

Special Collections Research Center
North Carolina State University Libraries

Item Removal Form

Collection Number: MC 62

Collection Title: William H. Johnson Papers

Series: 7, Tobacco Freeze-Drying Research Correspondence

Subseries:

Box Number: 41

Folder Number: 10

Folder Title: Cooperative work with John Campbell of Imperial Tobacco on cut-strip and close-grown tobacco, 1975-1982

Description of item(s):

"Griffin Farm Trials 1976", 1975-1976, 10 pages

"Present Position on Flue Cured Tobacco, with Stalk, for Sheet Manufacture", 1974 and undated, 4 pages

Reason for removal: Oversize

Removed to:

Box Number: 46

Folder Number: 15

Folder Title: "Griffin Farm Trials 1976" and "Present Position on Flue-Cured Tobacco, with Stalk, for Sheet Manufacture"

Date of Removal: 1/17/07

Staff Initials: ARC

This sheet is to be used whenever an item is physically removed from its original location within a collection and placed in a separate housing location. The form should be filled out and printed in duplicate, with one copy remaining in the original filing location and one placed with the item(s) in the new location.

2/9/2005

27 ✓

Griffin Farm Trials 1976

About three acres planted. Speights G.28. Seeds in tape 2½" apart as in 1975. Excellent germination. Stands 20,000-40,000 per acre. 150 lbs. N. at planting. One plot additional 100 lbs. N. Methyl bromide still used in planting rows. Stauffer Devrinol good herbicide, no damage to plants - promising for future. Yields up to 6000 lbs./acre including stalk.

Ratoon Crop - cut stalk about 6"-10" above soil - refertilize with 4.8.12 and 15.0.14 - very fast growing 16 leaves in 16 days (B.C.A.). Lower nicotine in leaf. Why? Three acres on Griffin, One acre on University Farm.

Tobacco Processors, Wilson, N.C. (8.25.76 with B.C.A.)

Material chopped after removal of lower 1, 2, or 3 primings by hand. Hence 2-5, 3-5, 4-5 primings chopped compared with normal 5 primings. The lesser the number of primings chopped, the less the stalk produced. Chopped 4-5 primings for some reason looked thinner in body and lighter in color compared with comparable treatments. All lots looked good. Lamina ripe. Material being sent to Schweitzer U.S.A. to make sheet. Stalk is separated and later combined with lamina.

Half the material is being used by Rothmans and half by Philip Morris (slightly different field experiments).

Exercise is very much a futuristic one - which treatment gives good taste? Homogeneity of sheet considered important. Cost of producing sheet not important at this stage.

Schweitzer (Bill Selke Director of Research - 9.8.76)

Enthusiastic about taste of Griffin sheet compared say with close grown Canadian sheet (very poor indeed).

Programme will continue in 1977. Fred Clark retires in December (consultant?). Griffin very keen on project - success in part possibly due to fact that accustomed to field fumigation for gladioli bulb production. Is direct seeding applicable to other areas? Late frosts did occur with 1976 crop in Florida with little damage.

IMPSSR00P 1116

34

DEK RETRYING
IMPSSR00P RSTL

WILSON NC AUG 23 1976

PASSEY - RESEARCH
CAMPBELL

YOUR TLX 17 AUGUST. APOLOGIES DELAY DUE TO OUR TLX OUT OF ORDER.
BOTH SAMPLES COMPARABLE PLANT POSITION BUT ONE WITHOUT STALK HARVESTED
CONVENTIONALLY AND THE OTHER KNIFE CHOPPED AND HENCE CONTAINS STALK.

IMAGINE INSUFFICIENT MATERIAL TO MAKE SHEET. WOULD LIKE CHEMICAL
COMPARISON INCLUDING TAR/NICOTINE RATIO ON BOTH SAMPLES. COULD THE
KNIFE CHOPPED BE DONE WITH AND WITHOUT STALK. WITH THE FORMER MAY
BE EASIER TO REMOVE STALK AND ADD BACK IN PROPORTION BY WEIGHT.
PERHAPS A SMOKING TEST COULD BE MADE BETWEEN THE TWO SAMPLES WITHOUT
STALK. WRITING.

