

**Spectral date summary for 846401**

**Barnes 12-1000**

15.00 degree FOV

5.90 meters above ground



Date	Time Period CUT	Illumination Angle-degrees		View Angle-degrees		% Cloud Cover	
		Zenith	Azimuth	Zenith	Azimuth		
840817	12:59 17:55	69 27	91 182	0 75	0 360	99	99
840819	12:28 13:41	75 61	86 98	0 75	0 360	0	5
840820	12:25 23:27	76 28 77	86 276	0 75	0 360	0	3
840919	18:01 22:42	39 78	188 261	0 75	0 360	0	0
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**Show day of year**



# 846401 Purdue Agronomy Farm Sorghum Polarization

**Researcher** Vern Vanderbilt

Crops Experiment

Purdue Agronomy Farm


Tippecanoe County



West Lafayette IN

0402813N Lat. 0865927W Long.

Illumination: Solar

Sorghum



Spectral Instruments	Dates	Wavelength Coverage ( $\mu\text{m}$ )	Data
<input type="radio"/> Barnes 12-1000	<input type="radio"/>		<input type="radio"/>
<input type="radio"/> Barnes 12-1000	<input type="radio"/>		<input type="radio"/>
<input type="radio"/>	<input type="radio"/>		<input type="radio"/>



**Description** **Factors** **Parameters**   

## Detector Description

Barnes 12-1000 sn 105 setup for 1984 Polarization Experiment-  
for 840817, 840819, and 840820

WFS	Detector No.	Detector Name	Wavelength Range		Wavelength Resolution		Sampling Resolution	Number of Samples
			Lower $\mu\text{m}$	Upper $\mu\text{m}$	%	$\mu\text{m}$		
1	1	Silicon	0.4500	0.5200	- 9	0.0700	0.0700	1
2	2	Silicon	0.4500	0.5200	- 9	0.0700	0.0700	1
3	3	Silicon	0.4500	0.5200	- 9	0.0700	0.0700	1
4	4	Silicon	0.7600	0.9000	- 9	0.1400	0.1400	1
5	5	Lead Sulfide	2.0800	2.3500	- 9	0.2700	0.2700	1
6	6	Lead Sulfide	2.0800	2.3500	- 9	0.2700	0.2700	1
7	7	Lead Sulfide	2.0800	2.3500	- 9	0.2700	0.2700	1
8	8	Pyroelectric	10.4000	12.5000	- 9	2.1000	2.1000	1

-> 900919 set

## Detector Description



Barnes 12-1000 sn 105 setup for 1984 Polarization Experiment-840919

WFS	No.	Detector Name	Wavelength Range		Wavelength Resolution		Sampling Resolution	Number of Samples
			Lower	Upper	%	$\mu\text{m}$		
			$\mu\text{m}$	$\mu\text{m}$		$\mu\text{m}$		
1	1	Silicon	0.4500	0.5200	- 9	0.0700	0.0700	1
2	2	Silicon	0.4500	0.5200	- 9	0.0700	0.0700	1
3	3	Silicon	0.4500	0.5200	- 9	0.0700	0.0700	1
4	4	Silicon	0.7600	0.9000	- 9	0.1400	0.1400	1
5	5	Lead Sulfide	1.5500	1.7500	- 9	0.2000	0.2000	1
6	6	Lead Sulfide	1.5500	1.7500	- 9	0.2000	0.2000	1
7	7	Lead Sulfide	1.5500	1.7500	- 9	0.2000	0.2000	1
8	8	Pyroelectric	10.4000	12.5000	- 9	2.1000	2.1000	1



-> August 1984 set



## Detector Description



Barnes 12-1000 sn 108 setup for 1984 Polarization Experiment

WFS	No.	Detector Name	Wavelength Range		Wavelength Resolution		Sampling Resolution	Number of Samples
			Lower	Upper	%	$\mu\text{m}$		
	1	Silicon	0.6300	0.6900	- 9	0.0600	0.0600	1
	2	Silicon	0.5200	0.6000	- 9	0.0800	0.0800	1
	3	Silicon	0.6300	0.6900	- 9	0.0600	0.0600	1
	4	Silicon	0.6300	0.6900	- 9	0.0600	0.0600	1
	5	Lead Sulfide	1.1500	1.3000	- 9	0.1500	0.1500	1
	6	Lead Sulfide	1.1500	1.3000	- 9	0.1500	0.1500	1
	7	Lead Sulfide	1.1500	1.3000	- 9	0.1500	0.1500	1
	8	Pyroelectric	10.4000	12.5000	- 9	2.1000	2.1000	1



