

SPECIALTY COFFEE ASSOCIATION OF AMERICA  
**arabica Green COFFEE**  
DEFECT HANDBOOK



**SPECIALTY  
COFFEE ASSOCIATION  
OF AMERICA®**

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# SCAA STANDARD FOR SPECIALTY COFFEE



SPECIALTY GRADE

No Category I Defects Allowed  
No more than 5 Secondary Defects



QUAKER

Specialty grade: 0 quakers allowed

## GREEN COFFEE COLOR GRADIENT

Unroasted coffee's color ranges from a blue-green to a pale yellow depending upon origin, processing or age.



Blue-Green

Bluish-Green

Green

Greenish



Yellow-Green

Pale Yellow

Yellowish

Brownish

# STANDARD CLASSIFICATION METHOD

## SAMPLE WEIGHTS

Green Coffee 350 grams

Roasted Coffee 100 grams

## TABLE OF DEFECT EQUIVALENTS

Category 1 Defects	Full Defect Equivalents	Category 2 Defects	Full Defect Equivalents
Full Black	1	Partial Black	3
Full Sour	1	Partial Sour	3
Dried Cherry/Pod	1	Parchment/Pergamino	5
Fungus Damaged	1	Floater	5
Foreign Matter	1	Immature/Unripe	5
Severe Insect Damage	5	Withered	5
		Shell	5
		Broken/Chipped/Cut	5
		Hull/Husk	5
		Slight Insect Damage	10

## **GREEN COFFEE MOISTURE CONTENT**

Washed processed coffees should be between 10 - 12% upon import.

## **BEAN SIZE**

No more than 5% variance from contracted specification, measured by retention on traditional round-holed grading screens.

## **ROAST UNIFORMITY**

Specialty Grade: No quakers allowed. *(Based on a 100 gram sample)*

## **GRADING**

When two defects are found simultaneously in one coffee bean, the defect that most impacts the quality of the cup takes precedent over others.

## **FLAVOR CHARACTERISTICS**

Cupping\* is a professional technique for evaluating coffee. When cupping specialty coffee, sample must exhibit distinctive attributes in the areas of Fragrance/Aroma, Flavor, Acidity, Body and Aftertaste, as determined between buyer and seller. Coffee must be free from odors, faults and taints.

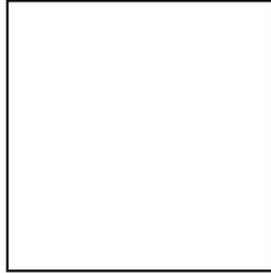
\*For complete information on cupping methodology, please reference the *SCAA Specialty Coffee Grading Standards & Protocols*, available on the resources tab at [scaa.org](https://www.scaa.org)

## FULL BLACK/PARTIAL BLACK

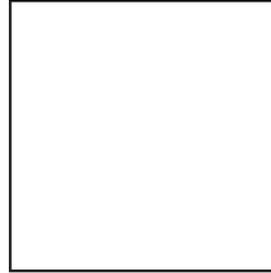
Defect Name:	Full Black
Other Names:	Black or partial black
Spanish Name:	Grano Negro - parcial negro
SCAA Classification:	Full Black is a Primary defect: 1 predominantly black bean = 1 full defect Partial Black is a Secondary defect: Less than ½ black, 3 beans = 1 full defect
Effect on Cup Quality:	Varies. Ferment or stinker taste, dirty, moldy, sour, phenolic taste.
Other issues:	Ochratoxin risk
Cause(s):	Agricultural. Blackening, results from over fermented pigment associated with micro-organisms.
Remedies:	1) AGRICULTURAL. Black beans are prevented by picking only ripe fruit from the trees, and avoid over-fermentation conditions during farm processing. 2) PROCESSING. Black beans become apparent when the parchment (pergamino) is removed. They are usually slightly smaller and less dense and some of them can be removed by screening and by density sorting. The most effective way to remove them is manually (hand sorting) or mechanically using a color sorting machine.



FULL BLACK



YOUR SAMPLE  
1 Bean = 1 Defect



YOUR SAMPLE  
3 Beans = 1 Defect

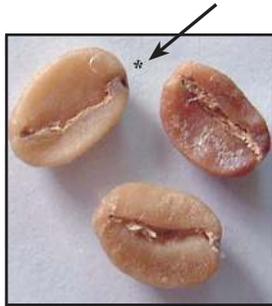


PARTIAL BLACK

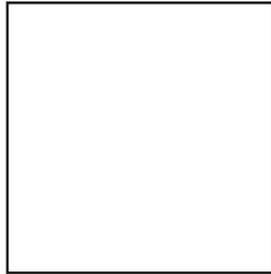
**PHYSICAL DESCRIPTION:** Black beans are distinguished by their opaque color.

