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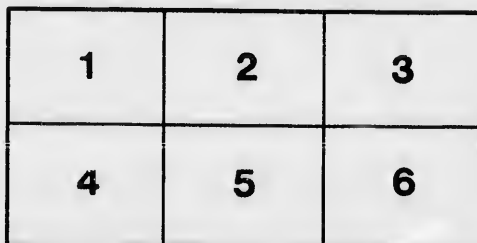
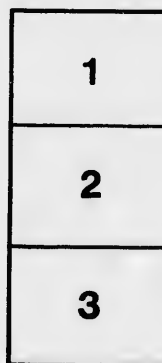
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A M E T H O D

OF

PRESERVING

Grain

FROM SMUT.

1789





FROM THE QUEBEC GAZETTE.

Mr. NEILSON,

AS it is said, that the Grain this year has in many parts of the Province suffered by the Smut, the Directors of the Agriculture Society request of you to insert in your next Paper the annexed Letter addressed to the President, with the Treatise therein mentioned, which points out the cause of the Smut, and the means to be used to prevent it.

HUGH FINLAY, Secy.

S I R.

1489



have followed with great care and attention the directions given in the collection of Letters and Papers lately published by the Directors of the Agriculture Society, relative to the preparation of seed grain, with intention to prevent the smut; and it is with much satisfaction I now inform you, that I have experienced the efficacy of the Receipts communicated to the Public, for that purpose. Until last Fall I thought that the quality of my land was such, as would not produce grain fit for seed, for whether I sowed wheat, barley, or oats, it brought nothing but smutty grain; However I perceive at present, that the Evil was in the seed, for by washing, scumming steeping it in a Pickle and sprinkling with lime after the manner described N^o 2 and 5th page of your Pamphlet, I have had a very plentiful crop of fair, full, and very sound grain, whilst that of my Neighbours was either more or less affected with the Smut.

Having some days ago met with a Treatise wrote by Mr. Gouffreville of Andeley in France, that fully shews the cause of the smut in grain, and points out a remedy to prevent it, I took the liberty to send you, as president of the Agriculture Society, a copy of it; referring to your better Judgment, whether the discovery made by this gentleman through his Experiments, could not, by inserting them in your next publication be (with the assistance of the Curés) diffused throughout the Province—for without their Aid, Sir, the laudable Efforts of the Society for the progress and improvement of agriculture would but little avail in this Province where the major part of those who are Farmers (and but a very few excepted) cannot read.

The Province would derive great advantages from the general adoption of the very simple method recommended for the preparation of seed, as it would give a reputation to, and increase the value of our Grain in foreign markets, to the great benefit of the Canadian Farmer. But as this, very much depends upon the Curés of the Country Parishes in this Province, it is to be wished that the directors of the agriculture Society would do their endeavours to prevail on those Gentlemen (as well for their own interest, as for that of their poor Parishioners, and the general prosperity of the Province) to communicate all the experiments and observations relating to Agriculture, by reading

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reading repeatedly after divine service to their Parishioners, the publications of the directors, which according to the original design, were to be transmitted to the Curés for the instruction of the Inhabitants;

In short, whatever relates to the great objet, *The advancement of Agriculture*, is of the utmost importance; and it will be left to the Clergy, till the Children of the country people have been taught to read—Wishing every possible success to the commendable Labours of the Gentlemen the directors of whom you are President.

I AM, SIR,

Your most obedient Servant.

A FARMER, *on the banks of the River Chamby and a Member of the Agriculture Society.*

* J. Carter

AN ACCOUNT

Of Experiments made in the Parish of Surcey, Jurisdiction of Andely (in France) to discover the true Cause of the Smut in Grain, and of the way to prevent it.



BEFORE Mr. Tillet, (a member of the academy of Sciences) nobody had discovered with certainty, the cause of the Smut in Grain; some attributed it to the point from whence the wind blew, or to the phases of the moon at the time of sowing; others to the dung of Pigeons scattered over the ground, or to that of sheep which had been folded on the piece intended to be sown.

The reiterated Experiments made by Mr. Tillet have shewn, that the Powder or dust of smutty grain, and which is attached to the seed, is the only cause of the spoiling thereof. This experienced Philosopher did not rest satisfied in discovering the evil, he has also pointed out the remedy, and we must acknowledge that that which he has made public, is infallible; but the preparation of a lixivium and the other operations which he has prescribed, would be with difficulty adopted by most people;—In our assuring him of the acknowledgments of all Farmers, his Patriotic sentiments and his zeal for the public good will therefore assuredly approve of our endeavours to render more simple the remedy he has discovered, and we flatter ourselves he will learn with pleasure that a simple washing, with water and liming produces the same effect as the Lixivium.