8/19/84  
 75 46.7 48.1 46.2 21.1 1.9 2.0 1.7  
 64 37.4 37.2 36.4 20.8 3.8 3.8 3.8  
 61 ~~41.4~~ 5 shaded. 3.8 3.8 3.8

2mtd  
 76° 35.0 36.4 34.0 12.7 1.3 1.2 1.2  
 35.1 36.5 34.3 12.7 1.5 1.0 1.3

39° 11.2 11.4 10.7 5.4 0.6 0.6 0.6  
 11.1 11.3 10.6 5.4 0.5 0.6 0.6

8/12/82  
 54° 23.4 17.8 12.3 10.3 4.6 2.6 1.1  
 26° 17.1 13.3 9.4 9.9 5.5 3.2 1.5  
 48° 24.1 19.3 14.4 13.0 2.8 0.2 4.6

9/19/84  
 34° 19.5 16.0 15.0 6.7 2.7 2.8 2.7  
 40° 19.4 15.9 14.4 6.4 2.3 2.3 2.4  
 44° 19.7 16.4 15.3 7.1 2.8 2.8 2.8  
 50° 19.7 16.3 15.1 6.9 2.6 2.7 2.6  
 54° 19.8 20.7 19.3 8.5 3.2 3.4 3.3  
 70° 28.4 29.9 28.7 10.9 3.7 3.9 3.7  
 73° 35.7 37.6 34.9 12.5 4.3 4.4 4.4

Trying to verify that MWR 105 used 2.05-2.35 bands in August and 1.55-1.95 bands in September. 10-7-90

2.00

# Polarization Angles for Barnes 108

8-24-84

Lamp = 6.10 A

Lamp opening 2 cm.

93.5' 9h

Distance between Lamp + Barnes = 1.0 m.

Channel #	Max Voltage mV	Min	Max Voltage Volts	Max	Min	Dark mV			
1	29	300° 50'	301° 35'	302° 20'	3.0	309	292	331.5	4
2									
3	29	77° 00'	77° 25'	77° 50'	2.9	162.5		169.5	4
4	4	211° 30'	211° 40'	211° 50'	2.9	299	300.5°	302	4
5	3	177° 00'	178° 20'	179° 40'	3.16	76°	81°	86.5°	3
6	3	42° 20'	43° 05'	43° 50'	2.84	129°	133°	137°	2-3
7	1-2	88° 00'	89° 27'	90° 55'	3.24	179°	181° 15'	183.5°	1-2
4	4	135° 20'	137° 55'	140° 30'	1.05	40°	47° 20'	54° 40'	4
		IR Polarizer							
Barnes 105									
1	535	75° 40'	77° 20'	79° 00'	1.800	1605	164.5	169	8
2	20	30° 50'	32° 25'	34° 00'	1.325	120°	124	128	7
3	50	161.5°	166.5°	171.5°	2.1.2	251.5	257° 45'	264.0	23
4			90						
5	420	129° 20'	131° 30'	133° 40'	4.0	34°	40° 15'	46.5°	3
6	411	175°	177° 5'	179° 10'	3.3	81.5°	85°	86.5°	3
7	405 20'	41° 20'	42° 10'	43°	3.7	129°	132° 20'	135° 40'	2
2		12° 40'	126° 40'	139° 45'	142° 50'	39°	46° 15'	53.5°	7
		IR polarizer used for angle determination							

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2.3  
.001

0023

25630

211° 40'

180

31° 40'