## FULL SOUR / PARTIAL SOUR

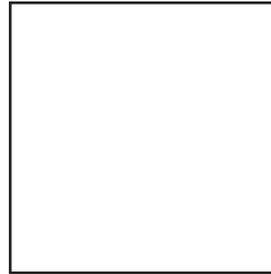
Defect Name:	Full Sour, Partial Sour
Spanish Name:	Grano agrio, Parcial agrio
SCAA Classification:	Full Sour is a Primary defect: 1 full sour bean = 1 full defect Partial Sour is a Secondary defect: Less than ½ sour, 3 beans = 1 full defect
Effect on Cup Quality:	Varies. Can produce sour, fermented or even a stinker taste, depending on the degree of bean fermentation.
Other issues:	Affects the appearance of the green.
Cause(s):	Agricultural and processing. The sour bean is caused by fermentation that is the result of microbial contamination at multiple points during harvesting and processing. Specific causes include: picking of overripe cherries, picking of fallen cherries, contamination of water during processing, or overfermentation in the fruit still attached to trees under humid conditions.
Remedies:	1) AGRICULTURAL. Harvesting ripe cherries only (avoiding overripe cherries), not picking up fallen cherries, and not cultivating coffee in low altitude areas near lakes, rivers, or dams prevent sour fermented beans. 2) PROCESSING. Sour beans can be avoided by: <i>a) Ensuring timeliness of the pulping process (Pulping cherries immediately after harvesting, avoiding storage of the cherries for extended periods).</i> <i>b) In fully washed coffees, controlling time of fermentation in the fermentation tanks.</i> <i>c) Avoidance of contaminated or recycled waters during the washing process.</i> <i>d) Ensuring timeliness of the drying process and avoiding interruptions.</i> <i>e) Full sour beans become apparent when the pergamino is removed, and color sorters or hand sorters can be used to remove most of the sour beans.</i>



FULL SOUR



YOUR SAMPLE  
1 Bean = 1 Defect



YOUR SAMPLE  
3 Beans = 1 Defect



PARTIAL SOUR

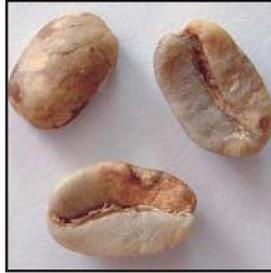
**PHYSICAL DESCRIPTION:** Sour Beans are recognized by their yellowish or yellowish brown to reddish brown color. Usually the embryo\* (see photo) inside the bean is dark or black.

If the bean is cut or scratched, a sour or vinegar-like smell is released.

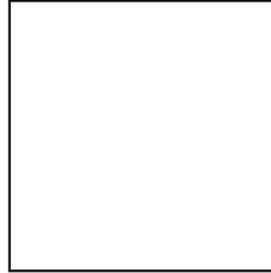
Once roasted and ground one single full sour bean can contaminate an entire pot of coffee.

## FUNGUS DAMAGE

Defect Name:	Fungus Damage
Spanish Name:	Daño por hongos
SCAA Classification:	Primary Defect. 1 fungus damaged bean = 1 full defect
Effect on Cup Quality:	Varies. Can produce fermented, moldy, earthy, dirty and phenolic taste.
Other issues:	Ochratoxin risk
Cause(s):	Agricultural and processing. Fungus damaged beans are most commonly caused by fungi from the <i>Aspergillus</i> , <i>Penicillium</i> , and <i>Fusarium</i> genus which can infect beans at any point from harvesting to storage where temperature and humidity are at levels that will induce fungus growth. Fungi growth will only occur under these conditions if fungus spores are present.
Remedies:	<p>1) <b>AGRICULTURAL</b>. Since coffee must be grown in temperate humid regions that favor fungus growth, efforts must be made to limit the vectors from which the fungus spores originate. This includes picking cherries from the ground, excessive broca, and left-over beans in harvesting sacks and drying tanks.</p> <p>2) <b>PROCESSING</b>. Infection of the coffee can be prevented with good practices in both the wet and dry mills. Causes of infection include cut or chipped beans during the pulping process, uncontrolled fermentation, left-over beans in the fermentation tanks, delay of the drying process, interruptions during the drying process, Broca, and storing coffee in parchment under conditions of high humidity and temperature.</p> <p>Fungus damaged coffee becomes apparent when the parchment (pergamino) is removed in the dry mill. At this stage, color sorters can remove the most critically fungus-damaged coffee, but slightly fungus damaged beans can only be removed through hand sorting.</p>



FUNGUS DAMAGE



YOUR SAMPLE  
1 Bean = 1 Defect

**PHYSICAL DESCRIPTION:** Fungus damaged beans, as they are commonly called, are recognized by yellow to reddish brown “powdery” spots (spores) in early stages of the attack, which grow in size until covering the entire bean. The fungus damaged beans release spores that will contaminate other beans.