The Experiments that I begun at sowing time in the Year 1759, and which I augmented in 1760 demonstrated the evil and the Remedy. Gentlemen in office, and intelligent Farmers who came some little time before Harvest to be witness of my experiments on the spot, were convinced of it. The kindness of Mr. de Brou, Intendant of the district, who honored my first essays, has encouraged me to render an exact detail of my last experiments.

and

and I do it, with so much the more confidence, as it enters into the views of a magistrate and of a Society whose endeavours are directed to the Public good.

This account will be divided into four parts; In the first, I have described the squares in which I made my experiments and of which I have furnished a Plan; In the second, I have extracted from the experiments, the cause of the disease; In the third I have pointed out the Remedy; and in the fourth the manner of applying it, which any Workman may do with ease. I shall add some observations which may be useful.

A DESCRIPTION

Of various Experiments made on twenty two squares or Plots of land.

The first experiments that I made last year were on a small scale, and in an enclosure; this year I have made them on a larger scale, and in the open field, on a piece of Ground 160 feet in length and 50 feet in breadth, which I divided into three parts, and the whole into twenty two squares of twelve rows each.

The six squares which made the first division were sown in september, two days after the full moon, the wind at west; eight squares, which composed the second division, were sown the 7th October, a day or two before the change of the moon the wind being south; and the remaining eight squares, forming the third division, were sown on the 17th October the moon then entering her second quarter, and the wind at North; and in order to determine whether some other received opinions were to be depended upon, I put pigeons dung on some of the squares, and sheeps dung on others. I shall now give a full detail of the Various experiments made on each square, and of the success resulting therefrom.

First square in four Experiments.

Sown the second day after the full moon the wind at west.

Three rows were sown with sound wheat taken from the granary, but previous to sowing it, it was sprinkled with some dust or powder of smutty wheat and then sown without being either washed or limed.

In the three rows above mentioned, two thirds at least, of the ears were found to be smutty grain, and many others to be full of a black dust.

Three other rows were sown with sound grain mixed with some smutty wheat, this was only limed in the usual manner, in those three rows about one tenth of the ears was smutty, and eight other ears were also found to be filled with black dust.

The seed of the next three rows was likewise perfectly sound, it was not mixed with the smutty grain before its sowing, but was washed in common water and afterwards in a lixivium or a lye of ashes as recommended by Mr. Tillet, and before harrowing it in, some powder of smutty wheat was scattered over it.

In those rows, one half of the ears at least was smutty and many were found to be full of a black powder.

The seed of the three last rows was also found, but it was mixed with the dust from smutty wheat, and before the sowing was washed in common water, and then steeped in the lixivium as prepared by Mr. Tillet.

Not one ear in those three rows was found to be entirely smutty, they were all found except four, which were full of black dust,

SECOND SQUARE,—IN FOUR EXPERIMENTS.

Sown the 27th September two days after the full moon, the wind at west.

The seed of the first three rows was perfectly found; no smutty powder was mixed with it, and it was sown without being either washed or limed;

In those rows, only two ears of smutty grain were found, and four ears filled with smutty Powder.

The three following rows were of found grain, taken, as was that of the three preceding ones, from the granary, and before sowing, it was limed in the usual manner.

Not one ear of smutted grain was found in them.
But there were two filled with black powder.

The next three rows were of found seed not sprinkled with powder of smutty grain; before sowing it was limed, but not washed in the lixivium;

In those rows, there was not one ear of smutty grain.
There were four of a black powder.

The last three rows were of the same seed as before mentioned, it was not mixed with the powder of smutty grain, but before sown it was washed in common water, and also steeped in the lixivium as before mentioned;

No smutty grain was found in those Rows.
Yet there were some ears filled with powder.

THIRD SQUARE,—IN FOUR EXPERIMENTS.

Was sown the 27th September two days after the full moon, the wind at west.

The three first rows were sown with found grain not touched with smutty powder, and without being either washed or limed; but before harrowing, some pigeons dung was scattered over all the rows;

Only one ear of smutty Grain was found in those rows.
All the others were perfectly found and good.

The seed of the three next rows was very found, as was also that of the preceding ones; before the sowing it was limed after our usual manner, and before harrowing, pigeons dung was scattered over it.

