

# STARCH INDEX SCALE

---

SUGGESTED CA STORAGE STARCH INDEX AND FIRMNESS LEVELS  
FOR COMMERCIAL APPLE VARIETIES IN MICHIGAN



**SCS** | STORAGE CONTROL SYSTEMS

**MICHIGAN STATE UNIVERSITY**



VERSION 1.0 · SPRING 2023



# STARCH INDEX SCALE v1.0

# AMBROSIA



C O R E   S T A I N

C O R T E X / F L E S H   S T A I N

## TESTING INSTRUCTIONS

- Collect a sample of apples from the orchard. Maturity tests should be performed on at least 10 fruit to represent the average in the block. Samples should be at least room temperature for best results.
- Stain apples as soon as possible after samples have been collected. Use an iodine solution of 10g I<sub>2</sub> and 40g KI per gallon.
- Cut apples in half at the equator. Immediately dip, spray, or roll starch solution on cut surface.
- Wait for pattern to develop, which may be several minutes, but rate sample within 20-30 minutes before cut surface of fruit turns brown.
- Compare each fruit with patterns in this chart and record the corresponding starch value.

FIRMNESS (POUNDS)	15	SHORT CA
	16	MID CA
	17	LONG CA
STARCH INDEX	3	OPTIMAL CA
	4	MATURE
	6	OVER MATURE



STORAGE CONTROL SYSTEMS  
STORAGECONTROL.COM · 800.487.7994 · INFO@STORAGECONTROL.COM

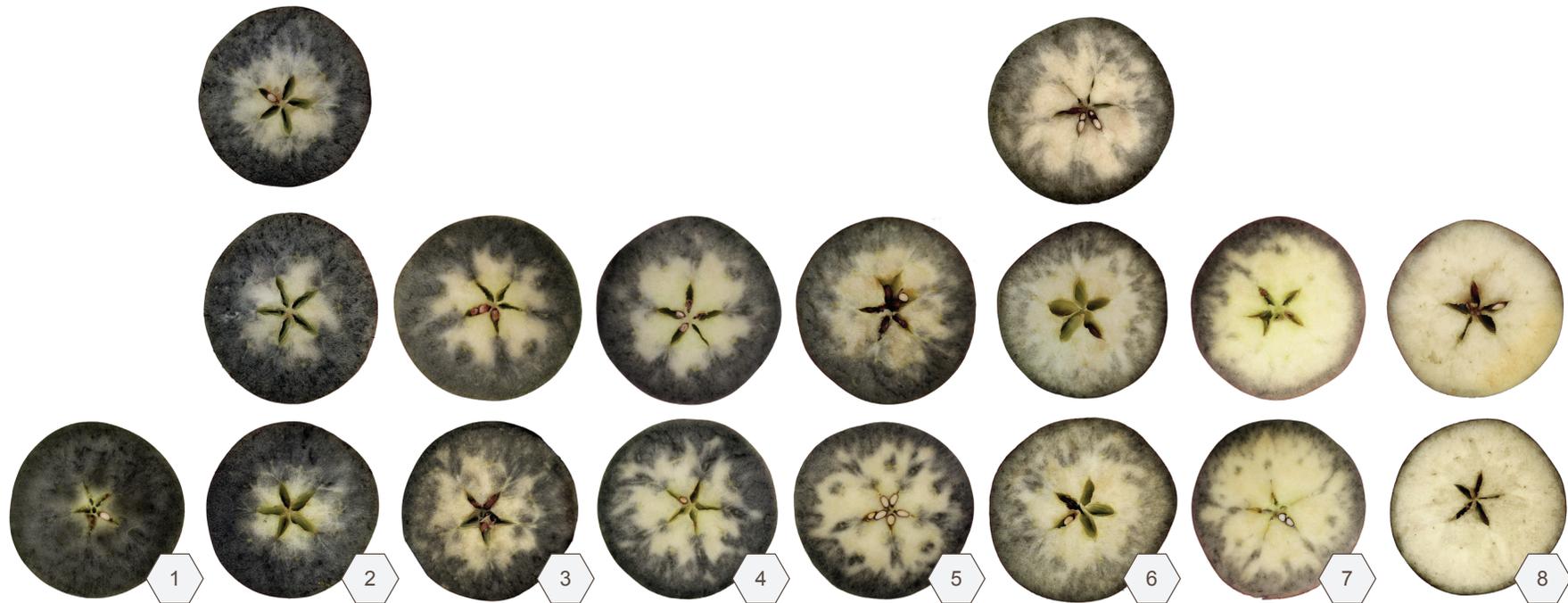
MICHIGAN STATE UNIVERSITY

Photos & Development by the Michigan State University Apple Maturity Program  
Contact: Randy Beaudry · beaudry@msu.edu



# STARCH INDEX SCALE v1.0

# BRAEBURN



C O R E   S T A I N

C O R T E X / F L E S H   S T A I N

## TESTING INSTRUCTIONS

- Collect a sample of apples from the orchard. Maturity tests should be performed on at least 10 fruit to represent the average in the block. Samples should be at least room temperature for best results.