45

301 35

144 00

121 35

# MMR Filter Arrangement for Polarization Study

8-14-89

A. Bickel

Prep  
Adj

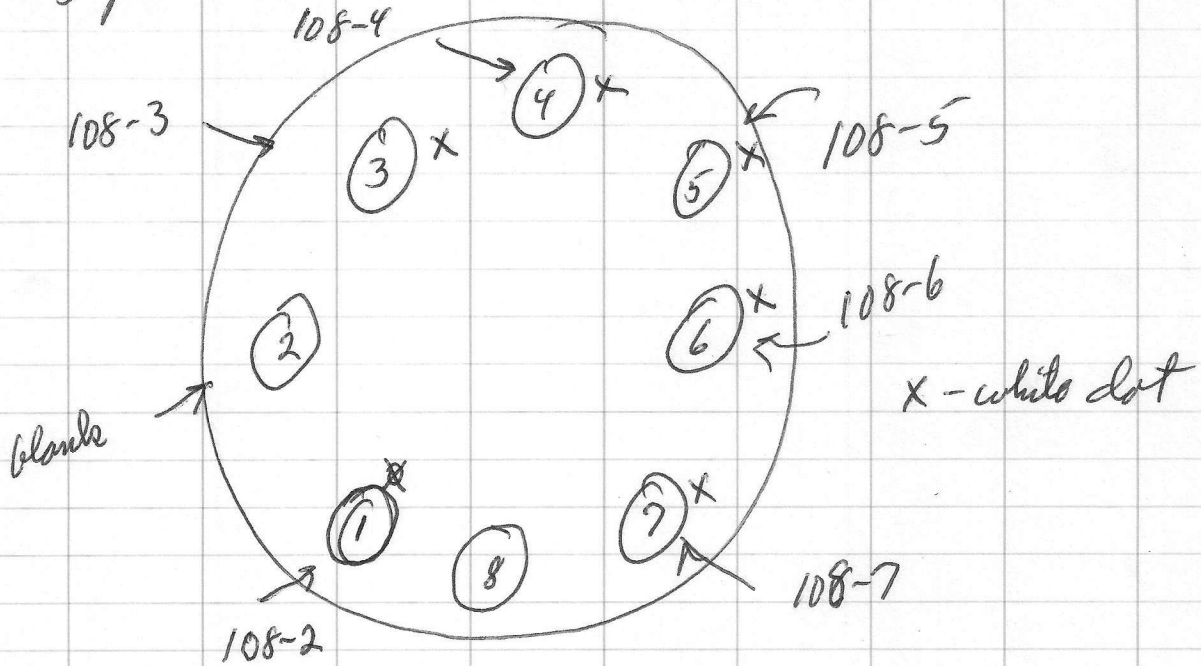
Chart	Band	From Tables			
Instrument 105					
✓ 1	.45-.52 (1)	✓ 105			—
✓ 2	.45-.52 (1)	✓ Proto	adjusted prep		105-1
✓ 3	.45-.52 (1)	✓ 108 (110)			105-1
✓ 4	.76-.90 (4)	✓ 105	no polarizer		—
✓ 5	2.08-2.35 (7)	✓ 108			105-7
✓ 6	2.08-2.35 (7)	✓ Proto			105-7 (not quite same)
✓ 7	2.08-2.35 (7)	✓ 105			—
✓ 8	Thermal (8)	✓ 105			
Instrument 108					
✓ 1	.63-.69 (3)	✓ 105			108-3
✓ 2	.52-.60 (2)	✓ 108	no. polarizer		—
✓ 3	.63-.69 (3)	✓ 108			—
✓ 4	.63-.69 (3)	✓ Proto			108-3
✓ 5	1.15-1.30 (5)	✓ 108			
✓ 6	1.15-1.30 (5)	✓ Proto			108-5
✓ 7	1.15-1.30 (5)	✓ 105			108-5
✓ 8	Thermal (8)	✓ 108			—
Prototype					
✓ 1	.52-.60 (2)	✓ 105			
✓ 2	.52-.60 (2)	✓ Proto			
✓ 3	.76-.90 (4)	✓ 108			
✓ 4	.76-.90 (4)	✓ Proto			
✓ 5	1.55-1.75 (6)	✓ 108			
✓ 6	1.55-1.75 (6)	✓ Proto			
✓ 7	1.55-1.75 (6)	✓ 105			
✓ 8	Thermal (8)	✓ Proto			