Not an ear of smutty grain was found in those rows.
There were two of a smutty Powder.

The three following rows were sown with found grain without any mixture of smutty powder, some pigeons dung was scattered over it before harrowing;

There was not in those rows one ear of smutty grain, all were found to be found and good.

The three last rows were sown with the same grain, before sowing it was washed in common water and steeped in a prepared lixivium, pigeons dung was scattered over it, previous to its being harrowed in;

Throughout those last rows, there was not one ear of smutty grain, they were all found to be perfectly found and good.

FOURTH SQUARE,—IN FOUR EXPERIMENTS.

Sown the 27th September the wind at west and the second day after the full moon.

The three first rows were of sound grain, it had not been mixed with smutty wheat, and was sown without being either washed or limed; but some sheeps dung was mixed with it;

In the above mentioned three rows, four ears of smutty grain were found, and five ears of a smutty powder.

The seed of the three following rows, was also good, it was limed after the usual method before it was sown, and before harrowing some sheeps dung was scattered over it as with the first three rows;

In those three rows there was not a single ear of smutty grain, there were some of a smutty powder.

The grain of the three following rows was very sound, it was neither sprinkled before it was sown with the smutty powder, nor was it washed; but it was steeped in the prepared lixivium and some sheeps dung was scattered over it before harrowing;

There was not an ear of smutty grain found in them.
There were three of a smutty powder.

The three last rows of this square were sown with the same seed as the above; before sowing it was washed in common water, and steeped in the prepared lixivium, and before harrowing, some sheeps dung was scattered over it, as over all the foregoing rows;

In those three last rows, there was neither one ear of smutty grain.
Nor of smutty powder.

FIFTH SQUARE,—IN SIX EXPERIMENTS.

Sown the 27th September two days after the full moon, the wind at west.

The grain of the two first rows was sound, but mixed with some dust gathered from the floor of a granary, and was sown without being either washed or limed;

In the abovementioned two rows, there were six ears of smutty grain, and four ears full of a black powder.

The two following rows were sown with sound grain, it was however mixt with some dust from the granary and then limed in the usual manner.

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In those two rows there were four ears of smutty grain and six of smutty powder.
The seed of the following rows was also good, but it was mixed with some dust from the granary, and before sowing was washed in common water, and steeped in the usual manner, in some water wherein some lime had been flaked.

In those two rows there was not any smutty grain;
There were only some ears of a smutty powder.

The two rows which follow were of sound grain, which before sowing was mixed with some dust from a granary of oats, and put into the ground, without being either washed or limed.

There was no smutty grain found in those rows:
But there were four ears of a smutty powder.

The wheat of the two following rows was good, it was mixt with some dust from an oat granary, it was not washed before sowing, but it was limed in the usual manner.

There was no smutty wheat in those two rows:
There were some ears of smutty powder.

The seed of the two last rows was likewise good; but it was mixt with some dust from the oat granary, and before sowing was washed and steeped in the usual manner, in some water wherein lime had been flaked.

In those two last rows, no smutty grain was found, there were three ears of the smutty powder.

SIXTH SQUARE, — IN FOUR EXPERIMENTS.

Sown the 27th September, two days after the full moon the wind at west.
The seed of the three first rows was mixed with the dust of smutty wheat, and was sown, without being either washed or limed.

Two thirds at least were found to be smutty grain, and many full of the black dust.

The three rows following, were also of seed mixed with smutty grain, before sowing it was limed in the usual manner without being previously washed:

There was at least one tenth of these rows smutty grain, and there were many ears filled with smutty powder.

The wheat of the three following rows, was mixed with the dust of smutty grain, but before sown it was limed and washed in common water, without having any thing but some lime flaked in it.

There was not one ear of smutty grain in them.
There were some ears of a smutty powder.

The grain of the three last rows was sound, and was not mixed with smutty powder, before sowing it was washed and steeped in a prepared lixivium, and before harrowing some powder of smutty grain was scattered over it.

One half of the ears was found to be smutty.
There were also many full of a smutty powder.

SEVENTH SQUARE, — IN FOUR EXPERIMENTS.

Sown 7th October two days before the new moon.

The seed, the same as that of the first square.

The grain of the three first rows was found, it was mixed with the smutty dust; and then sown without being either washed or limed.

About two thirds of the ears were found to be smutty many were full of a black dust.

The three next rows were sown with the same seed mixt with smutty powder, and was only limed in the usual manner.