- Stain apples as soon as possible after samples have been collected. Use an iodine solution of 10g I<sub>2</sub> and 40g KI per gallon.
- Cut apples in half at the equator. Immediately dip, spray, or roll starch solution on cut surface.
- Wait for pattern to develop, which may be several minutes, but rate sample within 20-30 minutes before cut surface of fruit turns brown.
- Compare each fruit with patterns in this chart and record the corresponding starch value.

FIRMNESS (POUNDS)	16	SHORT CA
	17	MID CA
	18	LONG CA
STARCH INDEX	2.5	OPTIMAL CA
	3	MATURE
	7	OVER MATURE



STORAGE CONTROL SYSTEMS  
STORAGECONTROL.COM · 800.487.7994 · INFO@STORAGECONTROL.COM

MICHIGAN STATE UNIVERSITY

Photos & Development by the Michigan State University Apple Maturity Program  
Contact: Randy Beaudry · beaudry@msu.edu





C O R E   S T A I N

C O R T E X / F L E S H   S T A I N

## TESTING INSTRUCTIONS

- Collect a sample of apples from the orchard. Maturity tests should be performed on at least 10 fruit to represent the average in the block. Samples should be at least room temperature for best results.
- Stain apples as soon as possible after samples have been collected. Use an iodine solution of 10g I<sub>2</sub> and 40g KI per gallon.
- Cut apples in half at the equator. Immediately dip, spray, or roll starch solution on cut surface.
- Wait for pattern to develop, which may be several minutes, but rate sample within 20-30 minutes before cut surface of fruit turns brown.
- Compare each fruit with patterns in this chart and record the corresponding starch value.

