

OREGON
Agricultural Experiment
STATION.

BULLETIN NO. 8.

DEPARTMENT OF AGRICULTURE:

Notes on Varieties of Wheat and Flax.

FOR JANUARY, 1891.

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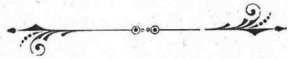
PORTLAND, OREGON:
SCHWAB BROS. PRINTING AND LITHO. CO.

1891

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NOTES ON WHEAT EXPERIMENTS.

H. T. FRENCH.

The detail work of sowing and caring for the varieties of wheat recorded in this Bulletin, were largely under my supervision ; but the work was begun by Prof. E. Grimm, who preceded me as Agriculturist, and who published the results of similar work last season in Bulletin No. 4.

OBJECT OF THE WORK.

The object in growing a large number of varieties of wheat, was first, to discover if possible some variety that would be more profitable than the varieties already grown on the farms in this State. Second, to determine the effect of a change of soil and climate upon the character of the product, as shown by a chemical analysis and manner of growth.

In reaching the first object we have some indications which point toward very satisfactory results indeed. Definite conclusions, however, cannot be drawn until the varieties have been grown for several years under like conditions. Many of the varieties tested promise to excel any of the varieties grown in this vicinity. At first, change of soil and climate acts very often as a stimulent, which soon loses its beneficial effects. For this reason we forbear to draw any definite conclusions until further work has been done. We will mention some of the indications which further investigations will either establish or prove to be false.

As regards the improvement of the product the results are very satisfactory so far as the eye can detect. Chemical analysis has not been made as yet to determine the changes which have taken place in the composition of the product. The work of a single season, and in a few cases that of two seasons, has produced very marked changes in the external character of the product. In no case has the product

deteriorated, and in many cases there has been a marked improvement. In case of an imported French wheat, the product, after two years trial, could hardly be classed with the original. The changes are very marked. The grain is much larger and has changed from a dark amber to a light amber. This change is noticeable in several instances. Several very dark colored wheats brought from the Eastern States, have become very much lighter in color. This feature is a very interesting one and leads us to the conclusion which has been very well established before, that wheat finds in Oregon most congenial soil and climate.

The yield was not large, as will be seen by referring to the table. Many of the varieties were grown only in small plats, for we were unable to procure the seed in larger quantities. In some instances only twenty-five kernels were planted. While the yield in no case was large, yet it was very good under the conditions which prevailed.

The ground on which the wheats were grown bore a small crop of fodder corn the season before. This crop was removed, and cut for silage, and the ground plowed for the wheats.

The grain was sown too late for last season. The extreme wet and cold weather came on, freezing and thawing the ground over several of the varieties before they came up. The rains beat the ground very smooth, and when the dry weather came it baked the ground as hard as a pavement, thus producing very poor conditions for the growth of the wheat plant.

From the results, and from observations, both in the field and in the plats, we are of the opinion that a too thorough pulverizing of the ground in the fall is a detriment, rather than an advantage, unless the tendency to puddle can be overcome by applying coarse manure or straw. This season we have harrowed into the soil a quantity of coarse manure, and shall watch the results with much interest. No fertilizers were used on the plats.

Some of the varieties have been grown in other States as spring wheats, but here they were all, with few exceptions, sown in the fall.

Notes on varieties are, for the most part, given opposite their names, hence we will only mention a few of the most striking points in this place.

The Martin's Amber is one of the varieties which indicates good results in this climate and soil. This variety has been one of the best grown in several of the Eastern States, having yielded for several years very satisfactory results; and although called an amber, it is as white as many of the white wheats. It is a flinty white, however.

The Beryl is one of the most promising varieties grown in small plats. This represents a type of white wheat which gives good results, both as to yield and quality. The head is large and compact, and the berry is medium in size and plump. The grain does not easily shatter.

There are several amber colored varieties that are good yielders and produce very desirable results; but these are classed in the markets of this State as inferior to the white, and rate two to three cents less per bushel. There is a close resemblance in many of the so called varieties, which in several instances is mentioned in the notes. This feature will be made a special study during our future work in this line. No doubt many of the varieties can be classified under one name, and if not under one name under one type at least.

