial winery operators for purchase of supplies from the 1970 grape crop.

The formation of this Board brought to 10 the number of such bodies now in operation under provisions of the *Natural Products Marketing (British Columbia) Act.*

Among these, a number of amendments to their respective marketing schemes made pursuant to the Act were drawn up and submitted for approval by the Executive Council.

In addition, assistance was provided to the three poultry-marketing boards in setting up regulations governing the inward movement of eggs, broiler chicken, and turkey respectively. This involved consultation with legal counsel and with marketing officials in other provinces.

The prospect of Federal marketing legislation being introduced to cover certain aspects of interprovincial and inter-regional trade necessitated considerable study and discussion with all parties directly concerned.

As liaison agency for the Agriculture Division of the Dominion Bureau of Statistics, the Branch was involved in a number of fields concerning statistical data, in particular, with preliminary arrangements in connection with the 1971 Census of Canada. This work continues to grow in scope as more demands for statistical data arise.

Several adjustments and amendments to the regulations under the *Fruit, Vegetables, and Honey Grades Act* were carried out during the year, involving the granting of concessions on a number of horticultural products and containers. The volume of work in this sphere also continues to expand as marketing techniques undergo more and more changes.

Preparation and publication of the Branch's weekly *Markets Bulletin* was reactivated at mid-year and appears thus far to have gained ready acceptance by readers. As in earlier years, this publication is designed to cover items of general interest in all aspects of agriculture, with particular emphasis on the marketing sector.

Radio and television production was continued in the Okanagan-Mainline area again this year, the former in a mid-day time slot from the Kelowna station. The weekly telecasts from Kelowna and Kamloops were upgraded technically through the provision of additional staff, and experimental colour work was undertaken for the first time. Public acceptance of both radio and television programmes continued in a favourable vein.

The Branch's Food Consultant Service was expanded through a series of "Pots 'n' Panels" television productions beamed over the Victoria and three Interior outlets. The tapes for these telecasts were also used extensively by the British Columbia Departments of Education and Health and Welfare.

The organization and staging of the "Acres of Food" show at the annual Pacific National Exhibition occupied an increased amount of time and participation this year as additional exhibitors took space. The presentation was viewed by an estimated 600,000 persons.

Requests for consumer information increased to more than 3,000 this year from a wide territory that included the northwestern United States as well as all parts of this Province.

INSTITUTIONAL FARMS

The two Institutional Farms continued to show good performance records in their live-stock enterprises as well as providing produce to other institutions. The combined value of this output has been placed in excess of $800,000 for the year.

At Colony Farm, the Holstein dairy herd maintained its high milk production with the 5-year moving average now standing at 134 and 136 per cent B.C.A. for milk and fat, respectively, from 230 records being completed annually. Surplus breeding stock found a ready market and a number of calves were again provided for 4-H Club projects. Shipments of milk to the Lower Mainland Regional Correctional Centre and the Haney Correctional Institute were commenced during the year.

The bull, Colony Sadie Ena Model, bred at Colony Farm and used extensively at the British Columbia Artificial Insemination Centre, was named leading Canadian Production Honour List Sire for 1970, based on the performance of 401 daughters in 260 herds.

Major show awards gained at the Pacific National Exhibition included the Premier Breeder and Premier Exhibitor, first prize junior yearling female, and first prize breeder's herd. The breeder's herd was subsequently nominated to the All-Canadian competition, and a yealing heifer was included in the British Columbia Holstein exhibit at the Royal Winter Fair.

Carcass quality continued to be emphasized in the development of the swine herd, with all boars used being back-fat probed prior to selection and subsequently progeny-tested for a market index. The herd's show quality was evidenced by the winning of the champion live-market hog, champion hog carcass, and first place sow and litter awards at the P.N.E.

At Tranquille Farm the weaning weights in the beef herd were well maintained in spite of unusually dry summer-range conditions. Steer calves averaged 453 pounds and heifers 416. The dairy herd increased its production this year and now boasts a moving average of 144 per cent, 145 per cent B.C.A. As at Colony, surplus stock for breeding purposes was in good demand.

4-H CLUBS

With a total membership of 3,836 in 251 clubs registered this year, the 4-H Club Division reported another full schedule of programmed activity among young people of the Province. This encompassed a broad participation in judging rallies and field days, training in public speaking, and attendance at fairs and exhibitions. For those engaged in live-stock projects there were a number of highly successful sales, highlighted by the excellent returns realized by Beef Clubs in fat-stock shows and sales at five centres.