FIRMNESS (POUNDS)	14	SHORT CA
	15	MID CA
	16	LONG CA
STARCH INDEX	2	OPTIMAL CA
	3.5	MATURE
	6	OVER MATURE

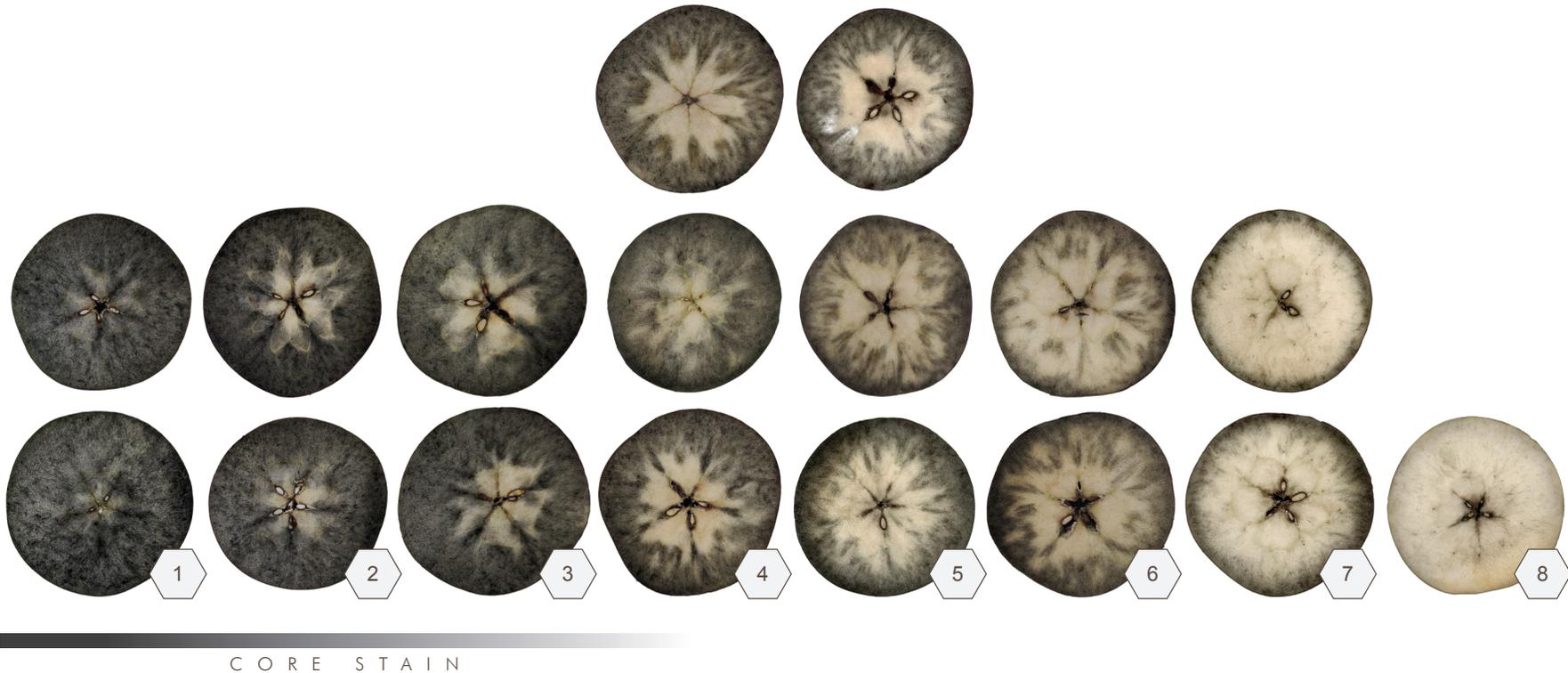


STORAGE CONTROL SYSTEMS  
STORAGECONTROL.COM · 800.487.7994 · INFO@STORAGECONTROL.COM

MICHIGAN STATE UNIVERSITY

Photos & Development by the Michigan State University Apple Maturity Program  
Contact: Randy Beaudry · beaudry@msu.edu





## TESTING INSTRUCTIONS

- Collect a sample of apples from the orchard. Maturity tests should be performed on at least 10 fruit to represent the average in the block. Samples should be at least room temperature for best results.
- Stain apples as soon as possible after samples have been collected. Use an iodine solution of 10g I<sub>2</sub> and 40g KI per gallon.
- Cut apples in half at the equator. Immediately dip, spray, or roll starch solution on cut surface.
- Wait for pattern to develop, which may be several minutes, but rate sample within 20-30 minutes before cut surface of fruit turns brown.
- Compare each fruit with patterns in this chart and record the corresponding starch value.