# Polarizer Arrangement for ~~108~~ MMR

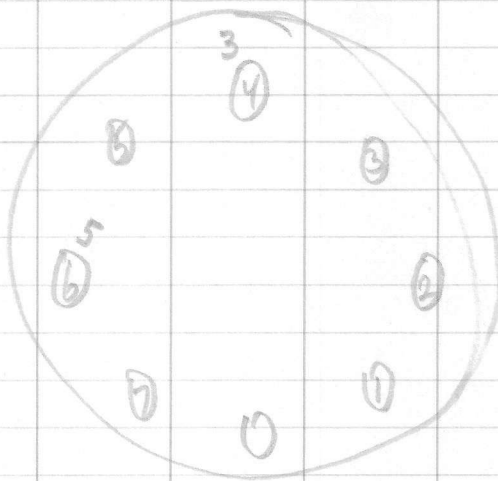
8-26-84  
L. B. ...  
SN 108

Looking from inside MMR to outside



filter direction

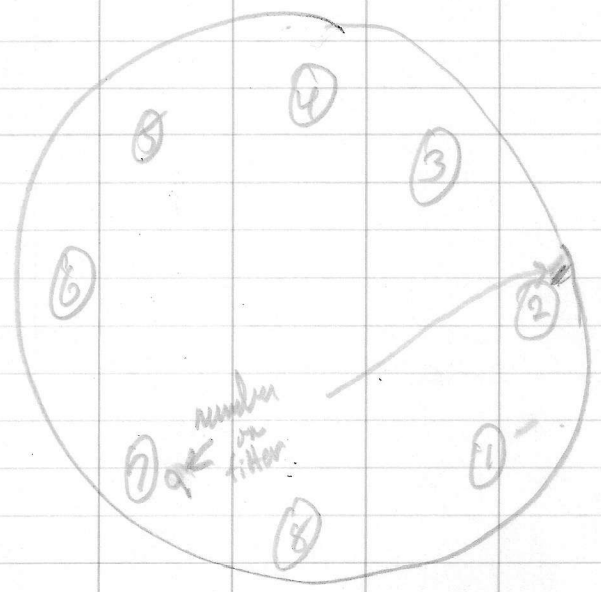
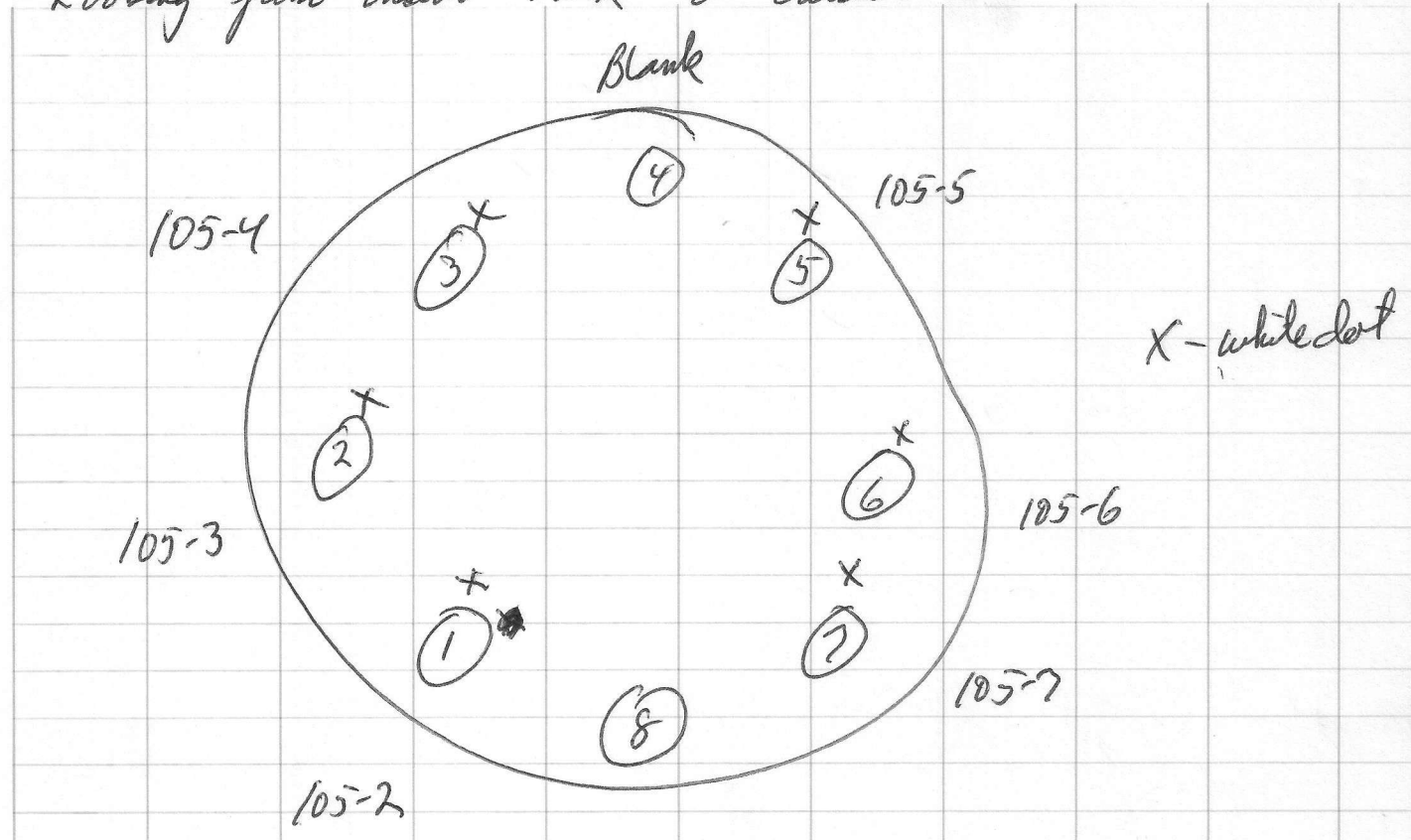
9-19-84