Expanded this year were the annual exchange programmes in which young people from all parts of the Province are enabled to visit other countries as well as other areas of Canada. Youngsters from these countries and provinces in turn visit British Columbia.

Such visits this year included a trip to Japan for two, to Ontario for four, to Manitoba for seven, and the annual interprovincial exchange which saw nine from British Columbia visiting one each of the other nine provinces.

In addition 14 members attended the National 4-H Club Conference, and one each represented British Columbia at the United States Conference in Washington, D.C., and the Chicago 4-H Club Congress.

Seventy-nine delegates attended the week-long Provincial 4-H Club Week at Vernon, at which a full programme was provided to encourage young people to become fully aware of everyday problems and ways and means of dealing with them.

Home Arts Clinics and 4-H Leader Training Workshops rounded out the Division's regular programme. Staff members were active in the communications field,

producing a number of radio tapes, publishing a broad range of pamphlets and newsletters, and taking an active role in workshop projects, including those conducted for leader training.

FIELD CROPS

Weed-control and range-improvement projects were again conducted under direction of the Field Crops Branch, with a number of new herbicides tested under field conditions, and demonstration projects on the control of Diffuse Knapweed in the southern Interior range areas of the Province. Trial plots for the control of Timber Milkvetch through the use of herbicides on ranges were also set up again this year.

In co-operation with the Canada Department of Agriculture and the British Columbia Beef Cattle Growers' Association, the Forage Analysis Service handled 290 submissions. Actual chemical determinations were carried out at the Federal Research Station at Summerland.

Through the British Columbia Crop Improvement Association, 1,620 pounds of pedigreed seed, including 700 pounds of Pitic 62 wheat, were distributed at cost to growers throughout the Province.

The Branch's laboratory processed 6,500 soil samples involving 48,000 determinations during the year, a gain of 10 per cent over the 1969 total.

Three Feeder's Permits and 21 Permits for Removal of Screenings, allowing for controlled use of raw refuse screenings for feed, were issued under authority of the *Noxious Weeds Act*. The total movement of screenings amounted to 151,667 tons, of which 51,050 tons were retained for domestic use.

Under provisions of the British Columbia Feed Grain Assistance Policy a total of $37,170.70 was paid out this year to subsidize the movement of 6,166 tons of feed grain shipped from Creston to feeding areas of the Province.

Several fertility trials were carried out in 1970, as well as two in-service soil tours to acquaint staff members with basic soils principles and with various crop-production potentials associated with these.

PLANT PATHOLOGY

Although the incidence of disease in plants was down in British Columbia this year, the Plant Pathology Branch reported for the third consecutive year an increase in the number of diseased plant specimens received for diagnosis. Altogether, 574 were diagnosed, including several reported in new areas of the Province for the first time. These included white rot of onion at Cloverdale, three turf disorders on Colonial Bent grass at Tsawwassen, leaf blight on greenhouse cucumbers at Haney, and chocolate spot on Brome grass at Dawson Creek.

Alfalfa crown bud rot was reported as widespread in the Kamloops-Cariboo region, and is suspected as the cause of relatively short duration of stands there. There were no findings of bacterial wilt anywhere in the Province.

Following the discovery of Little Cherry Disease on 49 trees in the Penticton area in 1969 an intensive check was made in Okanagan orchards this year. Five more trees were found and removed, as were the original group. This project was carried out in co-operation with the Canada Department of Agriculture.

The incidence of Crown Rot Disease in young apple trees on Malling IV, IX, and XXVI rootstock was determined to be of a minor nature with positive infections confirmed on only 5 out of some 44,000 trees checked.

Only one outbreak of bacterial ring rot was detected in potatoes this year, but damage to Fraser Valley strawberry crops from red stele was more prevalent than

usual, as was the incidence of fruit rots in Okanagan vineyards. Vegetable disease outbreaks were generally sporadic rather than widespread, although significant losses from neck rot in onions occurred in storage in the Fraser Valley.

There were a number of disease problems in the nursery-crop sector, including some severe damage to nursery-grown Thujas, but in the main the incidence was localized. There were no serious outbreaks in bulbs.

HORTICULTURE

Increased demand for advisory services, on the part of primary producers, occupied much of the attention of the Horticulture Branch in 1970. Since much of this demand stemmed from cultural and disease problems, staff personnel were heavily involved in a number of investigations into these and related matters.