FIRMNESS (POUNDS)	18	SHORT CA
	20	MID CA
	22	LONG CA
STARCH INDEX	2.5	OPTIMAL CA
	3	MATURE
	7	OVER MATURE



STORAGE CONTROL SYSTEMS  
STORAGECONTROL.COM · 800.487.7994 · INFO@STORAGECONTROL.COM

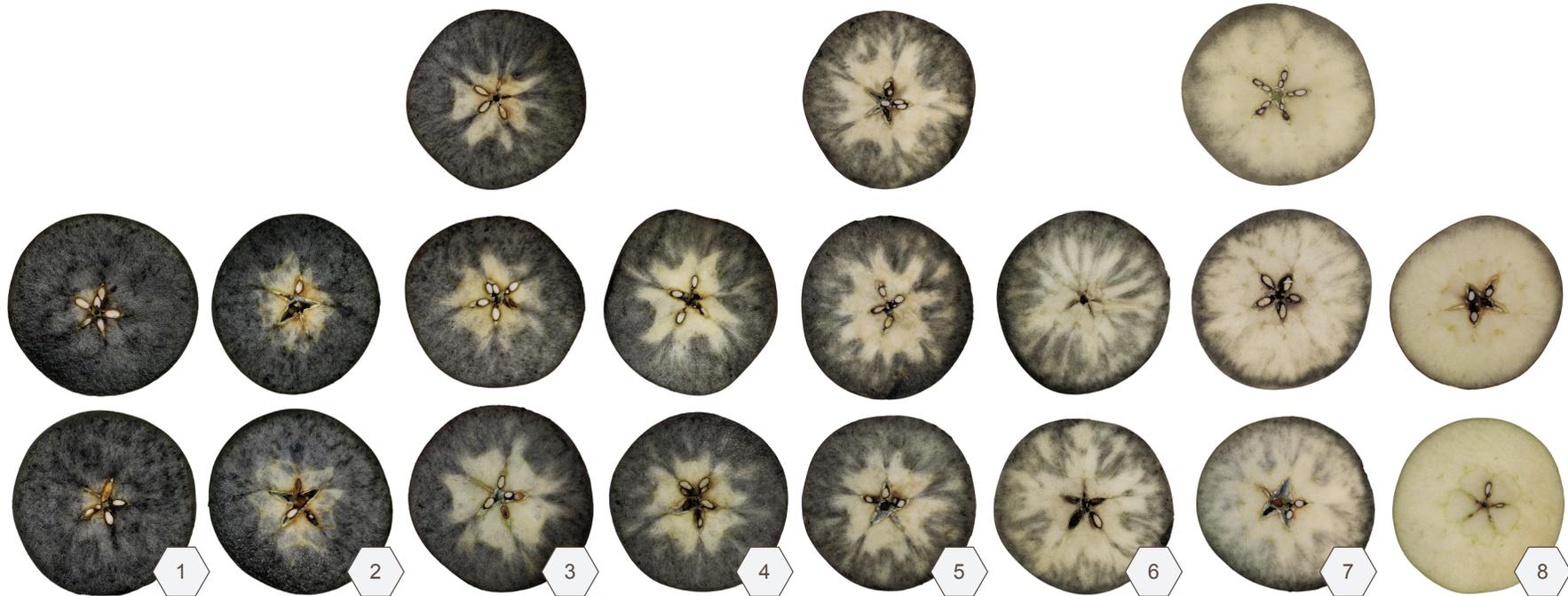
MICHIGAN STATE UNIVERSITY

Photos & Development by the Michigan State University Apple Maturity Program  
Contact: Randy Beaudry · beaudry@msu.edu



# STARCH INDEX SCALE v1.0

# FUJI



C O R E   S T A I N

C O R T E X / F L E S H   S T A I N

## TESTING INSTRUCTIONS

- Collect a sample of apples from the orchard. Maturity tests should be performed on at least 10 fruit to represent the average in the block. Samples should be at least room temperature for best results.
- Stain apples as soon as possible after samples have been collected. Use an iodine solution of 10g I<sub>2</sub> and 40g KI per gallon.
- Cut apples in half at the equator. Immediately dip, spray, or roll starch solution on cut surface.
- Wait for pattern to develop, which may be several minutes, but rate sample within 20-30 minutes before cut surface of fruit turns brown.
- Compare each fruit with patterns in this chart and record the corresponding starch value.