IMPSSR00P WLSN

IMPSSR00P RSTL.....
1138EST 001.94

cc-jdc
Sent
8-23-76
11:38a.m.

February 3, 1976

CO1/02/03/76/01

Imperial Tobacco Limited
Research Department
Raleigh Road
Bristol, ENGLAND BS3 1QX

Attention: Mr. M. L. Passey

Dear Mr. Passey:

I am forwarding to your attention twelve "High Nicotine Type" samples, to be shipped by container in our next shipment going direct to Bristol. I will telex details when available.

Our procedure for collecting these samples were similar to the "Low Sugar" samples. All these samples were selected purely on a subjective basis. Some characteristics looked for were upper leaf and tip, orange to mahogany color, heavy body, and ripe to overripeness. Blemish ran very high for most samples mainly because of overripeness.

Table I will give the government and company grades and the nicotine and sugar content of each sample. Also in the table you will find some availability information. All samples not listing a company grade were taken from the Flue-Cured Tobacco Cooperative Stabilization stocks in Wilson. There was a surprisingly large amount of this type of tobacco available in Stabilization stock. However, according to Mr. S. J. Reynolds, of our Leaf Department, this type of tobacco was in good demand in the Old Belt (ranging from .91-1.00 per pound) by Philip Morris and R. J. Reynolds.

Table II, enclosed in this letter, will give a subjective assessment of the twelve samples selected.

Included in this shipment are two samples from a Florida Harvesting Study. The sample without stalk was harvested from the top portion of the plant by a combine harvest and the sample with stalk was from a similar plant position but harvested by forage harvester. A letter is inclosed that will further explain the study.

Also enclosed in the shipment are two Ethlene gas treated samples from Mr. S. E. Stout.

If you have any questions regarding any of the samples, please contact me.

Sincerely yours,

R. F. Harrison
R & D Department

RFH/jbs
Enclosures

COPI	SEEN
SBS	/
WLW	/
CBC	/
RFH	/
GLA	/
FEW	/
JSC	/
TAU	/

JOHN - COULD YOU ANSWER
THIS - I AM NOT FULLY
CONVERSANT WITH THE WORK

IMPSGROUP WLSN

VIA WUI

IMPSGROUP BSTL

44791

17TH AUGUST, 1976.

FOR THE ATTENTION OF MR. R.F. HARRISON

REFERENCE YOUR LETTER 3RD FEBRUARY, 1976 - FLORIDA HARVESTING STUDY
IS TOBACCO INTENDED FOR PROCESSING AS CIGARETTE RAG AFTER REMOVAL
OF STALK OR IS IT FOR SHEET MANUFACTURE? PLEASE TELEX ANSWER.
ALSO PLEASE SEND DETAILS OF EXPERIMENT AND ANY PARTICULAR
OBJECTIVES AS SOON AS POSSIBLE.

M.L. PASSEY

IMPSGROUP WLSN

IMPSGROUP BSTL

Received
8-17-76
10:11a.m.

12.9

27.2

January 29, 1976

Mr. Fred Clark
Department of Agronomy
University of Florida
Gainesville, Florida 32611

Dear Fred:

Further to Mr. R. F. Harrison's letter of December 29 we have resampled the large "Harvest with stalk" and the "Harvest without stalk" samples and reanalysed them. Essentially there is no marked difference in the latter both with nicotine and sugar. The differences in the former can be attributed to our mind to amounts of stalk present in the sample.

We understood from you that results from other sources were higher. However the lamina results compare with the lamina results of equivalent cures in the small samples. Also they compare favorably with our previous analysis. Overall levels of nicotine in Florida are lower in general too. Maybe you would comment on this?