Three calcium compounds were tested on apples to determine which was most effective in controlling such physiological disorders as bitter pit and Spartan breakdown. Similar tests were conducted to control the incidence of Anjou pit in pear trees. Results, while generally encouraging, were not conclusive, although indications point to the need for adequate calcium intake as a prime factor.

Horticulturists have also been active again in the Tree Fruit Leaf Analysis Service in co-operation with the Federal Research Station at Summerland. Analysis determinations totalled 1,631 for the year, a gain of 38 per cent over the 1969 figure.

In addition to a comprehensive production survey on grapes in the Okanagan, considerable work was carried out on vine nutrition matters, bunch thinning trials, and vineyard weed control. Grape petiole analysis determinations were carried out on a larger scale than formerly.

In the berry crops field, blueberry propagation studies were continued, as were pruning demonstrations.

Altogether there were 530 nematode tests carried out, most of which involved strawberries and raspberries and which are known to cause extensive crop losses. The bulk of the 530 soil sample submissions in the Fraser Valley showed the presence of meadow nematode, parasitic to native grasses and alders.

Variety trials of carrots and celery revealed some possibilities in new varieties, but in the main these were not significantly superior to those currently in production. A similar trial on radishes showed one variety, Cherry Belle, to be superior in all respects, including yield, to others tested.

Tests on precision seeding of lettuce revealed that with good weed control substantial savings in production costs can be achieved by this method. Although hampered by weather conditions, lettuce variety trials showed Ithaca to be of some promise.

A trial involving closer-than-normal planting of broccoli provided encouraging increases in yield, and indicated that this method may lend itself to mechanical harvesting. Trials, covering 48 varieties of Brussels sprouts, resulted in the discarding of most, and the planning of further trials on the remainder next year.

In the Interior similar trials were carried out on tomatoes and asparagus, with a further testing of herbicides on the latter. These are to be continued.

The use of artificial light early in the season on greenhouse tomatoes and cucumbers revealed that improved performance can be obtained on the former by this procedure. On cucumbers further testing will be carried out before any recommendations are made.

Trials on lettuce-growing in greenhouses yielded useful information, and present results point to some possibilities for this crop if planted early, so that harvesting can be carried out beginning in November.

To improve the general quality of nursery stock, the Branch instigated the establishment of a plant-improvement committee which would involve the Canada Department of Agriculture, Botanical Gardens, and the University of British Columbia, as well as this Department.

A short course was provided for greenhouse tomato growers this year in co-operation with the Department of Education and Canada Manpower. This met with ready acceptance by growers, and will be continued.

The regular weather-forecasting service in the Fraser Valley was continued over two radio stations this year on a seasonal basis, and plans were laid for possible extension next year.

A fruit and ornamental variety testing and holding station was established at the Haney Correctional Institute, and plantings will be set out in 1971, under Branch supervision.

There were no indemnities paid on grapes, and grain grower claims were down to about $60,000.

ENTOMOLOGY

While there were no unusual insect outbreaks during 1970, a number of recurring problems requiring increased vigilance and control measures occupied the attention of the Entomology Branch in many areas of the Province. These were in addition to the continuing extension activities associated with insect determination and control, as well as advisory services in the field of pesticide usage. The latter included further assemblage of unwanted chemical products destined for disposal.

In the tree-fruits industry the integrated mite-control programme was continued with increased emphasis on the possibilities for reduced spray applications through judicious timing, to permit the building up of natural predator populations.

Difficulty in controlling the peach twig borer led to the conclusion that a second spring spray is advisable and that Diazinon is not effective as a control agent. Control of the Western Cherry fruit fly was predicted upon spray applications made only when this pest was captured on yellow sticky-board traps hung in orchards. Identification sessions were conducted throughout the Okanagan area to fully acquaint growers with the four main species of flies in this group, and growers were encouraged to remove derelict trees and hang not less than one trap per acre.

In a number of instances where damage was sustained in the half-inch-green stage on apple trees it was evident that this occurred whether or not oil-spray applications had been made. This suggested the frost damage was probably the root cause.

Investigation into the problems associated with spraying on high-density plantings revealed that overspraying is probably occurring in many instances, producing excess residues.

Among berry crops it was determined that bumble bees are most effective pollinators in cranberries, and that the exclusion of pollinators results in few or no berries, none containing seeds. A check on the incidence of raspberry fruitworm following the removal of DDT from use, revealed only slight infestation and none in the harvested fruit.