8-27-84  
L. Bickel  
SN-105

# Polarizer Arrangement for MMR

Looking from inside MMR to outside



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9-19-84  
L. Bickel

# MMR Filter Arrangement for Polarization Study

Chan#      Band      From Instr      Group      Adjust

## Instrument 105

1	.45-.52 (1)	✓ ✓ 105		-
2	.45-.52 (1)	✓ ✓ Proto		105-1
3	.45-.52 (1)	✓ 108 (11)		105-1
4	.76-.90 (4)	✓ ✓ 105		-
5	1.55-1.75 (6)	✓ 1080		105-6
6	1.55-1.75 (6)	✓ ✓ 105		-
7	1.55-1.75 (6)	✓ ✓ Proto		105-6
8	Thermal (8)	✓ ✓ 105		-

## Instrument 108

1	.63-.69 (3)	✓ 105		108-3
2	.52-.60 (2)	✓ ✓ 108		-
3	.63-.69 (3)	✓ ✓ 108		-
4	.63-.69 (3)	✓ ✓ Proto		108-3
5	1.15-1.30 (5)	✓ ✓ 108	↓	-
6	1.15-1.30 (5)	✓ Proto	108-7	108-5
7	1.15-1.30 (5)	✓ 105		108-5
8	Thermal (8)	✓ ✓ 108	↑	-

change made  
on 9-20

## Prototype

1	.52-.60 (2)	✓ ✓ 105		
2	.52-.60 (2)	✓ ✓ Proto		
3	.76-.90 (4)	✓ 108		
4	.76-.90 (4)	✓ ✓ Proto		
5	2.08-2.35 (7)	✓ 108		
6	2.08-2.35 (7)	✓ ✓ 105		
7	2.08-2.35 (7)	✓ ✓ Proto		
8	Thermal (8)	✓ ✓ Proto		

