

(1) Number of pages 30(2) Date of repair 29/1/66

(3) Initials of the Referencer _____

MADRAS RECORD OFFICE.

Government of Madras.

Public Works DEPARTMENT. ✓

G.O. No. 1836	Press Mis. 7
232-240	<i>quid</i>
Dated 12-6-	18 66.

Not to be folded or roughly handled

232-240

1/35- / Superintg Engineers Office 6th Div.
Cuddalore 1st June 1866

From
Lieut Colk C. A. George R.E.
Superintending Engineer
5th Division
To
Colonel, C. G. Orr R.E.
Secretary, to Government
O.P.W.

Sir,

With reference to the order of Government of the 17th June 1865 N. 1686, I have the honor to state that I have received from Mr. R.E. for an estimate of Rupees 300 for building a cistern and employing a masonry for six months for determining the quantity of water required to bring an acre of paddy to maturity -

2. The piece of ground selected for the experiment is two acres in extent near Porto Novo and is watered by one of the channels from the Coleroon Amittat. The owner of the ground has promised to give all the assistance
in

in his power.

3

3. I have the honor to request that the sum of three hundred rupees sanctioned for this experiment last year, but not expended, may be again granted this year from the "Reserve" under "Agriculture."

I have the honor to be

Sir

Your most Obedient Servant

Edw. Ford Lieut. Col. R. E.

Superintending Engineer

5th Division

Superintending Engineer's Office
 No 3241 1st Divⁿ, Waltair, 20th April 1866.
 From Deputy Secy
 Captain J. G. Symes R. E.
 To Superintending Engineer, 1st Divⁿ.
 Colonel C. A. Orr R. E.
 Secretary to Government, P. W. D.

Madras.

Sir,
 I have the honor to report that I in-
 trusted the experiments ordered in G. O. dated
 17th June last to the late Captain Philipps in
 Ganjourn & Mr. Rundall in the Goolavry. The
 death of the first named Officer & the absence on
 privilege leave of the latter prevented any defi-
 nite results being arrived at: which moreover
 could not have been exact as the irrigation
 season had commenced before the order was
 received.

2. To mature a crop of paddy in the Goolavry
 or Kistna Deltas the works must have the com-
 mand of 2 1/2 Cubic yards per hour per acre of
 the gross area, the supply to individual village
 sluices and channels should be at the rate
 of

No 1686.

J. G. Symes R. E.
 Deputy Secy
 to Govt of Madras

The Deputy Engineer
 to the Division

The Secretary to
 Government

Dated 1st June 1866.
 Received
 No 335

Applying for Rs 300 from
 the Reserve under
 Agricultural for carry-
 ing out the experiment
 to determine the quantity
 of water required to
 bring an acre of paddy
 to maturity.
 No 1836 - 1259 Dated 1/6/66

No 232

of $2\frac{1}{2}$ to $2\frac{3}{4}$ Cypds per acre per hour.

3. If Government wish it, I will have the experiments taken up for the season now coming on. but the results obtained will not have much practical value, first, - because the accurate measurement of the water used, which must necessarily be left to a native subordinate, cannot be relied upon. Secondly, - because a Ryot cultivating a farm of 20 or 30 acres cannot devote the necessary amount of care to the uniform distribution of the water.

4. The best way of determining the quantity of water required is to register the water supply in masses to separate areas, and note if failure of crops by want of water, or reduction of area of irrigation from the same cause occurs, the acreage ^{being} compared with the water supply: similarly a maximum limit is obtained by noting if the drainages take off much water. it is in this way that I have arrived at the result stated in para 2.

I have the honor to be
Yours most ^{dev.} obediently
A P (Capt. O. E.)

No 2

Dep't. of the Interior

Inasulipatan

8th May 1866.

From Wm. C. G. T. Winscom R.C.
Superintending Engineer 2^d Div.