In those three rows near a tenth of the ears were smutty, there were also five full of a smutty powder.

The seed of the following three rows was mixed with the smutty powder, but before sown it was washed and steeped in the lixivium as prepared by Mr. Tillet.

There was not a single ear of smutty grain found in them, all were very sound, except some ears with smutty grains thereon.

The three last rows were of sound grain not mixed with any dust; before sowing it was washed, and steeped in a prepared lixivium, and before harrowing some powder from smutted grain was sifted over it.

More than one half of the ears produced smutty grain, and there were also many ears full of a black powder.

EIGHTH SQUARE,—IN FOUR EXPERIMENTS.

Sown the 7th October, the wind at south, two days before the change of the moon.

As to the seed, it was the same as on the second square.

The three first rows were of sound grain, it was not mixed with any powder, and was sown, without being either washed or limed, there was not one ear of smutty grain found in them, there were three full of a smutty powder.

The grain of the three rows which followed was likewise of sound grain unmixed, neither was it washed before sown but it was limed after the usual method.

There was not in them a single ear of smutty grain, all were found perfectly sound and good.

The next three rows were of the same seed, sound and unmixed, nor was it washed before sown, but it was steeped in a lixivium in which some lime had been slaked.

All those ears were very good and sound, except some ears filled with smutty powder.

The seed of the last three rows was very sound, it was not mixed with any powder, and before sowing it was washed and limed in a prepared water, as recommended by Mr. Tillet.

There was not a single ear of smutty grain found, all were perfectly good.

NINTH SQUARE,—IN FOUR EXPERIMENTS.

Sown the 7th October two days before the new moon, the wind at south, the seed was conformable to that of the third square.

THIRTEENTH SQUARE,—IN THREE EXPERIMENTS,

Sown the 7th Oct. two days before the new Moon, the wind at South. The seed of the four first rows was very good, taken from the Granary; it was mixed with some smutty Powder, and then sown without washing or liming.

There were at least two thirds of this grain smutty, and There were many Ears full of a black powder.

The four next Rows were also of good grain, mixed as that of the preceding rows; before it was sown it was limed in the usual manner, but not washed.

There was found at least a tenth of the grain to be smutty and Eight Ears of a smutty Powder.

The seed of the last four rows was found, but it was mixed with the powder of smutty grain, and before it was sown was steeped in some common water, wherein some lime had been slaked.

There was not one smutty Ear in them.

There were six of a smutty powder.

The FOURTEENTH SQUARE,—IN THREE EXPERIMENTS.

Sown the 7th Oct. two days before the new moon, the wind South.

The seed was the same as that of the thirteenth square.

The four first rows were of sound grain, but it was mixed with smutty wheat, and sown without being washed or limed.

There were at least two thirds of the Ears smutty, and many full of a black powder.

The four rows following were sown in the same manner as the four rows of the second experiment in the 13th square :

There was at least a tenth of the Ears that produced smutty grain, and many were full of a black powder.

The four last rows were mixed in the same manner as the four last rows of the thirteenth square; before the grain was sown it was washed, and then steeped in common water in which last some lime had been slaked.

There was not one smutty Ear found, there were some Ears full of a black powder.

FIFTEENTH SQUARE,—IN FOUR EXPERIMENTS.

Sown the 17th October, the moon entering her second quarter, the wind north.

The seed was the same as that of the first square.

The Grain of the three first rows, was mixed with smutty powder, and sown without being either washed or limed.

There were about two thirds of the Ears smutty, and many full of black powder.

The three following rows were of grain mixed with smutty wheat, and before its sowing was only limed in the usual way.

There was at least a tenth of the Ears smutty; and many were filled with a black powder.

In the three next rows, the seed was mixed with smutty grain as the three preceding rows; but before it was sown was washed and steeped in a lixivium prepared after Mr. Tillet's method,

There was not a single Ear of smutty grain in them.

There were some filled with the smutty Powder.

The seed of the last three rows, was very found, it was not mixed with any dust, it was washed, and then steeped in a prepared lixivium, and before harrowing, some powder of smutty grain was scattered over it.

More than the half of the Ears were smutty, there were also many found to be full of a black powder.

SIXTEENTH SQUARE, — IN FOUR EXPERIMENTS.

Sown the 17th October the wind at North, and the moon entering her second Quarter.

The seed was conformable to that of the second square.

These three rows were of very found seed, it was not mixed, and was sown without being either washed or limed.