We wholeheartedly support your approach to direct seeding and we think that it is progressing most favorably. Closer spacing within the row should increase yields and we were surprised that these were not as high as expected. Problems with machine harvest of the green leaf do not seem to arise either.

In our November meeting in the U.K. and since, we have discussed the idea of close planting and chopping this "low quality" material and chopping "high quality" material à la Griffin. Both materials demand homogenization into sheet mainly because of the stalk present and hence a greatly added cost to the final product. We believe that they will also have a high tar/nicotine ratio. At this state therefore we are somewhat lukewarm to the concept.

We have sent the large samples to the U.K. for further appraisal.

With kind regards,

Yours sincerely,

J. S. Campbell

JSC/mr

cc: S.E.S.

FLORIDA HARVESTING STUDY

ROW	CURE	1ST CURE		2ND CURE			3RD CURE		4TH CURE		5TH CURE				
		NIC.	SUG.	NIC.	NIC.	SUG.	NIC.	SUG.	NIC.	SUG.	NIC.	SUG.			
1	P4F	.88	13.9	X5F	1.30	15.6	C4F	1.57	25.9	B3F	2.00	19.7	B4F	1.79	16.6
2	P4F	.78	11.5	X4F	1.15	11.2	X4F	1.61	16.6	H4F	2.10	19.5			
3	X3F	2.15	11.2	X4F	1.18	13.7	C4F	1.81	22.0	C5F	1.91	23.0			
4	X4F	.89	11.6	X4F	1.30	10.0	X4F	1.67	22.4	X4F	2.11	21.2			
5	H4F	.65	10.1	P5F	.71	11.2	X3F	.95	14.3	C5F	1.61	18.2			
6	X4F	.54	7.0	P5F	.69	7.2	X4F	1.11	21.2	X5F	1.73	16.0			
7	P4F	.65	7.4	P4F	.71	10.5	X3F	1.09	19.2	X4F	1.02	15.8			
8	P4F	.73	13.1	H5K	1.10	15.8	P4F	1.51	17.2	C5F	1.68	16.9			

1) HARVEST WITH STALK

<u>LAMINA ONLY</u>		<u>LAMINA AND STEM AND STALK</u>	
<u>NICOTINE %</u>	<u>SUGAR %</u>	<u>NICOTINE %</u>	<u>SUGAR %</u>
1.55	15.7	1.16	8.9

2) HARVEST WITHOUT STALK

<u>LAMINA ONLY</u>		<u>LAMINA AND STEM</u>	
<u>NICOTINE %</u>	<u>SUGAR %</u>	<u>NICOTINE %</u>	<u>SUGAR %</u>
2.11	12.8	1.50	10.2



UNIVERSITY OF FLORIDA
INSTITUTE OF FOOD AND AGRICULTURAL SCIENCES

GAINESVILLE, FLORIDA 32611

AGRONOMY DEPARTMENT

January 28, 1976

Mr. John Campbell
Imperial Group Limited
Research Department
American Leaf Organization
P.O. Box 1848
Wilson, North Carolina 27893

Dear John:

I enjoyed visiting with you on your recent visit to Florida and I hope your wife is feeling much better. The tobacco plant beds are coming along even though we have had the coldest weather since 1957-58. I am seed tapping today and I hope we get good germination, time will tell.

John you indicated that you would send us a revised report on the chemical data and I hope you have'nt forgotten this.

It was nice to have your comments at the meeting and I feel that we have a good group of farmers in Florida.

Come see us again.

I am
Sincerely yours,


Fred Clark,
Agronomist

FC:sc

EQUAL OPPORTUNITY EMPLOYER

COLLEGE OF AGRICULTURE

AGRICULTURAL EXPERIMENT STATIONS

COOPERATIVE EXTENSION SERVICE

SCHOOL OF FOREST RESOURCES AND CONSERVATION

CENTER FOR TROPICAL AGRICULTURE

IMPERIAL TOBACCO LIMITED

AMERICAN LEAF ORGANIZATION

POST OFFICE BOX 1848
WILSON, NORTH CAROLINA 27893

December 29, 1975

TELEPHONE (919) 237-5251
TWX 510-929-1671

Mr. Fred Clark
Agronomy Department
Institute of Food and Agricultural Sciences
University of Florida
Gainesville, FL 32611

Dear Mr. Clark:

Mr. John Campbell requested that I report the chemical results of two samples from your harvesting study.