Colonel C. A. M. R. C.
Secretary to Government

With reference to G. O. No 1686
 Dated 17th June 1866. I much regret to
 report that the experiments which I
 ordered to be made by the Officer in
 Charge of the Tellore Range as per
 letter copy of which I subjoin, have
 failed in furnishing any satisfactory
 information on the question of the quantity
 of water needed to bring a crop to
 maturity.

2 The reason of the failure is that the lands chosen by the Range Officer lay among other paddy fields, and it was found impossible to prevent the water of one percolating into that of another, till all became the same level. Also Major Fries left the Range soon after the Commencement of the Experiment, and Mr. R. Smith

whom

No 199^x of 1865
August 28 65

200

John C. Schuyler
Esq. & Secy
Genl. & Commr.
No. 2 S. 8th. N. Y.
1866.

6/6/66

whom I was obliged to put in charge
of both the Bellone and Conter Range
has been so fully occupied ever
since that he has had no time
to personally attend to the matter.

3. The only observation of any
value at home, I now forward. The
ground was higher than the adjoining
fields, but as the man in charge did
not regularly supply the fields
with the same quantity of water, the
question of how much per hour per
acre is needed, remains unsolved;
all the information we get is that an
average of 2.59 Cubic yards per hour
per acre produced on a certain soil and
under certain circumstances rather more
than 9 times the seed sown, and about
the same weight in straw as of paddy.

4. The Expenses attending the Experiment
amounted to Rs. 189-13-8 leaving a balance
of Rs. 110-2-4 on 300 Rs. allotted for the
purpose.

5. Whilst regretting much that I am
unable to furnish more information
on this specific subject, I would beg
very respectfully to remark that no
land requires one continued & regular supply
of

4 15
of water every day, but rather a varying
quantity according to the soil, the
temperature, the rain fall, the evaporation
and its own approach to maturity, the
question should not be, as regards
main works at least, what amount
per acre is needed on an average, but
what is the maximum amount at any time
really necessary for average land and
crops under unfavorable circumstances;
and all principal masonry work & main
distribution channels ~~yes~~ should be
designed to meet this want, though of
course possessing the means for
regulating and diminishing the supply
according to the state of the crops, season
&c. for there are few distribution channels
of large size which do not supply
a variety of lands, at such a distance
from their heads that the rain fall
and climate may be at times very
different. As regards the designing of
minor works and distribution channels
for the irrigation of lands having the
same quality of soil throughout, the
maximum supply for that soil is
I think the sole question to be considered,
means being taken for diminishing that
maximum supply according to the circumstances

of the day -

6 Delta Range Officers are so
heavily worked, that they have not
time for a long continuous series of
experiments, but as Mr Coaker has
now joined the Division, I propose
employing him under myself and
Captain Smith during the next season
on the investigation of many subjects
of great interest connected with irrigation
and Hydraulics as applied to large
channels and rivers, which I am
sanguine may lead to a more thorough
acquaintance with the subject. Amongst
the matter of the quantity of water
needed shall meet with due attention
In Expenses connected with these investiga-
tions such as assistants, judges, &c.
I request Government will be pleased
to place Rs 500 at my disposal
from the Revenue Fund.

I have the honor to be
Yours most Obedt Servt

Geo Minns Esq
Supt Engineer D. C.

Superintending Engineer D. C.

of the day—

SW 1866 Department
The Chief Engineer
25 Dec 1866

The Survey & Genl
d. File

2/8 Dec 1866
Recd 14 May 11
Exe: per No 2
Furnishing certain
Explanation on the
subject of Experiments
to be instituted for
ascertaining the quantity
of water required to
bring an acre of heavy
to maturity.

A 234.

NO 1836-12 June 1866

N^o 163

Range office N^o 5
Camp Montafon
29th April 1866
19

From.

Lt. William Eugene CB
Assistant Engineer RMD
To
Major A S Roberts RCB
Sup of Engineer 3rd Div.
See.