FIRMNESS (POUNDS)	16	SHORT CA
	17	MID CA
	18	LONG CA
STARCH INDEX	2.5	OPTIMAL CA
	3	MATURE
	7	OVER MATURE



STORAGE CONTROL SYSTEMS  
STORAGECONTROL.COM · 800.487.7994 · INFO@STORAGECONTROL.COM

MICHIGAN STATE UNIVERSITY

Photos & Development by the Michigan State University Apple Maturity Program  
Contact: Randy Beaudry · beaudry@msu.edu





C O R E   S T A I N

C O R T E X / F L E S H   S T A I N

## TESTING INSTRUCTIONS

- Collect a sample of apples from the orchard. Maturity tests should be performed on at least 10 fruit to represent the average in the block. Samples should be at least room temperature for best results.
- Stain apples as soon as possible after samples have been collected. Use an iodine solution of 10g I<sub>2</sub> and 40g KI per gallon.
- Cut apples in half at the equator. Immediately dip, spray, or roll starch solution on cut surface.
- Wait for pattern to develop, which may be several minutes, but rate sample within 20-30 minutes before cut surface of fruit turns brown.
- Compare each fruit with patterns in this chart and record the corresponding starch value.

FIRMNESS (POUNDS)	16	SHORT CA
	17	MID CA
	18	LONG CA
STARCH INDEX	2	OPTIMAL CA
	3	MATURE
	6	OVER MATURE



STORAGE CONTROL SYSTEMS  
STORAGECONTROL.COM · 800.487.7994 · INFO@STORAGECONTROL.COM

MICHIGAN STATE UNIVERSITY

Photos & Development by the Michigan State University Apple Maturity Program  
Contact: Randy Beaudry · beaudry@msu.edu





C O R E   S T A I N

C O R T E X / F L E S H   S T A I N

## TESTING INSTRUCTIONS

- Collect a sample of apples from the orchard. Maturity tests should be performed on at least 10 fruit to represent the average in the block. Samples should be at least room temperature for best results.
- Stain apples as soon as possible after samples have been collected. Use an iodine solution of 10g I<sub>2</sub> and 40g KI per gallon.
- Cut apples in half at the equator. Immediately dip, spray, or roll starch solution on cut surface.
- Wait for pattern to develop, which may be several minutes, but rate sample within 20-30 minutes before cut surface of fruit turns brown.
- Compare each fruit with patterns in this chart and record the corresponding starch value.

FIRMNESS (POUNDS)	15	SHORT CA
	16	MID CA
	17	LONG CA
STARCH INDEX	2	OPTIMAL CA
	3	MATURE
	6.5	OVER MATURE



STORAGE CONTROL SYSTEMS  
STORAGECONTROL.COM · 800.487.7994 · INFO@STORAGECONTROL.COM

MICHIGAN STATE UNIVERSITY

Photos & Development by the Michigan State University Apple Maturity Program  
Contact: Randy Beaudry · beaudry@msu.edu





C O R E   S T A I N

C O R T E X / F L E S H   S T A I N

## TESTING INSTRUCTIONS

- Collect a sample of apples from the orchard. Maturity tests should be performed on at least 10 fruit to represent the average in the block. Samples should be at least room temperature for best results.
- Stain apples as soon as possible after samples have been collected. Use an iodine solution of 10g I<sub>2</sub> and 40g KI per gallon.
- Cut apples in half at the equator. Immediately dip, spray, or roll starch solution on cut surface.
- Wait for pattern to develop, which may be several minutes, but rate sample within 20-30 minutes before cut surface of fruit turns brown.
- Compare each fruit with patterns in this chart and record the corresponding starch value.