The history of the varieties under the numbers of 2, 3, 50, 51, 53, 55, will be of much interest. It will be found in connection with the notes on varieties. These varieties appear to be very hardy and vigorous, and indicate good yields. The two originating from hybridizing wheat and rye, are especially hardy; but the amber color is an objection to some extent. If, however, this loss can be made up by additional yield and vigor of growth, then the objections are largely over balanced. We only had twenty-five kernels of each of these varieties for seed last season. Enough seed was obtained to make a test of the yield this season.

While it will be necessary to test those varieties which indicate good results further and on a larger scale, yet we feel assured that there are several sorts which will give very satisfactory results indeed.

It is our intention at the end of the coming season, to distribute some of the best varieties throughout the State, that they may meet a more extended trial under varied conditions.

NOTES ON VARIETIES OF WHEAT.

Reliable. Chaff white, bearded, heads good length, well filled and compact. Straw white, fine, and stands up very well, 34 inches high. Grain amber color; short plump berry.

Raub's Black Prolific. This resembles the Red Fultz, except it is a bearded variety. Heads short, compact, chaff red, bears short awns, stem blue, straw short, medium coarse, 36 inches high, straw stands erect; a promising variety. Grain dark amber color.

Red Fultz. Heads above medium in length, but rather loose, chaff red, bald, stem blue, straw fine, stands erect with heads drooping a little, 38 inches high. Grain dark amber color; small kernel.

Tuscan Island. Heads short, chaff red, bearded, heads droop, stem blue, straw slim and weak, 34 inches high, straw breaks very easily, making the variety objectionable where binding by hand is practiced. Not a promising variety. Grain large, amber color, long berry.

Hedges Prolific. Heads medium in length, loose, chaff white, bald, stem blue, straw fine, stands erect, 36 inches high. Resembles common Fultz. Short plump berry, amber color.

Hindustan. Heads stand erect, good length; chaff red, bearded; grain loose in head, stem blue, straw medium in strength and size; 36 inches high, long plump grain, amber color.

Mealy. Heads medium length, very compact, chaff white, bald, straw white and soft; resembles Velvet Chaff in this particular. heads and straw stand erect, 34 inches high. Short, plump grain, amber color.

Velvet Chaff. Heads good length, compact, chaff red, bearded, heads droop, stem blue, straw stands erect, 40 inches high. Large, plump grain, flinty, amber color.

German Emperor. Heads long, compact, droop a little and are uneven, chaff red, bald, stem blue, straw fine, 42 inches high, stands up very well; a promising variety. Grain large, shrunken a little, dark amber color.

Golden Cross. Heads average length, very plump; chaff red, bearded, but beards are short; stem blue, straw coarse, stands erect, 40 inches high; a promising variety; large plump grain, uniform in size and dark amber color.

Poole. Grain uneven in size, some of it badly shrunken; light amber color.

Nameless Variety. Heads good length, compact; chaff red, bald, straw white, coarse and stands erect, 38 inches high, shatters badly, aside from which it is a promising variety. Grain rusty amber color, uneven in size.

New Monarch. Heads long and drooping, quite compact; chaff light amber, bald; straw white, fine and does not stand erect; 42 inches high. Grain dark amber color and shrunken.

Leigh No. 6. Heads drooping, medium length, very slim and loose; chaff red, bearded, stem blue, straw medium size, 36 inches high, not a promising variety. Grain rusty amber, berry long, shrunken a little.

Deitz Long Berry. Heads medium length, compact, chaff white, bearded, stem blue, straw medium coarse, 40 inches high. A promising variety. Grain dark amber color, short plump berry.

Fulcaster. Heads short, uneven length and loose; chaff white, bearded, stem blue, straw medium strength, 36 inches high. Not a very promising variety. Grain dark amber color.

Tasmanian Red. Heads compact and good length, chaff red, bearded, stem blue, straw falls badly, 36 inches in length, grain shatters considerably. Grain amber color, berry long, uneven in size.

Ontario Wonder. Heads good length, compact, droop a little; chaff amber, bald, straw white, medium coarse, stands erect, 36 inches high. A promising variety. Grain light amber color, berry short, plump.