The path for carrying out water is a large scale and I have not thought of it but from the structure of the tank there is a small outlet for about 50 gallons running down through a narrow hole and is well adapted to take the necessary measurements. This I have done in several places and obtained a mean. I have also carefully surveyed the land and levelled the Channel, the particular are out.

Channel 20 inches broad, water flowing on the average 7 inches deep and a fall of 2 feet per mile. The amount of land cultivated this year is 128 acres. The discharge is 1866 Cubic yards per hour. This is more than one yard per hour per acre; but, when the well known carelessness of the Ryots is taken into consideration not only in their waste of water, but also using more than they absolutely require, it will be seen that in this instance, at least, the rate of 1 Cubic yard per hour per acre is sufficient. The lands cultivated are high and are chiefly red soil. Since the tank filled and cultivation commenced, no rain has fallen with the exception of one or two slight showers. As I had no barometer or thermometer, I cannot give you any information in these points.

Thos. Lee
W. M. Lee
Superintendent Engineer 3rd Div.
Lt. William Eugene CB
Assistant Engineer RMD

W. A. D. May 1866
Superintendent Eng. n.
3^d Division

The above receipt of a
 letter from the Hon. Secy.
 of the Interior (copy of the same)
 is herewith forwarded.
 Very respectfully,
 J. H. Smith

[illegible]

N^o 114. Superintending Engineer's Office,
Cuddalore 10th April 1866.

From,
The Superintending Engineer,
5th Division.

To,
The Secretary to Government.
D. P. W.

Sir,
I have the honor to report with reference to the Order of Government of the 17th January/65 N^o 1686, that I have not been able to obtain any information regarding the quantity of water required to bring an acre of paddy to maturity. During the past eleven months, one Sub. Engineer, one Supervisor and three Taluk Overseers of this Division, have died, and one Assist^{nt} Engineer has been transferred to another Division. There has therefore been great difficulty in getting the ordinary work of the Division carried out. I hope to be able to furnish some reliable information on the subject, during

W. M. S. & Co. Secy
to the Govt of Madras
19th April 1866

The Superintending Engineer
5th Division

To the Secretary to Govt.

D. P. W.

Encl^d 4th May 3, 1866
No. 84 of 1866

Do. no. 121

It is requested on behalf of the
Government of Madras that the
Superintending Engineer of the
5th Division be pleased to
furnish the information required
in the above-mentioned order of
Government.

1865

12. 1836. 12th June 1866

during the present year.

I have the honor to be,

Mr,
Your most obedient servant,

E. J. and Lieut Col R. C.
Superintending Engineer & Lieut.

No 162 of
1865
1866

Range Office
Rangpur
12th February 1866.

From Captain J. O. Hastie R.E.
Executive Engineer.

To Captain A. F. Oakes R.E.
Superintending Engineer
6th Div.

Sir, I have the honor
to report on the experiment
made in my compound of
the quantity of water re-
quired for our crop of paddy.
The ground was
situated in a garden which
was more or less
on all sides, and was a
quarter of an acre accurate-
ly laid out, bounded on
3 sides by the garden
about $\frac{3}{4}$ of a yard higher
than the level of the
paddy

Feb 28

Received of the
Superintending Engineer
the sum of Rs. 100/-
for the year 1865-66
No 114.
12th Feb 1866
J. O. Hastie
Executive Engineer
Rangpur

paddy field having a row of
Coconut trees planted
within a yard on 2^o of the
field, and on the 4th side
by other paddy fields. On
the west side a channel
supplying other fields ran
parallel to the ground at
a distance of about 10 yards,
and on the South side at
a distance of about 12
yards was a small tank
from which the water
was led into a masonry
basin measuring 6' x 6' x 3'
= 4 Cubic yards, and supplied
to the field. The basin
was furnished with a notch
as surplus, exactly 3 ft
above its floor, and supplied
water through a small
drain on a level with
its floor.