FIRMNESS (POUNDS)	16	SHORT CA
	17	MID CA
	18	LONG CA
STARCH INDEX	3	OPTIMAL CA
	3	MATURE
	5	OVER MATURE



STORAGE CONTROL SYSTEMS  
STORAGECONTROL.COM · 800.487.7994 · INFO@STORAGECONTROL.COM

MICHIGAN STATE UNIVERSITY

Photos & Development by the Michigan State University Apple Maturity Program  
Contact: Randy Beaudry · beaudry@msu.edu





C O R E   S T A I N

C O R T E X / F L E S H   S T A I N

## TESTING INSTRUCTIONS

- Collect a sample of apples from the orchard. Maturity tests should be performed on at least 10 fruit to represent the average in the block. Samples should be at least room temperature for best results.
- Stain apples as soon as possible after samples have been collected. Use an iodine solution of 10g I<sub>2</sub> and 40g KI per gallon.
- Cut apples in half at the equator. Immediately dip, spray, or roll starch solution on cut surface.
- Wait for pattern to develop, which may be several minutes, but rate sample within 20-30 minutes before cut surface of fruit turns brown.
- Compare each fruit with patterns in this chart and record the corresponding starch value.

FIRMNESS (POUNDS)	15	SHORT CA
	16	MID CA
	17	LONG CA
STARCH INDEX	3.5	OPTIMAL CA
	3.5	MATURE
	6	OVER MATURE



STORAGE CONTROL SYSTEMS  
STORAGECONTROL.COM · 800.487.7994 · INFO@STORAGECONTROL.COM

MICHIGAN STATE UNIVERSITY

Photos & Development by the Michigan State University Apple Maturity Program  
Contact: Randy Beaudry · beaudry@msu.edu





C O R E   S T A I N

C O R T E X / F L E S H   S T A I N

## TESTING INSTRUCTIONS

- Collect a sample of apples from the orchard. Maturity tests should be performed on at least 10 fruit to represent the average in the block. Samples should be at least room temperature for best results.
- Stain apples as soon as possible after samples have been collected. Use an iodine solution of 10g I<sub>2</sub> and 40g KI per gallon.
- Cut apples in half at the equator. Immediately dip, spray, or roll starch solution on cut surface.
- Wait for pattern to develop, which may be several minutes, but rate sample within 20-30 minutes before cut surface of fruit turns brown.
- Compare each fruit with patterns in this chart and record the corresponding starch value.

FIRMNESS (POUNDS)	14	SHORT CA
	15	MID CA
	16	LONG CA
STARCH INDEX	2.5	OPTIMAL CA
	3.5	MATURE
	5.5	OVER MATURE



STORAGE CONTROL SYSTEMS  
STORAGECONTROL.COM · 800.487.7994 · INFO@STORAGECONTROL.COM

MICHIGAN STATE UNIVERSITY

Photos & Development by the Michigan State University Apple Maturity Program  
Contact: Randy Beaudry · beaudry@msu.edu



# STARCH INDEX SCALE v1.0

# JONAGOLD



C O R E   S T A I N

C O R T E X / F L E S H   S T A I N

## TESTING INSTRUCTIONS

- Collect a sample of apples from the orchard. Maturity tests should be performed on at least 10 fruit to represent the average in the block. Samples should be at least room temperature for best results.
- Stain apples as soon as possible after samples have been collected. Use an iodine solution of 10g I<sub>2</sub> and 40g KI per gallon.
- Cut apples in half at the equator. Immediately dip, spray, or roll starch solution on cut surface.
- Wait for pattern to develop, which may be several minutes, but rate sample within 20-30 minutes before cut surface of fruit turns brown.
- Compare each fruit with patterns in this chart and record the corresponding starch value.

FIRMNESS (POUNDS)	15	SHORT CA
	16	MID CA
	17	LONG CA
STARCH INDEX	2.5	OPTIMAL CA
	3.5	MATURE
	5.5	OVER MATURE



STORAGE CONTROL SYSTEMS  
STORAGECONTROL.COM · 800.487.7994 · INFO@STORAGECONTROL.COM

MICHIGAN STATE UNIVERSITY

Photos & Development by the Michigan State University Apple Maturity Program  
Contact: Randy Beaudry · beaudry@msu.edu





C O R E   S T A I N

C O R T E X / F L E S H   S T A I N

## TESTING INSTRUCTIONS

- Collect a sample of apples from the orchard. Maturity tests should be performed on at least 10 fruit to represent the average in the block. Samples should be at least room temperature for best results.
- Stain apples as soon as possible after samples have been collected. Use an iodine solution of 10g I<sub>2</sub> and 40g KI per gallon.
- Cut apples in half at the equator. Immediately dip, spray, or roll starch solution on cut surface.
- Wait for pattern to develop, which may be several minutes, but rate sample within 20-30 minutes before cut surface of fruit turns brown.
- Compare each fruit with patterns in this chart and record the corresponding starch value.