Nigger Wheat. Heads good length, compact, uniform in size ; chaff white, bearded ; stem blue, straw stiff, coarse, 40 inches high. A promising variety, excepting its tendency to shatter. This could be largely obviated by cutting early. Grain is exposed in head while standing. Grain dark rusty amber, berry long, plump.

High Grade. Heads short, compact, even length ; chaff white, bald, stem blue, straw medium coarse, stands erect, 40 in. high, quite a promising variety. Grain light amber, very plump.

Saskatchewan. Heads medium long, compact, even growth ; chaff light amber, bald, straw white, crinkles a little, medium coarse, 40 in. high ; one of the most promising varieties. Grain light amber color, very plump.

Assimboia Fife. Resembles the Saskatchewan only the heads are a little slimmer, otherwise the notes correspond. Grain same as in Saskatchewan.

French Imperial. Heads long, rather loose ; chaff light amber, bearded, straw white, crinkled, 42 in. high. Grain is not completely covered by chaff in the head ; one of the most promising varieties. Grain light amber, very plump and large berry.

White Russian. Heads long, compact ; chaff white, bald, straw coarse but not strong, falls a little, 40 in. high ; a promising variety. Grain dark amber, short, plump berry.

Missoyen. Heads short and compact ; chaff amber, bearded, straw medium coarse, stands erect, with heads drooping a little ; straw is solid nearly to the bottom. Grain white, very large and flinty.

Russian. Heads medium long and quite loose ; chaff white, bald, straw medium coarse, strong, 37 in. high. Grain light amber, short, plump berry.

Atlanti. Heads medium long, compact ; chaff amber, bearded, straw white and coarse, 39 in. high ; this wheat is not so easily shattered as most of the red chaff wheats. Grain white, long flinty berry, very large.

Porcelain. Heads long and loose ; chaff light amber, straw white, medium coarse, falls a little, 37 in. high ; quite a promising variety. Grain light amber, short, plump berry.

Northcotis White. Heads medium length, rather compact ; chaff amber, bald, straw white and fine, stands erect, 38 in. high. Grain white and very large, uniform berry, one of the best.

Sapphire. Heads long and loose ; chaff amber, bald, blue stem, straw white and weak, fallen considerably, straw 36 in. long. Grain white, short, plump berry.

Granite. Heads short, compact ; chaff white, bald, straw white, rather weak, letting heads bend considerably, 40 in. high. Grain light amber and white mixed.

Ruby. Heads medium length, loose ; chaff white, bald, straw white, fine and rather weak ; a promising variety. Grain amber, short, very plump berry.

Andriala. Heads medium long, loose ; chaff amber, bearded, straw does not stand well, 36 in. high. Grain amber small, plump berry.

Jasper. Heads medium length, very loose and drooping ; chaff amber, bearded and open, causing the grain to shatter, straw medium coarse, but rather weak, 38 in. high. Grain light amber, large plump berry.

Fultz. Heads medium long and rather loose ; chaff white, bearded, straw, fine, white, stands erect, 36 in high. Grain dark amber, small, plump berry.

No. 10. Heads medium length, compact, club shape ; chaff is white and bald, excepting a few glumes in each head, straw fine, erect 34 in. high ; one of the most promising varieties. Grain white, large, plump berry, one of the best.

Northcotis Amber. Heads long, rather loose ; chaff white, bald, straw white and medium coarse, stands erect, 34 in. high. Grain rusty amber, large berry and a little shrunken.

Meekins. Heads long, loose and drooping ; chaff amber and bearded, straw white, medium coarse and stands erect, 36 in. high. Grain dark amber, very plump.

Platinum. Heads medium long and loose ; chaff white and bald, straw medium coarse, stands erect, 36 in high. Grain mixed, white and amber.

Amethyst. Heads medium long, loose ; chaff white and bald, straw white and fine, 36 in high ; resembles the preceding variety in manner of growth. Grain white, small, very uneven, mixed.

Flourspar. Heads medium length ; chaff white, bald, straw white, medium coarse, stands erect, 35 in. high ; resembles the two preceding varieties. Grain white and amber mixed.

Sardins. Heads short and compact ; chaff white, bald, straw fine but strong, pearly white, stands erect, 40 in. high ; grain does not easily shatter. Grain dark, rusty, amber, large plump berry.