2. The tank was
supplied by water from

the Channel above mentioned,
so that there was never
much difference between
the level of the water
in it and the surface of
the paddy field.

3. The soil is sandy
with apparently a rather
large amount of alluvial
deposit in it than is
generally met with hereabouts.
4. The season was

I believe an exceptional
one; the fall of rain in
October being very small
only $2\frac{7}{8}$ inches. The rain that
fell in November $14\frac{1}{2}$ inches
was apparently too late
to do much good, the crop
is therefore a very short-
one, the paddy though
promising well not having
sared properly. The yield
for the quarter acre is
about $3\frac{1}{4}$ Calans only one
third

third of a full crop as
I am informed. It is
however better than most
of the paddy about here.

The cultivation
is attended to by a man
who has had some experience
in paddy cultivation, and was
looked after in my absence
by the Accountant of
the Range Office.

6. During the very
hot weather in September
and October when there was
no supply of water to the
other paddy fields, I had
water baled from a tank
to the neighbouring paddy
fields which prevented the
water baled on the quarter
acre of ground draining off
to those fields.

7. The experiment re-
lates only to the time
from which the ground
was prepared to receive

27
the transplanted paddy
to the time the crop was
cut. The ground was plough-
ed on the 15th September 1865,
and on the 16th the paddy
was planted out. Between
the 6th and 15th of September
2 1/2 inches of rain fell, the
ground required therefore
only 28 cubic yds of water
for ploughing. Had the
weather before been very
hot it would have required
2 or 3 times as much.
The crop was cut on
the 4th of February 1866.
8. Twice during the
month of December it
was necessary to drain
off some of the water.
The paddy had been growing
in a considerable depth
of water for some time,
and it was necessary to
drain

drain it off, and supply
fresh water once more
before leaving the crop
to ripen - on the 7th and
15th December, 10 inches were
drained off and on the
30th December 20 cubic yds
were let in. This was the
last supply.

9. The supply of water
and rain was as follows.

Sept. 1865	Supplied from Tank	0.408
	149 basins - 196.	
" "	Rain fall 6 inches on $\frac{1}{4}$ acre	202.60
		598.66
" Oct. 1865	Supplied from Tank	
	86 basins - 344.	
" "	Rain fall 27 inches on $\frac{1}{4}$ acre	96.63
		440.63
" Nov. 1865	Supplied from Tank	
	28 basins - 112.	
" "	Rain fall 14 inches on $\frac{1}{4}$ acre	487.35
" Dec. 1865	Supplied from Tank	599.35
	5 basins - 20.	
" "	Rain fall 13 inches on $\frac{1}{4}$ acre	46.21
		66.21

Total Supply - 1504.79 C. yds

Direct discharge into Ocean -
10 inches on $\frac{1}{4}$ acre - 336.10

Actual Supply used - 1168.69 C. yds.

10. From the day the
ground was ploughed 15th Sept.
1865, therefore, to the day the
crop was reaped - 4th Feb.
1866 in all 143 days 1168.69.
Cubic yds of water were
consumed, this is at the
rate of 8.17 Cubic yds a
day per $\frac{1}{4}$ acre or 1.361 C. yds
an hour an acre.

11. From the situation
of the ground, I believe
few sites would have been
more satisfactory as regards
drainage, for it is almost
impossible to find a piece
of ground not affected
by percolation either into
or from it, during the
wet season, but surrounded
as it is by trees, the amount
of evaporation was very
small to what it must
have been in situations
exposed to both sun and

wind - Again the amount
required to make the
ground sufficiently moist
for ploughing would have
been much greater in
supposed situations where
the cultivation is commenced
immediately after the hot
weather and before any
rain has fallen. Black
Cotton soil at such a time
absorbs an immense quantity
of water -

12. The supply according
to this experiment, shows
that one acre required
4674-76 Cubic yds of water
during the season - Taking
to account the situation
of the ground as above
described - I think 5000.
Cubic yds may be estimated
as the amount required on
an average during the season
Taking

