

acter and kept under good conditions under confinement so that no food was available excepting such as was given by Mr. Anderson, who conducted the experiment.

It would be well if our poultry growers would place plenty of skim-milk available to the chickens. If the vessel containing the milk was thoroughly scalded daily to keep the sanitary conditions good, the feeding of the milk would unquestionably result in profit.

Further information on the subject will be forthcoming in bulletin 71 of this station, which will be mailed to all persons on the station mailing list, as well as to other applicants while the supply lasts.—C. S. Plumb, director Purdue University Agricultural Experiment Station.

CORRESPONDENCE.

WINTER WHEAT.

LEADING VARIETIES SUCCESSFULLY TESTED IN 1898 ON 191 ONTARIO FARMS.

Editor of FARMING:

Seven varieties of winter wheat were sent out for co-operative experiments in the autumn of 1897. These were divided into three sets, with three varieties in each set, the Dawson's Golden Chaff being used in all the sets as a basis by which the results of all the varieties could be compared with one another. We have received 191 full and satisfactory reports of carefully conducted winter wheat experiments for 1898.

The following table gives the comparative yield of straw and grain per acre of the varieties of winter wheat tested in 1898 on 191 farms:

	Straw per acre (tons).	Grain per acre (weighed bushels).
Dawson's Golden Chaff. 1.8	30.6	
Imperial Amber . . . 1.9	29.3	
Early Genesee Giant. . 1.7	28.2	
New Columbia. 1.6	27.5	
Early Red Clawson. . . 1.7	26.9	
Pride of Genesee . . . 1.5	25.5	
Poole 1.5	24.6	

This table should be of great value to the wheat growers of Ontario, as none except the 191 good results are included in the summary. Much credit is due to the careful experimenters who sent us the reports of the tests made on their farms.

CONCLUSIONS.

(1) In the average yield of winter wheat per acre the Dawson's Golden Chaff stood highest among eleven varieties tested over Ontario in the year 1893, among nine varieties in each of the years 1894, 1895, and 1896, and among seven varieties in each of the years 1897 and 1898.

(2) Three of the varieties of winter wheat have been tested over Ontario for five years in succession with the following average yields of grain per acre: Dawson's Golden Chaff, 32.0 bushels; Early Genesee Giant, 28.9 bushels; and Early Red Clawson, 28.7 bushels.

(3) Dawson's Golden Chaff was the most popular variety with the experimenters in each of the past five years.

(4) In the co-operative experiments for 1898 the Dawson's Golden Chaff and the Early Genesee Giant came through the winter the best, and the New Columbia the poorest.

(5) The Early Genesee Giant, Dawson's Golden Chaff, and New Columbia possessed the strongest straw and the Poole and Imperial Amber the weakest straw in 1898.

(6) In the co-operative experiments of each of the past five years the Dawson's Golden Chaff was one of the least and the Early Genesee Giant was one of the most affected by rust.

(7) In 1898 all varieties were practically free from smut, which is nearly always the case when no smut is sown with the wheat.

(8) The Pride of Genesee and the Imperial Amber produced the longest and the New Columbia the shortest straw.

(9) The New Columbia, Early Red Clawson, and Dawson's Golden Chaff were the first and the Early Genesee Giant and Pride of Genesee were the last to mature.

(10) The Dawson's Golden Chaff and New Columbia produced the plumpest and the Poole the most shrunken grain.

The following leading varieties of winter wheat will be distributed this year for co-operative experiments:

Set 1. Dawson's Golden Chaff, Early Genesee Giant, and Early Red Clawson.

Set 2. Dawson's Golden Chaff, Imperial Amber, and Golden Drop.

Set 3. Dawson's Golden Chaff, Bearded Winter Fife, and Stewart's Champion.

Any person wishing to conduct a careful experiment with one of these sets should apply to the Experimentalist, Agricultural College, Guelph, for the desired set, and one-half pound of each variety together with instructions for testing and the blank form on which to report will be furnished free of cost to his address. The supply of some of the varieties is limited, but we will be enabled to furnish a large number with this seed before the supply is exhausted.

A bulletin giving the results of ninety-two varieties of winter wheat grown in the Experimental Department of the Ontario Agricultural College is now in the printer's hands and will be mailed from the Department of Agriculture, Toronto, as soon as printed.

C. A. ZAVITZ,
Experimentalist.

Agricultural College, Guelph, Aug. 20th, 1898.

PROFITABLE FARMING.

A Reply to Mr. Hobson's letter in our issue of August 16th.