The two samples were 1) harvest with stalk and 2) harvest without stalk.

The samples were treated using two methods. One test was run on lamina only, removing by hand the stem and/or stalk and the second test was run on the product as was including stem and stalk.

The results were:

1) Harvest with Stalk:

<u>Lamina Only</u>		<u>Lamina and Stem and Stalk</u>	
<u>Nic.%</u>	<u>Sug.%</u>	<u>Nic.%</u>	<u>Sug.%</u>
1.13	16.7	.89	13.2

2) Harvest without Stalk

<u>Lamina Only</u>		<u>Lamina and Stem</u>	
<u>Nic.%</u>	<u>Sug.%</u>	<u>Nic.%</u>	<u>Sug.%</u>
2.18	12.8	1.69	9.5

If you have questions concerning these results, please feel free to contact either Mr. Campbell or myself.

Sincerely yours,

R. F. Harrison
R & D Department

RFH/jbs

cc: Mr. J. S. Campbell



UNIVERSITY OF FLORIDA
INSTITUTE OF FOOD AND AGRICULTURAL SCIENCES

27.2

GAINESVILLE, FLORIDA 32611

AGRONOMY DEPARTMENT

September 26, 1975

Mr. John S. Campbell
The Imperial Tobacco
Company of Great Britian
Wilson, North Carolina

Dear John:

I have arrived home after a nice trip visiting several people.

The Campbell stop was very nice and I enjoyed meeting the family. You have many reasons for talking about your nice house and grounds. Something like that is always a challenge.

I shipped the tobacco samples and they are labeled: 1st digit is cure; 2nd digit is the row number. We made four multi-pass harvest and the chopped harvest.

The sample of stripped lamina was from stems, such as you see stem + lamina. The 5th cure sample is where we used the harvester for all harvest. (Only 1 row).

I hope this help explain the so-called code for the samples. I have a note from Basil about a forth coming visit to the states and I hope he will have some ideas, etc. !

Again thanks for your interest and hospitality.

Sincerely yours,


Fred Clark
Agronomist

FC/eg

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CENTER FOR TROPICAL AGRICULTURE

Fluoride

C-1 - 1 2 3 4 5 6 7 8.
P4F P4F X3F X4F H4F X4F P4F P4F

C-2 - 1, 2, 3, 4, 5 6 7 8.
X5F X4F X4F X4F P4F P5F P4F H5K

C-5 - 1. B4F Whole Leaf.

C-3 1 2 3 4 5 6 7 8
C4F X4F C4F X4F X3F X4F X3F ~~X~~ P4F

C-4 1 2 3 4 5 6 7 8
B3F H4F C5F X4F C5F X5F X4F C5F

9 lbs Strip Lamina Removed stems.

22 lbs Chopped leaf into stalks.
Curing 5.

Separate Bag Fine Trash Chopped leaf.

Can get more from University.

Present Position on Flue Cured Tobacco, with Stalk,
for Sheet Manufacture

History

Schweitzer originally worked on the idea of whole plant sheet making but were convinced that the stalk should be removed. They were persuaded out of this approach by the late E. Meizner of Rothmans, Canada, some 6-8 years ago. He advocated the very close planting of tobacco and I remember seeing some of his early plots.