There were not one Ear of smutty grain, there were some of smutty Powder.

The Grain of the three rows following was not mixed, it was very found, and before it was sown was steeped in a prepared lixivium, but it was not washed.

There were no smutty Ears found, but there were two full of a smutty powder.

The grain of the last three rows was also very found, it had not been mixed, and before sowing was washed, and steeped in the lixivium as prepared by Mr. Tillet.

All the Ears were found to be very good and found, except some filled with black powder.

SEVENTEENTH SQUARE, — IN FOUR EXPERIMENTS.

Sown the 17th October, the moon entering her second quarter, the wind north.

The seed of the three first rows was very found, it was not mixed with any dust, and was sown without being washed or limed; and before harrowing some pigeon's dung was scattered over it.

Two Ears of smutty grain were found in it, and four full of a smutty powder.

The three rows following were also of found grain not mixed, before it was sown it was limed in the usual manner, and some pigeon's dung was put over it before harrowing.

There was no smutty grain found in them, there were some Ears of smutty powder.

The seed of the next three rows was of the same found sort with that of the before named rows, not besmeared with any kind of dust; before sowing it was steeped in lye only, and before harrowing, some pigeon's dung was scattered over it.

The grain of the three first rows was very found, it was not mixed with any dust, it was sown without being washed or limed, and before harrowing, some pigeons dung was scattered over it.

There was not one ear of smutty grain.
There were four ears filled with a smutty powder.

The three next rows were also of found grain unmixed;—before sowing, it was limed in the usual manner only, and some pigeons dung was scattered over it before it was harrowed.

Two ears of smutty grain were found in them, and some ears of a smutty powder.

The seed of the three next rows was perfectly found, it was not mixed with smutty powder, it was steeped in a prepared lixivium, and before harrowed in some pigeons dung was scattered over it.

Not one ear of smutty grain was found, all were very good and very found.

The seed of the last three rows was also very found; before sowing it was washed and steeped in a prepared lixivium, and some pigeons dung was scattered over it, before it was harrowed;

Every ear was good and very found, except two ears of a black powder.

TENTH SQUARE,—IN FOUR EXPERIMENTS

Sown the 7th October two days before the change of the moon, the wind at south.

The seed was the same as that of the fourth square.

The three first rows were sown with seed that had not been mixed with any smutty powder, it was neither washed nor limed, and before harrowing some sheeps dung was scattered over it;

There were some ears of a smutty grain and some others full of smutty powder.

The seed of the next three rows was also found and not mixed, before sown it was steeped in the usual manner only, and before harrowing some sheeps dung was scattered over it;

There was not one ear of smutty grain found in them.
All were good and very found.

The three rows following were of the same grain as the above, before sown it was only steeped in the prepared lixivium; but before harrowing some sheeps dung was scattered over it.

All the ears were found good and found, except some full of a smutty powder.

The three last rows were of found seed, it was not mixed with the smutty powder, before sowing, it was washed and steeped in the lixivium recommended by Mr. Tillet, and some sheeps dung was scattered over it before it was harrowed in.

There was not one ear of smutty grain found in them.

THE ELEVENTH SQUARE,—IN SIX EXPERIMENTS.

Sown the 7th October the wind at south, two days before the change of the moon.

The seed the same as of the fifth square.

The two first rows were of sound seed, but it was mixed with some dust of the wheat granary, and sown without being either washed or limed.

There were found some ears of smutty grain and five ears of a smutty powder.

The seed of the two following rows was also mixed with the dust from the wheat granary, and before sown it was limed in the usual manner.

In them were found two ears of smutty grain and seven of a smutty powder.

The two next rows were of seed mixed with dust from the wheat granary, but before sown it was washed and then steeped in some water where lime had been flaked.

There was not one ear either of smutty grain, or of smutty powder.

The two following Rows were of sound Grain, but it was mixed with some Dust from the Oat granary, and sown without being washed or limed.

There was not one Smutty Ear, there were some full of a smutty Powder.

The two next rows were of good Seed, but mixed with dust from the Oat Granary, and sown after being limed in the usual manner only.

Not one Ear of smutty grain was found, there were some of a smutty Powder.

The seed of the two last Rows was also mixed with some dust from the Oat Granary, and before sown it was washed and limed in the usual manner.

There was no smutty Grain, but some Ears of a smutty Powder.