Sardonyx. Heads medium long, loose and drooping ; chaff white, bald, straw medium coarse, height 40 in. Grain light amber, short plump berry.

Basalt. Heads medium long and loose, stand erect ; chaff amber, straw white, medium coarse, 40 in. high. Grain dark amber, small uneven berry.

Centennial. Heads long, compact, drooping ; chaff white and more bearded in some heads than others ; beards very long and stiff, straw coarse, 42 in. high. Grain white, very large berry resembles the Trap.

Beryl. Heads medium long, compact, stand erect, chaff white, bald, stem yellow, straw medium coarse, 36 in high. Grain white, short plump berry.

Crysolite. Heads medium long, compact, stand erect ; chaff white, bald, straw white, medium coarse, 37 in. high. Grain white, large plump berry.

Dallis. Resembles Sardins except the head is longer. Grain mixed, amber and white.

Chili. Heads medium long, compact ; chaff amber, bald, straw fine but tough, 40 in. high, straw fallen a little. Grain white, large plump berry, resembles Crysolite.

Silica. Grain mixed, white and amber, both types are large and plump.

Dominion. Heads medium length, compact ; chaff amber, bald, stem brittle, straw weak and fallen, 40 in. high, grain easily shattered. Grain dark amber, small berry.

Gneiss. Heads medium long, drooping; chaff white, bald, straw fine and fallen quite badly, 38 in. high. Grain white, large plump berry.

Gypsum. Heads medium long, compact, erect; chaff white, bald, straw medium coarse, badly fallen. Grain white, short plump berry.

Emerald. Heads long and loose, poorly filled; chaff amber, bald, straw strong, 38 in. high. Grain light amber, long uneven berry.

Lost Nation. Grain dark amber color, berry large and plump.

Hornblend. Grain white, flinty small berry.

Chalcedony. Heads short, loose; chaff white, straw weak, 36 in. high. Grain white, large plump berry.

Club. Head short, very compact; chaff white, bald, straw white and strong, 36 in. high. Grain white, short plump berry.

Red Chaff. Another variety of Club wheat which is a little larger in growth and a trifle larger berry than the common Club. Grain white, short plump berry. Grain resembles the Club.

Blue Stem. Heads are very uneven in length; chaff white, bald, straw stands erect, 38 in. high. Grain white, large plump berry.

Foisy. Heads medium length, compact; chaff amber, bald, straw medium coarse, 30 in. high, a spring wheat. Grain white, medium large plump berry.

Defiance. Spring wheat. Heads long, loose, chaff light amber, bald, straw medium coarse, stands up well, 30 in. high. Grain white, flinty, small plump berry.

New York Spring. Similar to the Defiance except the color of grain, which is amber. Grain light amber color, short plump berry.

The spring wheats were injured very badly by the extreme dry weather. Some of them were only partially headed out.

No. 2. (Willits). Hybrid between rye and wheat. Heads resemble wheat in every particular, medium in length, compact; an

early variety. Chaff white and beardless, straw medium coarse, stands erect, 36 in. high. Grain light amber color and very plump. A very promising variety.

No. 3, (Roberts). Hybrid between wheat and rye. Heads medium length and compact; chaff, dark amber, bearded, grain dark rusty amber color, straw stands erect and medium coarse. There were three types of this variety, coming from the same seed apparently. Two of them differed from the third, in not being so heavily bearded. One of the types was nearly free from beards; the shape of the heads varied a little. These types have been sown separately this season and the results will be carefully watched.

No. 50, (Bailey.) Pure wheat cross. Heads long, very compact and club-shaped; chaff white, beardless, straw medium coarse, 36 in. high. Grain very light amber, would pass for a white wheat no doubt. One of the most promising varieties.

No. 51, (Stewart.) Pure wheat cross. Heads long, rather loose; chaff dark amber, bearded, straw coarse, stands erect, 40 in. high. Grain amber color, one of the latest to mature.

No. 53, (Beal.) Pure wheat cross. Heads medium length, compact; chaff white, beards long, straw strong, stands erect, 40 in. high. Grain light amber, very plump, some kernels much darker than others.