To the Editor of FARMING:

In your issue of August 16th last there appears a letter from my esteemed friend, Mr. Jno. I. Hobson, Guelph, Ont., in which he somewhat criticizes, and also asks several questions relative to, a previous letter of mine, which appeared in your paper. I take much pleasure in replying to the same at some length, inasmuch as all my previous observations (and I hope the future as well) were specially written and designed to bring out criticism and enquiries. The *Business Science of Farming* being newly discovered and very imperfectly understood in all the phases of professional and practical departments, not only by the teacher and the scholar, but by the practical overseer and worker, hence the discoveries which are needful for its development can only be understood and acquired by experiment, enquiry and criticism.

Profitable farming can fairly be divided into two leading distinct divisions which are *Cash* profit and *Capital* profit. Cash profit is the net money received each year as a dividend for the use of the capital or money invested. Capital profit is the net amount of added value to the capital each year. These are illustrated by the financial conditions which appear before us continually in reference to bank and railway stocks. All investors and monied men know quite well how varied are the cash dividends from these investments as well as the great change and sometimes daily fluctuations of capital values.

Farming being a vocation requiring capital and labor to carry it on is, therefore, a business that calls for financial results. Then it must be quite evident that if the different financial departments of business, whether it be railroading, banking, manufacturing, etc., etc., need a special branch of business science for each, particularly designed for one or the other, then it must also be quite evident that there is a branch of business science which is specially applicable to the different pursuits of agriculture.

In such a position I stand as an advocate and an explorer, and am quite willing to give to enquirers advice as far as lies in my power (which I regret is so very feeble), and at the same time give the results of my explorations, investigations and experiments, which I regret also are so limited and confined. In the experience of working a whole farm of one hundred or more acres it is not usual or even possible to devote every part to one crop. Therefore, a farm is usually divided up into fields for the division of crops; and, therefore, as there are different crops, there must be different "cash" and "capital" profits derived from each. Hence, to obtain the maximum profit in cash and capital knowledge and selection must be practised in the established rotation which in the aggregate each year will give the greatest profits (cash and capital) *per acre per farm*. Therefore it must be laid down as a principle to act on in the de-

termining of a rotation practised on a farm to obtain the greatest profits that among those crops which go to make up a rotation, the one which produces the greatest cash profit and added capital value should receive the greatest advantage and maximum area, while those crops which are necessary in the rotation, but give the least "profit" per acre, should, on the contrary, receive the minimum area of land. The result of practising this principle is to give the maximum average profit per acre of the whole farm, and therefore the financial aim is attained.

To practise this principle to the fullest degree on a farm requires a knowledge of the highest attainments in agricultural science, and in business science, and in practice of the highest effective art. Therefore, there are three main accomplishments to be acquired for effective, profitable and progressive farming—which are *science, business and practice*—and these must be combined to promote the best results. The weakest attainment of any of these three determines the strength and success of the whole; the weakness of any one determines the strength of the other two, or the two combined determines the one. It is then quite evident that a successful farmer, striving to attain the maximum profits from his capital and labor, must be proficient in the knowledge of all facts and scientific laws relating to his profession. He must be a business man in the highest sense of the term, drilled in all the multiplicity of departments coming under his supervision, effective calculation, precise and systematic planning and perfect co-operation. He must also be an artist in all the accomplishments of practical work. No oversight, flaw or imperfection must be permitted to mar or retard the effective results of the plan of work laid down. A successful farmer to-day must know the science of agriculture as well as the best "professor." He must have a knowledge of business principles equal to the manager of the best-managed departmental store of the present day—and he must be as practical as the highest prize-winners at our industrial exhibitions.

This "ideal" of a farmer may be high, but I strongly believe it is true and correct. Some farmers believe that professional science in agriculture has done nothing and will do nothing for the average farmer. This is virtually true if we do not associate business science along with science proper. Hence, my contention is, and always has been, that that branch of science in agriculture which I call business has been neglected and overlooked, and, before the Canadian farmer or any other man can expect much better results as relates to progressive profits in a general way, the "business science" of farming must be studied, understood, taught, and practised.

Mr. Hobson asks: "Is it proper to credit the land in a speculative business of that sort with more than the largest possible production of grass?" My answer is, yes. Why not credit the land with its productive power? By all means it should, whether it is a single or double crop, or a single or double crop in combination. My theory and practice in farming is to determine the net results of a crop in *cash* and *capital* profit, not product per acre. My aim is to obtain maximum results at minimum cost, giving *maximum profit* (cash and capital) *per acre*. Mr. Hobson measures the results of an acre by the hay it will produce, or I suppose he means any other crop that might be mentioned. This is the old idea of farming—big crops, irrespective of cost or profit. It seems strange that farmers will persist in overlooking the true aim and purpose of a crop—whether it be large or small.