35
Taking the season to be
4 months (after the space
of which time from trans-
-planting; no water would
be required) this would
be 1.73. Cubic yds per hour
per acre or say $1\frac{3}{4}$ C yds.
Supposing the rain fall
to be 15 inches during
the cultivation season
3000. Cubic yds might
suffice or rather more
than 1. C yd per hour per
acre -

13. The largest supply
in any one month it will
be seen was 599.35 C yds
for the whole month,
this would be a supply
of $3\frac{1}{5}$ C yds per hour per
acre - This is much more
than would absolutely
be required in any month,
and it was necessary to let

let off 336-1. C^{yd} from the
quarter acre to keep the
paddy alive.

14 - The water required
for seed beds is not included
in the above amount the
beds are usually planted
again, and in estimating for
the amount of water
required for any given
extent of land say seven
acres, I believe the plan
would be to allow for
the whole extent $\frac{13}{4}$ C^{yd}s
an hour an acre for 4 months,
and in addition $\frac{13}{4}$ C^{yd}s an
hour an acre for one acre
for 2 months, for seed beds -

I have &c.

Resd - Captain P. C.
Executive Engineer

1996

Sub Engineer's Office 6th Dec

was within 12 yards of it on the South side
The

No 1996

Sub Engineer's Office 6th Div
Trivady, 17th March 1866.
31
To
Captain R. F. Cooke R. L.
Sub Engineer 6th Div
Colonel C. A. Ott R. L.
Secretary to Govt P. W. D.

Sir,

With reference to the G. O.
noted marginally, I regret to inform you
that the experiment made by Captain
Hasted in his Compound relative to the
supply of water required by rice land
has been a failure and will, I fear, be
of no assistance in forming an opinion
on the subject.

2 The ground was unfavorably
situated being $\frac{3}{4}$ yard below the level
of the garden which bounded it on
three sides, where it was sheltered
by Coconut Trees within 1 yard of its
edge or margin; the fourth side was
bounded by other Paddy fields and an
irrigating channel ran within 10 yards
of it on that side; while a Tank
from which the land was supplied
was within 12 yards of it on the South side.

No 1282 dated
12th June
No 2697-
14th Sept

18⁶⁵ D. A. 11.

No 162 of 18⁶⁵
1151/66
From

Captain J. D. Fawcett
Resident Engineer
10/10/65

The Sub Engineer
of 4th Division

Dated 12th February
1866

Enclosure "

Report on the
experiment made
on the quantity of water
required for one
acre of paddy

Executive Engineer

No 1996

Sub Engineer's Office 6th Div
Trivady, 17th March 1866.
To
Captain R. F. Coker P. E.
Super Engineer 6th Div
Colonel C. A. Ott, P. L.
Secretary to Govt P. W. D.
Sir,

No 1282 dated
12 June
No 2697--
14 Sept

With reference to the G. O.
noted marginally, I regret to inform you
that the experiment made by Captain
Hasted in his Compound relative to the
supply of water required by rice land
has been a failure and will, I fear, be
of no assistance in forming an opinion
on the subject--
2. The ground was unfavorably
situated being 4th yard below the level
of the garden which bounded it on
three sides, where it was sheltered
by Coconut Trees within 1 yard of its
edge or margin; the fourth side was
bounded by other Paddy fields and an
irrigating channel ran within 10 yards
of it on that side; while a Tank
from which the land was supplied
was within 12 yards of it on the South side.
The

18⁶⁵ D. P. E.
No 162 of 18⁶⁵
1151/66
From
Captain J. O. Easton
Executive Engineer
6th Div
The Sup. Engineer
6th Division
Dated 12th February
P. 14 1866
Enclosure "

Report on the
Experiment made
on the quantity of water
required for one
acre of Paddy

I attest - Captain
Executive Engineer

The soil was of a sandy nature mixed with alluvial deposit - The experiment commenced on the 15th September when the land was prepared to receive the young plants from the seed bed, it does not therefore show what water is required for the crop from the time of planting till the removal of the Paddy from the seed bed -