The alfalfa seed project near Kamloops, launched several years ago, showed again the gains in seed yield than can be realized with the presence of adequate numbers of leafcutter bees and the application of dimethoate solution for Lygus control.

Effective control of rodents was made possible by the introduction of "Gophacide" as a substitute for the more toxic "1080" bait commonly used. This new product can be applied without official supervision.

Pesticide-applicator certificates have now been issued after examination to 835 individuals, and a total of 231 private firms are presently licensed to apply these products. Exclusive of pharmacies, 445 retail outlets are licensed to sell, and 839 persons are certified dispensers of pesticides.

There were more than 3,000 inspections of retail establishments carried out, as well as 700 pharmacy checks, out of which, warnings for violations were issued to operators in 18 per cent of such outlets.

OTHER SERVICES

Twenty-two projects were approved this year under the Federal-Provincial Agricultural Rehabilitation and Development Act (ARDA), representing a total commitment of some $6.7 million. Of these, 12 projects involved soil and water classification, seven came under the Canada Land Inventory programme, and the remainder were of a minor nature.

The 1970 programme brought to 169 the total number of projects approved since ARDA activities were first launched in 1963. The cost now stands at $36.7 million for these. A new five-year ARDA agreement was signed this year by the Federal Minister of Regional Economic Expansion and the Minister of Agriculture for British Columbia.

The Publications Branch reported the distribution of 110,673 publications during the year, reflecting a growing public demand for this material. Output of mimeographed work accounted for 846,940 sheets.

This year's honey crop amounted to 3,647,090 pounds, the second largest on record. This was produced from 31,041 colonies, operated by 1,883 beekeepers, according to statistics compiled by the Apiary Branch. Beeswax production totalled 74,106 pounds.

Producer prices remained unchanged at 14 to 15 cents per pound in bulk for honey, while good quality beeswax realized 65 to 70 cents.

While the incidence of disease generally declined, there was a sharp increase of American Foulbrood, occurring chiefly in the Okanagan Valley. There were also losses reported stemming from pesticide poisoning of bees.

As the use of honeybees in pollination programmes expanded this year, 4,412 colonies were rented by fruit- and seed-growers, at an over-all average of about $11 per colony.

Work was continued on package-bee production in co-operation with the Canada Department of Agriculture, and indications point to a number of advantages to be derived from such production in the Province. Coupled with this project has been the overwintering of colonies in the more southerly regions.

Newsletters and instructional sheets on all phases of beekeeping were widely distributed, and assistance was provided in the promotion of honey and other bee products to improve their market position.

The Farmers' Institutes Branch reported on the operations of 109 individual Institutes, having a combined membership of 4,336. Of these, 99 recorded purchases of commodities, valued at just under $2 million, during the year.

Four pound districts were constituted during the year and six were extended. Six grasshopper-control areas received advances totalling $45,000, of which sum more than one-half was returned unexpended.

Fifty-one exhibitions and fall fairs received grants totalling $108,714 this year.

This year the Branch took over the editing and distribution of Departmental press releases and specific articles to news media and other interested parties. A newsletter, *Inservice News* and a summary of research projects, *Research Abstracts* were established this year for circulation among staff personnel.

A total of 247 individuals received farm-analysis reports for their 1969 operations under the Farm Business Management Programme conducted by the Farm Economics Division. This year, 281 operators registered, of which number, 64 were registered in Option 2C of the CANFARM Programme.

A series of economic guidelines covering dairy, grain, and beef production were published, and work was continued in the preparation of cost-analysis data to bring to 57 the number of cost-analysis sheets published by the Division. These cover a variety of enterprises including hay, silage, grain, vegetables, berries, and tree-fruit production.

A Farm Business Management course for orchardists was conducted in co-operation with the Department of Education and Canada Manpower in the Okanagan this year, and Division staff took part in a number of farmer workshops at various centres throughout the Province. In-service-training workshops rounded out the year's general programme.

Four crop-insurance programmes were administered by the Crop Insurance Branch this year, covering tree fruits, berry crops, grapes, and cereal grains. The tree-fruit programme increased the number of policyholders to 1,223, involving a total risk of some $5.2 million. Indemnity payments were sharply reduced to about $80,000 from the $1.1 million figure for the previous year.

Coverage for berry crops was well maintained with a slight acreage increase. Claims in 1970 amounted to less than $14,000 in total, as compared with more than $838,000 in respect of the 1969 crops.

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