TWELFTH SQUARE, — IN FOUR EXPERIMENTS,

Sown the 7th Oct. two days before the new moon, the wind at south,

The seed was conformable to that of the first Square,

The Grain of the three first rows was sound, but it was mixed with the powder of smutty wheat, and sown without being washed or limed.

There were at least a third of the grain smutty, and many Ears of a black powder.

The three following rows were also of sound grain but mixed with smutty Powder, and before sowing it was limed in the usual manner, without being first washed.

There was about an Eighth of the Ears smutty, and five Ears of smutty Powder.

The three Rows following were also of grain mixed with the Dust of smutty wheat, before sown it was washed and steeped in the lixivium directed by Mr. Tillet.

There was not one Ear either of smutty grain or smutty Powder.

The seed of the three last rows was very good, it was not mixed with any dust, but it was washed and steeped in a prepared lixivium before sown, and before harrowed in, some powder of smutty grain was sprinkled over it.

About one half of the Ears were smutty, and many full of a black Powder.

The grain of the first four rows was found, but before it was sown was mixed with some smutty powder, and put into the ground without being either washed or limed.

At least two thirds of the Ears were found to contain smutty grain, and some were full of a black powder.

The four next rows were also of seed mixed with smutty powder like that of the foregoing rows, and before it was sown, it was limed in the usual manner; but not washed.

About one half of the Ears were smutty, and many were filled with a smutty powder.

The four last rows were of the same seed, mixed with smutty powder, but before it was sown it was washed and then steeped in some common water wherein some lime had been flaked.

All those Ears were found to be good and very sound, but there were some bad grains of smutty Powder.

TWENTY SECOND SQUARE,—in three Experiments,

Sown the 17th Oct: the wind at North, and the moon entering her second Quarter.

The grain the same as used for the seed of the twenty-first square.

The first four Rows were of sound grain, before sowing, it was besmeared with powder of smutty wheat, and put into the ground without being either washed or limed.

About two thirds of the Ears were found to be smutty, and many others to be full of a black powder.

The seed of the next following four rows was also smeared with powder from smutty grain as the four rows preceding, and before it was sown it was limed in the usual manner; it had not been washed before.

Near half of the Ears were smutty and many full of black powder.

The four last rows were also of seed mixed with smutty grain, but before it was sown, it was washed and steeped in common water wherein some lime had been flaked, this water received no other preparation.

All the Ears were found to be good and very sound,

PROOFS of the CAUSE PRODUCING the DISTEMPER.

It results from those Experiments that no situation of the winds, no Phase or Quarter of the moon, occasioned any difference in them. The seed mixed with the Powder or Dust of smutty grain, and sown without any preparation, was equally tainted. yet the same seed, tho' mingled with the like smutty powder, but washed before sown, produced sound grain. It has moreover been proved, that the grain which had been sown with Pigeon or sheep's dung, was not vitiated. It is therefore neither the wind, nor the moon, nor the dung which spoils the grain; tis nothing but the smutty powder

that adheres to the seed, and causes injuries according as it is more or less abundant; now to prevent such contagion nothing more is requisite than to clean the seed well from the smutty Powder.

For the generality of Farmers, it is sufficient for them to know from whence the disease arises, and the remedy that Experience has discovered; we leave to natural-philosophers to explain in their learned dissertations, the cause of it; I will only lay before them a fact, which may be looked upon as a Phenomenon.

A grain of corn soon after it is sown, forms a pretty considerable root, from whence arise several stalks and often but one, two or three at most, of smutty Ears on them, for seldom they are also—Sometimes the grains of the same Ear are entirely smutty on one side and perfectly sound on the other; sometimes they are even mixed in the Ear, that is to say, adjoining to an Ear that is sound, we find another which is smutty.—During the harvest of 1759 I discovered many of those Ears that were in part vitiated, I carefully picked out the sound grains and sowed them in the year 1759 by themselves without washing, they yielded perfect grain without any defect. This remark merits the attention of philosophers; as for myself I adhere to what has been experimentally proved for the use of Farmers.

THE METHOD TO PREVENT SMUTTY GRAIN.

As it has plainly appeared, by repeated Experiments, that the dust or powder of smutty grain, is the sole cause of the distemper, and that it will infallibly communicate it, 'tis therefore essentially necessary to cleanse the seed from it.—Neither the sieve nor fanners which careful workmen alternately use, are sufficient to cleanse it thoroughly.