3 The supply was as follows,
 In September From Tank 196 Cys
 From Rain 6" 201.66 397.66
 October From Tank 344 Cys
 From Rain 27" 96.63 440.63
 November From Tank 112 Cys
 From Rain 14 1/2" 487.36 599.36
 December From Tank 20 Cys
 From Rain 1 3/8" 46.21 66.21

or from 15th September to 30 December when the last supply was received 1503.86 Cys

From which deduct what it was necessary to discharge owing to the heavy fall of rain in November 10" 336.1
 Total supply in 107 days 1167.76

or 10.913 Cys per diem for 1/4 of an Acre
 or 43.652 Cys per Acre or 1.82 Cys per hour per Acre.

In September the supply was at the rate of 4.14 Cys per hour per Acre -
 In October 2.368 Cys

In November 3.33 Cys
 or deducting the 336.1
 drained off in Dec. 1.46 -
 In December 368 -

4 There are, it will be observed, very great differences in the supply afforded to the land in the various months - It is perhaps hardly fair to divide the supply into the by months, as it is not shown what depth of water stood on the land at the end of each month, but it is clear that later in November and early in December the depth of water over the land was very considerable and was necessarily high - This and perhaps the fact of the land receiving only clear water from the Tank instead of water rich with deposit, the unseasonableness of the rain fall and the fact of the land being much shaded by the trees in its neighbourhood caused the failure of the crop, had caused the failure of the crop, the outturn from which was only one third of what it should have been, the ear did not swell though the paddy promised well - The outturn was better than that on the neighbouring land -

5 The Cultivation was attended to

to by a man who has had some experience
in Paddy Cultivation and the Crop was
reaped on the 4th February or 4²/₃ Months
from the date of transplanting.

6. The experiment was evidently tried
with what is called the six months Paddy,
it requires a smaller supply of water
daily than the Paddy which comes to
maturity more rapidly, for the latter
 $\frac{1}{2}$ " of water over the entire surface
daily for 72 days is, I believe, about
what is required, this may perhaps
be spread over three months. A
Cubic yard of water for every square yard
of land for the entire season is, as
far as I can judge, the ordinary sup-
ply required, or allowing for leakage
and absorption and evaporation in
long channels 3 Cubic yards per hour
per Acre may be regarded as an
ample supply from the time the Paddy
is transplanted till it ceases to require
water.

7. Captain Hasted's original Report
is enclosed -

No. 162
12th Feby

I have the honor to be

Sir
Your most obed^t Servant -

J. F. Drake Captain R.E.
Bengal Engineers 8th Bn

43-

41

to by a man who had had some experience

43-

28th 1866 Dep't
Secy of Govt for Ind
Wm N 7 1861

The Suby requires
for

The Secretary to Govt
R.D.

Dated 17 } March 1866
Recd 20 }

One one

No 1996

Reporting on the exper-
iment of Paddy culti-
vation.

287

1836-12 June 66.

W. F. Baker Captain R.E.
Chief Engineer 8-23

Supg. Engrs Office 7th Dⁿ
Coimoor 2nd May 1866-

From Lieut. Col. G. W. Walker R. E.
Superintending Engineer 7th Dⁿ

To Colonel C. A. Orr R. E.
Secretary to Govt. P. W. D.
Madras-

Sir, With reference to your Memo no. 91 of
24th March I have the honor to state that I
was not under the impression that G. O. No.
1886 of 17th June 1865 called for a reply. On
receipt of that order I communicated at once
to the Consulting Engineer for Irrigation what
steps I had taken with reference to the pre-
vious Order 122350 of 7th February; and I will
now report on the same for the information
of Government.