FIRMNESS (POUNDS)	15	SHORT CA
	16	MID CA
	17	LONG CA
STARCH INDEX	2.5	OPTIMAL CA
	3.5	MATURE
	5.5	OVER MATURE



STORAGE CONTROL SYSTEMS  
STORAGECONTROL.COM · 800.487.7994 · INFO@STORAGECONTROL.COM

MICHIGAN STATE UNIVERSITY

Photos & Development by the Michigan State University Apple Maturity Program  
Contact: Randy Beaudry · beaudry@msu.edu



# STARCH INDEX SCALE v1.0

# PINK LADY



C O R E S T A I N

C O R T E X / F L E S H S T A I N

## TESTING INSTRUCTIONS

- Collect a sample of apples from the orchard. Maturity tests should be performed on at least 10 fruit to represent the average in the block. Samples should be at least room temperature for best results.
- Stain apples as soon as possible after samples have been collected. Use an iodine solution of 10g I<sub>2</sub> and 40g KI per gallon.
- Cut apples in half at the equator. Immediately dip, spray, or roll starch solution on cut surface.
- Wait for pattern to develop, which may be several minutes, but rate sample within 20-30 minutes before cut surface of fruit turns brown.
- Compare each fruit with patterns in this chart and record the corresponding starch value.

FIRMNESS (POUNDS)	16	SHORT CA
	17	MID CA
	18	LONG CA
STARCH INDEX	2.5	OPTIMAL CA
	3	MATURE
	6	OVER MATURE



STORAGE CONTROL SYSTEMS  
STORAGECONTROL.COM · 800.487.7994 · INFO@STORAGECONTROL.COM

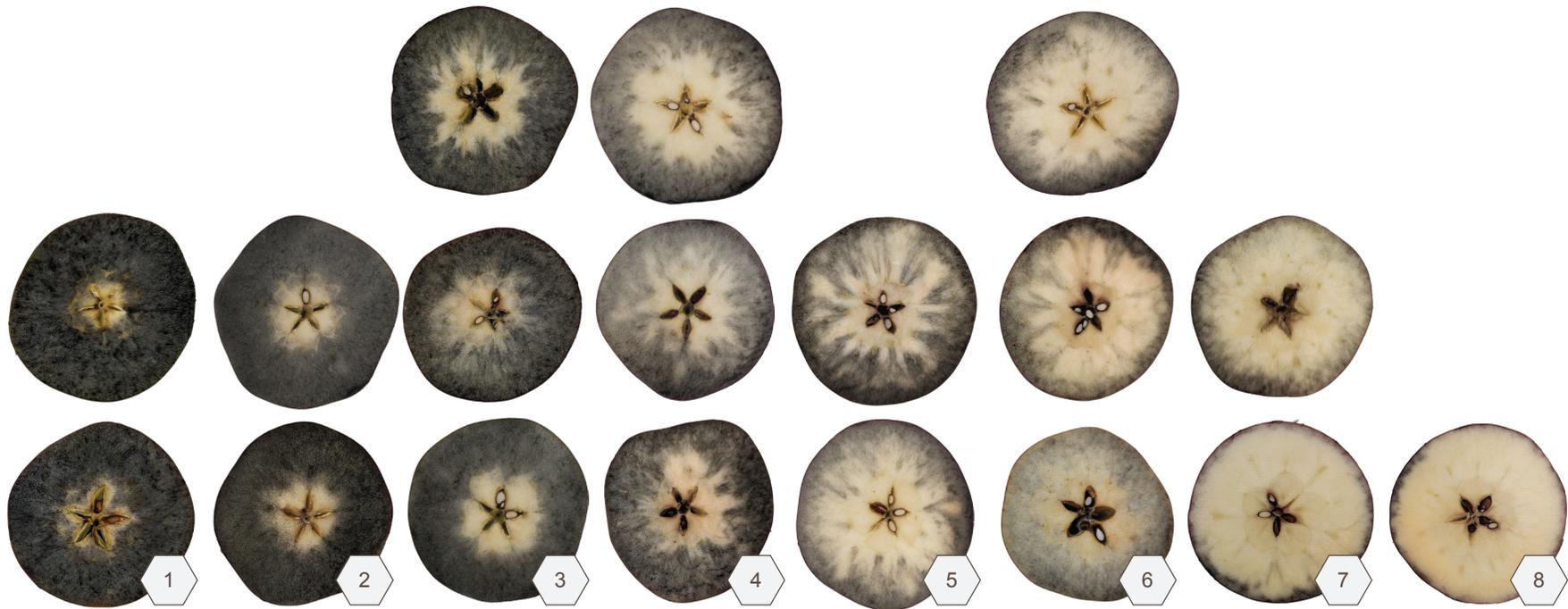
MICHIGAN STATE UNIVERSITY

Photos & Development by the Michigan State University Apple Maturity Program  
Contact: Randy Beaudry · beaudry@msu.edu



# STARCH INDEX SCALE v1.0

# RED DELICIOUS



C O R E   S T A I N

C O R T E X / F L E S H   S T A I N

## TESTING INSTRUCTIONS

- Collect a sample of apples from the orchard. Maturity tests should be performed on at least 10 fruit to represent the average in the block. Samples should be at least room temperature for best results.