During the early 70s the P.R.T. programme with BAT was started, to which ITL contributed. Various experiments were carried out and the sheet for the most part was made by BAT in the U.K. I have never obtained any definitive results (H.O. Research might possibly provide these) but R.M. Gibb has always reported to me that:

1. Smoke taste of sheet made from tobacco with stalk incorporated is inferior.
2. Cost of mechanically pulping such stalk is high. BAT did not try chemical pulping because of addition of chemicals to the product. As a result BAT lost interest and did not go into biological testing. A short report on a comparison between stalk and wood pulp, which was part of another report is attached (Appendix 1).

Much close planted work in Canada was carried out by BAT, as stated, and now for the past 2-3 years by the Research Station at Delhi (E.K. Walker).

B.C. Akehurst has been a promotor of the approach and Rothmans (U.K.) seem very keen on the idea. He has encouraged W.L. Johnson to work on the problem at Oxford, N.C. for the past three seasons.

In 1975 quite separately from the above, the Griffin Brothers, farmers of Branford, Florida, developed a technique by which the top half was chopped up by rotating circular blades, fitted to a conventional multi-harvest Roanoke combine, unlike the forage harvester used by Walker and Johnson.

Objective and Problems

It is difficult to fully comprehend the ramifications of this programme and how it has developed. To my mind it has been, and still is, a somewhat haphazard approach and not fully thought through. Probably the principal stimulus in Canada, as stated in a speech to growers in 1972 by Dr. D.G. Hamilton, Assistant Director-General of Agriculture, is to combat substitutes and to incorporate only tobacco materials in Canadian cigarettes. Products of a high and low quality, at a high and a low price respectively, are envisaged.

On the other hand, the costs and difficulties of production of normal high quality leaf have been steadily mounting and average field yields have been not increasing for a large number of years either in the U.S.A. or Canada. But the production of twice the yield of low quality tobacco "material" could considerably reduce costs though the equation:

Close grown chopped tobacco material 4000-6000 lbs. per acre	+	Sheet making paper process at 30c/lb. (estimate)	=	Must Less cost than normal tobacco or N.S.M.
--	---	--	---	---

All this of course assumes that the low quality material is useable. There are however two problems which are also vital to its success, which need to be evaluated, namely:

- (a) Smoking quality of sheet. There are indications that the less the amount of stalk present, the better the smoking quality. But what is the optimum level and would this level reduce the yield of material to a point where the equation above is less, or completely, uneconomic?

No account here is taken of the "filler" nature of such a material because of its exceptionally low nicotine content.

- (b) Smoking and health. An important objective of such a material, in addition to its high yield, would be to provide a "safer" product, with less T.P.M. and less specific, biological activity. Is stalk safer than stem? No work so far as is known has been carried out to date.

Programme in 1975

- (a) W.H. Johnson, Oxford, N.C.

About 1½-2 acres of close grown tobacco in ½ acre blocks, Variety Speight G.28, was transplanted one week apart over a period of three weeks at a spacing of 16" x 8"-10" (34000-38000 plants/acre). Growth was fair to good (100 lbs. nitrogen applied) and there were no problems from pests and diseases. Normal topping was done with contact chemical sucker control. Harvesting was carried out row by row by a New Holland Forage harvester pulling a forage wagon trailer at the rate of 10 tons of material per hour. Modular "curing" of the cut material was used. Half of the material was given to De Jong for the H.L.C. project and half was retained in the chopped form. Both will be used in the National Cancer Institute testing programme in the form of sheet, probably in the S.E.B. V experiment. Part of the material for H.L.C. was sprayed with Ethrel.

Chaplin provided a number of high nicotine selections for observation to see if higher nicotine levels than normal could be achieved from the close planting method. They were not harvested by chopping, but rather by the whole plant. No topping was done.

- (b) E.K. Walker, Delhi, Ontario

A pilot farm study entailing growing four acres for costing purposes was supported by the Canadian Tobacco Manufacturers Council. Variety D.34. Planting distance was 12" x 12" x 36" or 21,780 plants per acre. Fertilizer was applied at the rate of 300 lbs. 2.10.16. Preplanting, followed by 1400 lbs. 2.10.16 as sidedressing, or 34 lbs. nitrogen per acre, only about 6 lbs. above normal rates. Growth was excellent. Ethrel was applied prior to harvest and the field

harvested by a forage chopper as with Johnson. A direct attached machine was used in Canada in 1975 as opposed to a trailed machine in 1974. The material was bulk cured in boxes.