The smutty powder is unctuous, and adheres so to the grain, that the most violent motion will not remove it entirely. This truth well known to Mr. Tillet, has led to the discovery of the means for removing this kind of viscous substance, and he imagined, that nothing but the Lixivium (the preparation of which he has described,) would answer that purpose; it has in fact succeeded; the reiterated experiments, which I made last year, and repeated this year have proved it; But being persuaded, that the care and the necessary expences attending such a preparation of the seed, together with the inconveniences that might lie in the way for drying it, would prevent the common run of Farmers from use of it I resolved last year to know whether a simple washing in common water would not be sufficient.—I have this year made a trial of it with a pretty large quantity of grain, and have found that common water had the same effect as the lixivium; and I have been lately informed, that some years ago one of the principal Farmers of *Vexin*, whose grain had one year been considerably smutty, had resolved to wash all his seed grain before liming, and that his following Crop was perfectly free of smut; therefore I am determined to attach myself to that process, it is simple, costs nothing, and any one may easily make use of it.

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Not one Ear of smutty grain or of smutty powder was found in them.

The grain of the last three rows was also very sound, before sowing it was washed, and steeped in lye, and before it was harrowed in, some pigeon's dung was scattered over it.

All the Ears were found to be very good, except some full of a smutty powder.

EIGHTEENTH SQUARE,—IN FOUR EXPERIMENTS.

Sown the 17th October the wind at north, and the moon entering her second quarter.

The seed was as that of the fourth square.

The three first rows were of sound grain, not mixed with any Powder or Dust, and sown without being either washed or limed, but before it was harrowed in, some sheep's dung was put over it.

There were found four Ears of smutty grain, and Six of smutty Powder.

The seed of the three rows following, was very sound, it was not mixed, before sown it was limed in the usual manner without being washed, and some sheep's dung was scattered over it before it was harrowed in.

There was not a single Ear of smutty grain:

There were four of a smutty Powder.

The seed of the three next rows was likewise very sound, not mixed, before it was sown it was only steeped in lie, and before harrowing some sheeps dung was put over it.

There was no smutty grain found ; there were some Ears full of smutty Powder.

The three last rows were of sound seed, not mixed, before it was sown, it was steeped in lye as directed by Mr. Tillet, and before harrowing some sheeps dung was scattered over it.

All those Ears were found to be good, except some of smutty powder.

NINETEENTH SQUARE,—IN SIX EXPERIMENTS.

Sown the 17th Oct. the moon entering her second quarter, the wind North.

The seed the same as that of the fifth square.

The grain of the three first rows was sound, but it was mixed with some dust from a wheat granary, and sown without being washed or limed.

Four Ears of a smutty wheat were found, and three full of a black powder.

The two next rows were of sound grain, but that was also mixed with some dust from a wheat granary, and before it was sown was only limed in the usual manner.

There were found in them two Ears of smutty grain, and five of a black powder.

The following two rows were of sound grain, mixed with dust from a wheat granary, and before it was sown, was washed and then steeped in common water in which only some lime had been slaked,

There was not a single smutty Ear, there were some of a smutty powder.

The seed of the next two rows was found, but it was mixed with some dust from an Oat granary, and sown without being either washed or limed.

There was no smutty grain found in them, there were five Ears full of smutty powder.

The two following rows were of found grain, it was also mixed with dust from the Oat Granary, it was not washed before sown, but it was limed in the usual manner.

There were three Ears of smutty grain, and some of a smutty powder.

The two last rows were of found grain, but it was likewise mixed with dust from an Oat Granary, and before sown, it was washed and then steeped in common water in which some lime had been slaked.

No smutty grain was found in them, only three Ears filled with smutty powder.

TWENTIETH SQUARE, — IN FOUR EXPERIMENTS,

Sown the 17th October the wind at North, and the moon entering her second Quarter.

The seed the same as that of the first Square.

The grain of the three first rows, was mixed with the powder of smutty wheat, and sown without being washed or limed.

Two thirds at least of the Ears were found to be smutty, there were also many Ears full of smutty powder.

The seed of the three next rows was also mixed with smut, before sown it was not washed, but it was limed in the usual manner.

Near the half of the Ears were found to be smutty, and four Ears were full of black powder.

The grain of the following three rows was also mixed as that of the three preceding ones, and before it was sown was washed and steeped in Lye prepared as Mr. Tiller directs.

All those Ears were found to be good and very sound.

The seed of those three last rows was very sound, and was not mixed with any kind of dust; before sown it was washed, and then steeped in the aforesaid Lye, and before harrowing, some smutty powder was scattered over it.