- Stain apples as soon as possible after samples have been collected. Use an iodine solution of 10g I<sub>2</sub> and 40g KI per gallon.
- Cut apples in half at the equator. Immediately dip, spray, or roll starch solution on cut surface.
- Wait for pattern to develop, which may be several minutes, but rate sample within 20-30 minutes before cut surface of fruit turns brown.
- Compare each fruit with patterns in this chart and record the corresponding starch value.

FIRMNESS (POUNDS)	16	SHORT CA
	17	MID CA
	18	LONG CA
STARCH INDEX	3	OPTIMAL CA
	3.5	MATURE
	5	OVER MATURE



STORAGE CONTROL SYSTEMS  
STORAGECONTROL.COM · 800.487.7994 · INFO@STORAGECONTROL.COM

MICHIGAN STATE UNIVERSITY

Photos & Development by the Michigan State University Apple Maturity Program  
Contact: Randy Beaudry · beaudry@msu.edu



# STARCH INDEX SCALE v1.0

# ROME



C O R E   S T A I N

C O R T E X / F L E S H   S T A I N

## TESTING INSTRUCTIONS

- Collect a sample of apples from the orchard. Maturity tests should be performed on at least 10 fruit to represent the average in the block. Samples should be at least room temperature for best results.
- Stain apples as soon as possible after samples have been collected. Use an iodine solution of 10g I<sub>2</sub> and 40g KI per gallon.
- Cut apples in half at the equator. Immediately dip, spray, or roll starch solution on cut surface.
- Wait for pattern to develop, which may be several minutes, but rate sample within 20-30 minutes before cut surface of fruit turns brown.
- Compare each fruit with patterns in this chart and record the corresponding starch value.

FIRMNESS (POUNDS)	15	SHORT CA
	16	MID CA
	18	LONG CA
STARCH INDEX	3	OPTIMAL CA
	3	MATURE
	5.5	OVER MATURE



STORAGE CONTROL SYSTEMS  
STORAGECONTROL.COM · 800.487.7994 · INFO@STORAGECONTROL.COM

MICHIGAN STATE UNIVERSITY

Photos & Development by the Michigan State University Apple Maturity Program  
Contact: Randy Beaudry · beaudry@msu.edu