2. Under date the 14th April 1865, I
addressed the Executive Officers of the Districts
in charge of the 5 Irrigation Ranges of the
Coimbatore District, inviting their cooperation
in carrying out the object in view & Authori-
zing them, in anticipation of Govt. Sanction,
to incur such expenses as might be necessary
for the purpose. Lieut. Morris R. E. at
once, in charge of Pollachy Range, responded
to the call, and an Estimate of Rs. 120 for the
construction of a Cistern which he submitted
having been duly worked out, the experiment
commenced. I had occasion however to
remove him to another Range, but hoped that the
small opportunity for practical research
afforded by it would not be lost by his successor,
Lieut. Hon. C. Smith R. E.

3. Whether owing to its not having been

Recd: 1

In a letter from the
Lieut. Col. G. W. Walker
to the Secy to Govt. P. W. D.
No. 3 of 22 May 1866

Copy 1/19/1866

Abstract of documents
presented to the
Hon. Secy to Govt. P. W. D.
for the purpose of
providing information

Commenced by himself, or from its not having been
in a sufficiently large & scientific scale to com-
mand his interest, that Officer has rather dis-
-appointed me by neglecting to give the detailed
account I called for of all that had been done,
having contented himself with sending Tabu-
-lar Statements without note or comment,
save that it was a mistake that the experiment
was ever made in the Pollachy Range. I am
therefore left to my own conjectures to account
for the Site of the Cistern having been chosen
under the Tada Kaloor Channel near Ama-
-malay, instead of more immediately in the
vicinity of the Range Officer or one of his
Overseers, who had much more time to de-
-voted such observations than any others of
the 7th Division, of which Pollachy is the Range
in which least money is spent & work done.
As it was, the observations were left entirely to
a Lascar, from which Lieut. Smith concludes
that they are valueless. But he never ap-
-plied for any portion of the Govt. Grant
of Rs 300 to secure the services of a more com-
-petent person, and I have to be content
with such papers as I can get.

4. It may suffice to keep them at the dispo-
-sal of the Consulting Engineer for Irrigation
should he wish to have them, and to abstract
their Apparent results for the information of
Govt. - Briefly summed up they would
appear to show that the average daily supply
per acre was 115 Cubic yards, 24,80 Cubic yards
per acre (in addition to a Rainfall of 36 1/2 inches)
purporting to have been supplied during the
213 days over which the observations extend,
viz from one month before the sowing till
9 days before the cutting of the crop, which
shows the proportion of 1,70 Acres produce

to 8 1/2 of seed per acre or about 6 to 1 only -
The Abstract Statement appended gives a
few more particulars -

I have the honor to be
Sir
Yours Most Obedt. Servant
W. Walker Smith, Lieut. Col.
Supg. Engineer 7th Division

ad

No 2338

No 1836 - 12th June 1861

Submits report on above
item to the Secretary to Govt

Encls: one.

No 3.

Wales 2nd May 1861
Secured 1st

Wales

to the Secretary to Govt

to the Secretary to Govt

to the Secretary to Govt

to the Secretary to Govt
to the Secretary to Govt
to the Secretary to Govt

No 2597 Sup. Engineer's Office 8th D.
Cockaracolum 10th April 1866

From,

Captain J. H. S. Prendergast
Off. Superintending Engineer 8th D.

To, Colonel C. A. Croft R.E.
Secretary to Government 8th D.

With reference to P.O. No 1686 of
the 17th June 1865, I have the honor to report
on the experiment made by Major Paxton
in Tinnervelly, to ascertain the quantity of
water required for wet cultivation.

The tank selected for the experiment
was the Ollendacolum, to the South of the
Pulacottah Fort, which is conveniently
situated for observation, and of sufficient
size to give a good idea of the requirement of
a 2nd Class tank. The area which was
planted was 30 acres. The arrangements
made for measuring the water discharged from
the sluice, was as follows. Two square wooden
troughs were constructed 12 feet in length,
8.485 inches in width, and height, so as to
give a section of half a square foot, and
were placed below the sluice of the tank. The
velocity of the water was obtained by allowing
a float, adjusted in the centre of the trough,
to

to pass through 10 feet of the trough, and the time taken being noted, the discharge was calculated. The troughs were arranged in such a manner that by slightly altering the slope the water could be made to run even with the top of the trough throughout. Owing to the very insufficient rain soon the results of the experiment were not so satisfactory as could be wished; the crops being withered entirely during the early part of January. Still the results are of some value as showing the least quantity of water capable of keeping up a crop of paddy.