More than the half of those rows was smutty grain, and they produced many Ears of smutty powder.

TWENTY FIRST SQUARE, — in three Experiments.

Sown the 17th October, the moon entering the second quarter and the wind at North.

The seed was conformable to that of the thirteenth square.

A SIMPLE AND EASY METHOD, TO CLEANSE SEED FROM THE
SMUTTY POWDER.

Take two Casks or Puncheons, open at one end, pour into the one common water, such as is to be met with where one lives, and in the other slake some lime with boiling water in the usual manner; then take one or two baskets, not too closely worked, and with long upright handles. The Baskets should be made to enter easily into the casks, and to contain about one bushel of grain each;

Put into one of the baskets about half a bushel of grain, and then dip it into the cask where the common water is, stir the grain well with the hand, or with a little wooden shovel, raising and falling the basket several times, this operation cleanses the seed thoroughly; the smutty grains that have not been bruised, swim, and are to be taken off with a skimmer, and the water, when it becomes foul, must be changed; the grain in the basket being thus perfectly cleaned, the basket must be hung up to drain, after which, it is dipped into the cask where the lime is, and which must first be well stirred up from the bottom, for the lime precipitates itself very soon, and without this precaution, the seed would not be sufficiently limed, the basket must be dipped two or three times into this cask, afterwards it is hung up to drain, for a few minutes, and then the grain thus washed and limed is laid in a corner of the granary where it soon dries, and is fit for sowing the next day, but in case it should remain there several days before used, it will be very necessary to stir it with a shovel in order to prevent accidents.

OBSERVATIONS.

This preparation of the seed, is neither expensive, tedious nor difficult; myself and three more prepared last year in this manner fifteen septiers, which weigh about 270lb each, we were only four hours in washing and liming the whole, 'tis true I made use of two baskets, one of which was draining, whilst we dipped the two others, which forwarded the business. I sowed these 15 septiers on a piece of ground, and had scarcely any smut in it, this produce will supply me with all the seed I shall want this year to sow one hundred acres or one hundred and sixty arpents of ground. I shall also wash after the above manner, fifteen septiers of this harvest which I shall sow by itself, so that the grain produced from it, may furnish the seed for 1762. continuing this process for some years, I am persuaded I shall never have any smutty grain, the seed will be so very clear; and should it even be necessary to continue the same process for some years, yet it is so easy, and of such little expence, that no careful Farmer ought to neglect it, tho' in all probability it would not be necessary for more than three years. An example quoted by a Farmer of the subdelegation of Andeley is a proof of it; He asserts, that having the good fortune to have grain perfectly clean, for more than twenty years that altho' he has not changed it, he has not had a single Ear of smutty wheat, although his neighbours grain has been often smutty; he

had for many years been a Farmer in a parish on the banks of the River Seine, where the soil was, in part sandy and part marshy; for the two last years he has been settled on the Vexin and altho' he has like other people, sown at all times of the moon, and with every wind, and that he has made use of Pigeon's dung, or folded Sheep on the spot intended to be sown, yet he has always reaped very sound grain; from whence it follows, that all and every thing, depends on having very clean seed, there is even reason to suppose, that the washing, not only preserves the grain from being smutty, but also from having any of the Ears filled with the smutty powder. I will not as yet affirm it to be so, but I have remarked that I have had much less of it in those crops, the seed of which had been washed.

Although the quantity of water and lime necessary to lime the seed be known; yet to prevent mistakes, it may not be amiss to give an account of my operations.

I poured into one of the casks one hundred pots or fifty gailons of water, which served to wash the grain, and I poured the same quantity of water into the other cask, in which two Bushels or 100lb of lime had been before flaked with 24 pots or twelve gallons of boiling water; this quantity I found sufficient to lime the fifteen septiers before mentioned; if one wishes to lime it more or less, it may be regulated by the quantity of lime or water, however one might venture to add a little more lime than what I have mentioned, it will make the grain become dry the sooner.

I ought also to inform those who will study their own interest so far as to follow my Example, that if in washing or liming the grain, some of it should pass through the basket, into the casks, this grain so remaining in the bottom of the casks till the operation is over, will be considerably swollen, but not spoiled: that which has been in the cask with the lime will only require to be dried, and that in the cask with the water only, must be dipped in the lime water that remains, as was done with the limed grain, but I have always been careful to sow by itself the grain thus found in the bottom of the casks, the whole passed through the process, and was found to be perfectly good.

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