No. 55, (Johnson.) Pure wheat cross. Heads good length, uniform, compact; chaff white, bearded, straw medium coarse, stands erect, 38 in. high. Grain light amber and some of the grains are nearly white, very plump.

As a matter of interest, in connection with the history of these wheats, the following extract from a circular sent out by J. M. Thorburn, who first introduced these wheats, is herewith presented:

“Mr. E. S. Carman, the editor of *The Rural New Yorker*, began his work of improving wheats some fourteen years ago. The first step taken was to secure the leading varieties of this, and other countries, and test them side by side in small pots. After testing in this way some 200 so-called varieties, that known as Armstrong, a beardless, white chaff variety, with amber grains, was selected for the mother

plant in the proposed crossings then begun and since continued. They were effected in a thoroughly scientific painstaking way, that has left no room for doubt as to the character of the results. Hundreds upon hundreds of crosses have been made during the past ten years. Most of them have, from time to time, been rejected as of no greater value than the well-known kinds already in cultivation; the others have been retained, with the intention of introducing them to the public as fast as they should become fixed in character and give promise of excellence.

Nos. 2 and 3 are Hybrids between Rye and Wheat, though the rye blood does not manifest itself in any way. They are in *appearance* pure wheats. The others are pure wheat crosses.

Mr. Carman's collection of crosses and hybrids, as estimated by those who have seen them, is not approached by any similar collection in the world. In fact, there is no record of any other crosses between rye and wheat having been effected.

The crop of these crosses and hybrids was last year so limited that they were offered (under numbers) in very small quantities, and at an almost prohibitive price, viz., 25 cents for 25 seeds. Permanent names have now been given and the price so reduced that all farmers may give them a trial at small cost."

Mayflower. A spring wheat of very promising qualities. Heads medium long; chaff white, bald, straw good strength and medium coarse, 30 in. high. Grain white, large plump berry.

Trap. A variety that resembles the Centennial very much, both in manner of growth and character of grain. Heads long, compact, chaff white, very heavily bearded, straw coarse and strong, 40 in. high. Grain white, large plump berry.

Martin's Amber. Heads long and slim, quite compact, chaff white, bald, straw white, fine and strong, 40 in. high. Grain white, long plump berry. One of the best varieties.

WHEATS GROWN ON STATION FARM.

Name of Variety.	No. of Plat.	Date of Sowing.	Date of Harvesting.	Yield per Acre.	Where Obtained.
				Bus'l	
Reliable	1	Nov. 6	July 12	23 $\frac{1}{3}$	Experiment Station, Indiana.
Raub's Black Prolific	2	" 5	" 12	21 2-5	" " "
Red Fultz	3	" 5	" 12	24	" " "
Tuscan Island	4	" 4	" 12	17 4-5	" " "
Hedge's Prolific	5	" 4	" 12	17 4-5	" " "
Hindostan	6	" 4	" 12	18	" " "
Mealey	7	" 4	" 12	24 3-5	" " "
Velvet Chaff	8	Oct. 25	" 12	19 3-10	" " "
German Emperor	9	" 25	" 12	19	" " "
Golden Cross	10	" 25	" 12	18 $\frac{1}{2}$	J. A. Everett & Co., Indianapolis, Ind
Poole	11	" 25	" 12	18 $\frac{1}{3}$	" " " "
Nameless Variety	12	" 25	" 12	16 2-5	" " " "
New Monarch	13	" 21	" 12	18	" " " "
Leigh No. 6	14	Nov. 6	" 14	14 3-5	Experiment Station, Indiana.
Deitz Long Berry	15	" 6	" 14	17 $\frac{1}{3}$	J. C. Suffern, Voorhies, Illinois.
Fulcaster	16	" 6	" 14	16 3-5	" " "
Tasmanian Red	17	" 6	" 14	18 4-5	" " "
Ontario Wonder	18	" 6	" 14	18 4-5	" " "
Nigger Wheat	19	" 6	" 14	21	" " "
High Grade	20	" 6	" 14	17 4-5	" " "
Saskatchewan	21	" 6	" 14	17	College Farm.
Assimboia Fife	22	" 6	" 14	16 1-5	"
French Imperial	23	" 6	" 14	22 7-5	"
White Russian	24	" 6	" 14	17 $\frac{1}{2}$	"