Light rains prevailed from the 21st to 26th October, during which time, about $\frac{2}{3}$ of the area under the tank was planted, but no water accumulated in the tank. The young plants however appeared healthy and went on well, till the 10th November (one intermediate shower having fallen on the 31st October) when a heavy fall of rain took place, giving a depth of 2 feet of water in the tank, and the remaining area was then planted. Occasional showers fell between the 10th and 20th November, during which time the crops were watered as required, but the sluices were not allowed to discharge water throughout the day. From the 20th the sluices were opened partly, but the troughs not being ready, measurements were not made at first. The discharge of the Northern sluice was noted from the 27th November, that of

the

the Southern sluice from the 5th December, and the water was allowed to flow from both sluices until the 19th when the South sluice was closed for want of water. After this no rain fell, sufficient to store any water in the tank, and the crops gradually failed. —

On the 11th December with a total discharge of 1230 Cubic feet per hour, or rather more than $\frac{1}{4}$ inch depth of water over the whole area per diem, the crops appeared to thrive; and but little water ran

1230, Cubic feet per hour
or 29.520, Cubic feet in
24 hours, distributed
over 30 acres, gives a
depth of .27 inch

to waste — hence it is considered that under similar conditions of temperature and evaporation, $\frac{1}{4}$ of an inch per diem would bring a crop to perfection. The Ellandacolum tank received only 2 feet of water in the past monsoon, but when full it would contain water to a depth of 10 feet; and with a view to making fresh and more continued observations in another monsoon, when a heavier fall of rain would be expected, Major Haxton commenced taking a series of contours to ascertain the exact contents of the tank; he was however obliged to desist from all health, which has obliged him to proceed to England. —

I observe that Captain Mullins in his letter N^o 16 29th May 1865 asking for observations of the quantity of water used mentions $2\frac{1}{4}$ Cubic yards per hour, per acre

55-

as considered not more than sufficient ^{to} the
Godavery Channels: whereas the experiment noted
above, gives a result of only $1\frac{1}{2}$ Cubic yards per
hour, per acre. —

1230 Cubic feet per hour per 30 acres.

= 41 — (9) — (9) — 1 — (9) —

= $1\frac{1}{2}$ Cubic yds. per hour per acre.

Received

Howlandsgate Captain R.E.,
Off^r Superintending Engineer S.D.

Dr 1885 Cash
120- of Cash & Cash June
1885 10/15/10.

2 The Superintending Engineer of the 4th Division has not yet reported the result of the experiments which have been made under his orders, and ^{his} attention will

P. D. A. 1282. 12th June 1865.
 P. D. A. 1686. 17th " 1866.

will now be drawn to the subject.

3 It will be considered in the Revenue Department whether the experiments which are proposed by the Superintending Engineers of the 2nd and 5th Divisions should be made during the current year, as if so, the funds which are applied for will be allotted from the Reserve.

Rs 500 in the 2nd Div
Rs 300 in the 5th Div

W.H.

To
The Rev. Department
4th - Cont. Eng. Min. & G. E.
Super Eng. 4th Division
all other S E

95
11
Desp. 13th June

P. W. 1866. Department.

Proc. of Govt for June

No. 1836.

PROCEEDINGS OF GOVERNMENT

of Hawaii

Dated

12 June 1866

*Issuing orders on certain
correspondence relative to the result of
the experiment made to ascertain
the quantity of water required to
bring in a row of Paddy to maturity*

232.240