A selection of 20 varieties including high and low nicotine types, planted at the same spacing were grown, harvested and cured in the same manner for observation. Growth as with the Pilot Farm Study looked excellent in late August.

Schweitzer have just made sheet from the 1974 experiments and hope to repeat this from the 1975 experiment. Nevertheless there will be extra raw material available from the 1975 experiment. Some short term bioassay testing is anticipated to be done at the Universities of Guelph and Kentucky. N.C.I. have refused to do long term testing unless payment is made.

(c) Griffin Brothers, Branford, Florida

A separate report was issued previously to members of the C.L.T.C.

The main purpose of the 2-3 acre experiment was to try out direct seeding of tobacco in the field at different times of planting. This was very successful and will be expanded in 1976.

Secondary to this was the development of the idea of a rotating disc chopper attached to a harvesting machine, which could be raised or lowered, depending on how much of the plant it was desired to harvest. The equipment worked exceedingly well but was used to harvest the top 1/3-1/2 of the plant. A similar sized material as in (a) and (b) was produced and cured in bulk barns. In this case less stalk, though perhaps more woody, is expected and a higher "quality" tobacco with a higher nicotine.

The aim in both cases, close planting and chopping, is to increase material yields and reduce growing costs. A good number of companies and dealers visited this experiment. Universal purchased all the chopped material.

Future

There is a great need for simplifying the cultivation methods and cheapening the costs of production of flue cured tobacco in its present form. The current mechanical harvesting techniques, using multi-pass automatic combines and bulk curing in the U.S.A. and Canada, together with some of the new experimental approaches, such as low profile once-over harvest aim to make harvesting and curing easier and cheaper, whilst at the same time maintaining the quality of the whole leaf.

The possibility however of producing flue cured tobacco in a cut up or shredded form, satisfactory to the manufacturer, cannot be overlooked.

The close planting-chopping approach is very different. It should cut costs of production markedly but its quality is poor and its use in sheet form is almost certain. Its nicotine content is very low indeed. W.A. Selke of Schweitzer dealt at some length on the sheet aspect of such a material at the London Leaf Conference in May (his paper was sent forward to Secretary C.L.T.C. May 22, 1975). He tells me that there are no problems breaking up stalk by mechanical means.

It would seem desirable at this stage for the C.L.T.C. to decide whether they see any future for the chopped material in ITL blends and if so, whether they wish to test it and how they want to proceed.

7th May, 1974.

PRT-715
PROGRESS SUMMARY

Appendix 1.

Comparison of Stalk and Woodpulp

Following the study of the incorporation of stalk in PRT, various ways of processing stalk were examined. Two woodpulp were also included in the comparison to ascertain whether stalk had any smoke or subjective advantage over woodpulp in PRT. This study was undertaken before it was known that the use of stalk - or large proportions of stem - might not be necessary for machine runnability.

The pulping procedures for U.S. stalk were :-

Mechanical
Thermo-mechanical
Semi-chemical
Chemical

The woodpulp examined were :-

Unbleached kraft
L-Cellulose

Base sheets were prepared on the midget Fourdrinier and impregnated with extract from U.S. flue-cured strips.

It was established that mechanically pulped stalk gave the least irritant smoke of the four stalk PRTs produced. Inconsistency of results, probably due to the unpleasant subjective character of the six materials tested, made it impossible to establish whether stalk was preferred to woodpulp, or vice versa.

The smoke deliveries of stalk PRT in general showed no marked trend with pulping method, and were very similar to the deliveries of the woodpulp sheets. Stalk PRT TPM deliveries were, however, higher (29-36 mg/cig) than had been previously observed (13-17 mg/cig).