Mr. Hobson estimates that the highest capacity of land in pasture is the productive power of four tons of hay per acre, and also estimates the results of such an acre the same in pasture as in hay. No greater mistake was ever made or could be made, although I must say it is the usual belief and practice—a farmer owning and using an acre of grass has the means of converting the product of that acre into a great many channels. For example, he can convert it into power through the horse as pasture; into wool through the sheep; into beef through the steer; into milk through the cow; into money through hay; into pork through the pig, and so on; or into hay to feed any or all of these above mentioned animals, a portion of their daily rations during the winter. If it were a fact that a steer could be fattened, a large flow of milk obtained from a cow, or the greatest amount of work secured from a horse by feeding hay alone in the winter then there might be something in Mr. Hobson's contention, but if he admits that the cow and steer must

have provender, the horse oats along with the hay to make the hay profitable then he admits that a combination of conditions must be effected to make the hay (*the product of the soil*) an effective agent to obtain a valuable cash product, whether it is the liveryman with his horse, the farmer with his cow, steer or sheep—then he must also admit that it is not improper to add such necessary conditions and requirements to the grass while growing which will obtain the same or more profitable results.

Let me give a demonstrated practical example. Take two acres of clover grass land which will produce, say, four tons of hay, equally the same. One acre is allowed to mature and make four tons of hay, the other acre is pastured and converted into pork. The hay is fed the winter to two beef cattle to fatten, sold in the open market. If sold it may be worth, say, the four tons, \$32. The cost of this is as follows: Labor, \$6; seed and preparation, \$5; marketing, \$3; marketing, \$2; total, \$16. Cash left, \$16. Lost fertility to the acre by sale of four tons, \$16; use of land, *nothing*. If fed to two steers, for six months, we have a gross cash gain of, say, \$40. Cost as above, \$11; putting hay into barn, extra feed (meal, etc., etc.), \$25; labor, \$4; total cost, \$40; net cash gain, nothing. Fertilizer gain left in manure from purchased meal, etc., \$20, which is a source of capital gain. Take, on the other hand, the other acre, and convert it directly into pork, and we have the following result, which is based upon three years' experiment under my own personal direction: One acre of such clover production will accommodate 50 spring pigs, starting at a weight each of 40 pounds, and cause them to weigh in five months 220 pounds, giving an increase of 180 pounds each, or on the whole 50 pigs of 9,000 pounds' live weight. These pigs are supposed to be of the choice bacon type, and therefore are worth at present time 10 cents live weight; but we will take five cents per pound as a fair average value. This makes the one acre produce, gross, \$450 at the following cost: Purchased feed, \$200; labor attending hogs, \$25; labor preparing soil, seed, etc., \$5; cost of sleeping-berth, troughs, etc., \$20; total, \$250. This leaves a net cash profit of \$200, and a fertility profit arising from the feeding of the purchased feed of over \$100 of the finest and best fertilizer possible, for all the liquid and solids are distributed over the acre.

I have given the above example based on the highest maximum product under the most favorable conditions, and I am prepared to show such results actually in progress—on my farm at the present time—and am prepared also to demonstrate and prove that the above figures can be attained—in the hands of any ordinary farmer—with proper directions, start and finish. To say that pork production on the most improved methods is a speculative business, as Mr. Hobson claims, is rather a surprise to me, and the only answer I can give is that I cannot agree in the least that it is, but, on the contrary, claim that bacon pork production is the most reliable and unspeculative branch of Canadian farm production.

Mr. Hobson observes that there is a limit to adding fertility profitably. My reply is, that I believe there is not in practice, particularly in summer pasture and fodder corn. I here state that I have in no way got to the limit of increased fertility on my farm, and must beg my friend, Mr. Hobson's, pardon in making this contradiction to his statement. I wish my land were double as fertile as it is at the present time, and I hope, in a few years more, to make the soil of my farm more than double its present fertility.

I desire to apologize for the length of this letter, but hope some few items of information may be gleaned from its perusal.

D. M. MACPHERSON.

Lancaster, Aug. 17th, 1898.

LIST OF PRINCIPAL CANADIAN FAIRS FOR 1898

Industrial Fair, Toronto	August 29th to Sept. 10th
Stanstead Live Stock Assn, Stanstead, P.Q.	Aug. 24th and 25th
Eastern Exhibition, Sherbrooke, P.Q.	Sept. 5th to 10th
Western Fair, London, Ont.	Sept. 8th to 17th
Quebec Exposition Co., Quebec, P.Q.	Sept. 12th to 21st
New Brunswick Exhibition Co., St. John, N.B.	Sept. 13th to 23rd
Bay of Quinte District Fair, Belleville, Ont.	Sept. 14th and 15th
Central Canada Fair, Ottawa	Sept. 16th to 21st
Southern Fair, Brantford	Sept. 17th to 22nd
Provincial Exhibition, Halifax, N.S.	Sept. 22nd to 29th
Markham Fair	October 5th to 7th
Thorah Township Fair, Beaverton	Sept. 27th and 28th