readying  
prototypes for  
tests

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Rep. I

1984 Angle Study (Tower) Polarization  
 Sky Condition \_\_\_\_\_

Start Date 8-16-84  
 Stop Time \_\_\_\_\_  
 Cloud Cover (%) \_\_\_\_\_

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Target	Instru Boom Azimuth	View Az-Zen	Code-#Obs	Loc Time	Target	Instru Boom Azimuth	View Az-Zen	Code-#Obs	Loc Time
Set Gain ?					Wheat	270	0-70	10-1	
Picture of Time ?							60		
Dark							45		
Dark			7-2				30		
BasO <sub>4</sub>	180	180-0	8-3				22		
Shadow	180	180-0	9-2				15		
Sorghum	180	270-70	270-1				7		
		60					0		
		45					180-7	180-1	
		30					15		
		22					22		
		15					30		
		7					45		
		0					60		
		90-7	90-1				70		
		15				315	45-70	45-1	
		22					60		
		30					45		
		45					30		
		60					22		
		70					15		
	225	315-70	315-1				7		
		60					0		
		45					225-7	225-1	
		30					15		
		22					22		
		15					30		
		7					45		
		0					60		
		135-7	135-1				70		
		15							
		22				BasO <sub>4</sub>	180	180-0	8-3
		30				Shadow	180	180-0	9-2
		45				Dark	-	-	7-2
		60							
		70							

1984 Angle Study (Tower)

Starts 7:00 AM 11/16/84

Rep 2

Sky Condition \_\_\_\_\_ Polarization \_\_\_\_\_

Date \_\_\_\_\_ Time \_\_\_\_\_ Cloud Cover (%) \_\_\_\_\_

Start \_\_\_\_\_ Stop \_\_\_\_\_

Target	Instru Beam Azimuth	View Az-Zen	Cable-#Obs	Line Time	Target	Instru Beam Azimuth	View Az-Zen	Cable-#Obs	Line Time
					Wheat	90	180-70	180-1	
							60		
							45		
Dark	—	—	7-2				30		
BasOy	180	180-0	8-3				22		
Shadow	180	180-0	9-2				15		
Sorghum	0	90-70	90-1				7		
		60					0		
		45				0-7	0-1		
		30					15		
		22					22		
		15					30		
		7					45		
		0					60		
		270-7	270-1				70		
		15			135	225-70	225-1		
		22				60			
		30				45			
		45				30			
		60				22			
		70				15			
	45	135-70	135-1			7			
		60				0			
		45				45-7	45-1		
		30				15			
		22				22			
		15				30			
		7				45			
		0				60			
		315-7	315-1			70			
		15							
		22							
		30							
		45							
		60							
		70							
					BasOy	180	180-0	8-3	
					Shadow	180	180-0	9-2	
					Dark	—	—	7-2	

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L. Brown

Sky

1984 Angle Study (Tower) Polarization  
Sky Condition \_\_\_\_\_

8-16-84 ~~8-20-83~~ ~~9-10-84~~  
Date \_\_\_\_\_ L. Birch

Time \_\_\_\_\_ Cloud Cover (%) \_\_\_\_\_

Start \_\_\_\_\_  
Stop \_\_\_\_\_

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Target	Instr Boom Azimuth	View Az-Zen	Code- <sup>o</sup> Obs	Time	Target	Instr Boom Azimuth	View Az-Zen	Code- <sup>o</sup> Obs	Time
"Gains = X.1"									
Dark			7-2						
Sky	180	270-75	51-1		Sky	45	135-75	57-1	
		60	↓				60	↓	
		45					45		
		30					30		
		15					15		
		0					0		
		90-15	52-1			315-15	58-1		
		30	↓			30	↓		
		45						45	
		60						60	
		75						75	
	135	225-75	53-1		Sum			50-1	
		60	↓		Dark			7-2	
		45							
		30							
		15							
		0							
		45-15	54-1		Change Gains Back for Sorghum <sup>u</sup>				
		30	↓		Dark			7-2	
		45							
		60							
		75							
		0							
	90	180-75	55-1						
		60	↓						
		45							
		30							
		15							
		0							
		0-15	56-1						
		30	↓						
		45							
		60							
		75							