WHEAT GROWN ON STATION FARM. (*Continued.*)

Name of Variety.	No. of Plat.	Date of Sowing.	Date of Har-vesting.	Yield per Acre.	Where Obtained.
Missoyen	25	Nov 16	July 21	-----	Experiment Station, Colorado. Grown in small plats.
Russian	26	" 16	" 21	-----	" "
Atlanti	27	" 16	" 21	-----	" "
Porcelain	28	" 16	" 21	-----	" "
Northcotis, White	29	" 16	" 18	-----	" "
Sapphire	30	" 16	" 18	-----	" "
Granite	31	" 16	" 18	-----	" "
Ruby	32	" 16	" 18	-----	" "
Audriala	33	" 16	" 18	-----	" "
Jasper	34	" 16	" 18	-----	" "
Fultz	35	" 16	" 18	-----	" "
No. 10	36	" 16	" 18	-----	" "
Northcotis Amber	37	" 16	" 21	-----	" "
Meekins	38	" 16	" 21	-----	" "
Platinum	39	" 16	" 21	-----	" "
Amethyst	40	" 16	" 21	-----	" "
Flourspar	41	" 16	" 21	-----	" "
Sardins	42	" 16	" 18	-----	" "
Sardonyx	43	" 16	" 21	-----	" "
Basalt	44	" 16	" 21	-----	" "
Centennial	45	" 16	" 21	-----	" "
Beryl	46	" 16	" 21	-----	" "
Crysolite	47	" 16	" 21	-----	" "
Dallas	48	" 16	" 21	-----	" "

WHEAT GROWN ON STATION FARM. (Continued.)

Name of Variety.	No. of Plat.	Date of Sowing.	Date of Harvesting.	Yield per Acre.	Where Obtained.
Silica	49	Nov 16	July 21	-----	Experiment Station Colorado. Grown in small plats.
Dominion	50	" 16	" 18	-----	" "
Gn iss	51	" 16	" 21	-----	" "
Gypsum	52	" 16	" 21	-----	" "
Emerald	53	" 16	" 18	-----	" "
Lost Nation	54	" 16	" 21	-----	" "
Hornblend	55	" 16	" 21	-----	" "
Chalcedony	56	" 16	" 21	-----	" "
Club	57	" 16	" 21	-----	Milton, Oregon.
Red Chaff Club	58	" 16	" 21	-----	" "
Blue Stem	59	" 16	" 18	-----	" "
Foisy	60	Apr. 4	" 26	-----	College Farm, Spring Wheat.
Defiance	61	"	"	-----	" " " "
New York Spring	62	"	"	-----	" " " "
No. 2 (Willits)	63	Nov. 6	" 21	-----	Jas. M. Thorburn, N. Y.
" 3 (Roberts)	64	" 6	" 21	-----	" " " "
" 50 (Bailey)	65	" 6	" 21	-----	" " " "
" 51 (Stewart)	66	" 6	" 21	-----	" " " "
" 53 (Beal)	67	" 6	" 21	-----	" " " "
" 55 (Johnson)	68	" 6	" 21	-----	" " " "
Mayflower	69	Apr. 4	" 26	-----	College Farm, Spring Wheat.
Trap	70	Nov 16	" 21	-----	Experiment Station Colorado.
Martin's Amber	71	" 16	" 21	23 Bu.	J. A. Everett & Co., Ind.

FLAX.

The Portland Linseed Oil Works sent a sample of flax seed to the Experiment Station, for the purpose of testing its growth in the production of seed.

The seed was sown May 25th, but owing to the extreme dry weather a large portion of it failed to germinate.

The soil was the black upland of the valley, such as would be considered very good for the production of wheat or other grain. No fertilizer was used.

The young plants made a good growth, reaching two feet in height when harvested.

A portion of the plat was carefully measured off, and the plants pulled and placed in small piles to dry. After thoroughly drying, the seed was threshed out, giving a yield of nine and one-half bushels per acre. The stand was not as good as it ought to have been, and would have been, had not the dry weather prevented the germination of the seed.

At one time this crop was an important factor in the agricultural products of portions of the valley. May it not again be successful? We shall test the growth of this plant further during the coming season.