## FOREIGN MATTER

Defect Name:	Foreign matter
Spanish Name:	Materia extraña, impurezas
SCAA Classification:	Primary defect. 1 foreign matter = 1 full defect
Effect on Cup Quality:	Contamination from foreign matter can affect the green coffee, causing various off-flavors.
Other issues:	Affects appearance of the green coffee, can cause damage to roasting equipment, health issues.
Cause(s):	Various: Foreign matter can be accumulated at any step in the process.
Remedies:	1) AGRICULTURAL. None. 2) PROCESSING Foreign matter can be removed and/or avoided by: a) <i>Careful attention to avoid sticks and leaves during harvesting.</i> b) <i>Careful attention to avoid foreign material, such as stones, wood chips, nails, etc., on the drying patios.</i> c) <i>At the dry mill, use proper equipment such as destoners, magnets, that effectively remove foreign matter.</i>



STICKS

1 Non-Coffee Object = 1 Defect



YOUR SAMPLE



STONES

1 Non-Coffee Object = 1 Defect

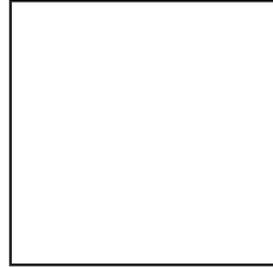
**PHYSICAL DESCRIPTION:** Foreign matter, includes all non coffee items found in the green coffee such as sticks, stones, nails, etc. which give the green beans a bad appearance, and are signs of poor processing and grading. Foreign matter can damage equipment, especially grinders.

## DRIED CHERRY / PODS

Defect Name:	Dried cherry or pod
Spanish Name:	Guayaba, Cereza Seca
SCAA Classification:	Primary defect. 1 cherry or pod = 1 full defect
Effect on Cup Quality:	Ferment, moldy, or phenolic taste
Other issues:	Affects appearance of the green beans.
Cause(s):	Processing. In washed coffees, dried cherries or pods are the result of poor pulping process and failure to remove floaters (dry fruits) from the initial water bath in the receiving station, either from a lack of maintenance or poor adjustment of the machinery. In natural processed coffees, dried cherries or pods are the result of improper hulling and sorting.
Agricultural:	Drought and disease can cause fruit to dry on the tree, eventually dropping to the ground.
Remedies:	1) AGRICULTURAL. Avoid picking dried cherries from the ground or the trees. 2) PROCESSING. Hulling machines will not perform effectively with too many dried cherries present. Removing all floaters at the receiving station and keeping pulping machines properly calibrated and maintained will reduce the number of dried cherries. Any pods that pass through the pulper can be removed with a density sorter in the dry mill.



CHERRY PODS



YOUR SAMPLE  
1 Bean = 1 Defect

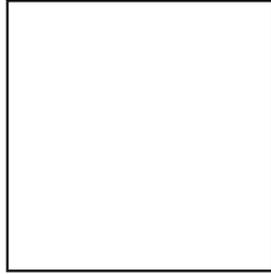
**PHYSICAL DESCRIPTION:** The dried pulp usually covers part or all of the parchment bean, sometimes with the presence of white spots or powdery residue, which is a sign of mold that affects the quality of the cup and the appearance of the coffee.

## SEVERE INSECT DAMAGE / SLIGHT INSECT DAMAGE

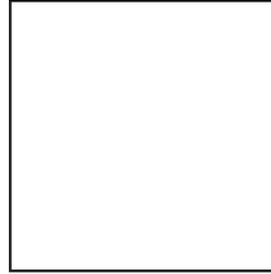
Defect Name:	Insect Damage
Other Names:	Borer, Berry Borer, Borer damaged
Spanish Name:	“La Broca”
SCAA Classification:	Primary Defect: Severe Insect Damage, 3 or more perforations, 5 insect damaged beans = 1 full defect Secondary Defect: Insect damage, less than 3 perforations, 10 insect damaged beans = 1 full defect Severe insect damage, 3 or more perforations, 5 insect damaged beans = 1 full defect
Effect on Cup Quality:	Varies. Impacts the appearance of roasted beans, can result in dirty, sour, Rioy, or moldy flavors, especially if present in high quantity.
Other issues:	Ochratoxin risk. Affects the appearance of the green and roasted beans.
Cause(s):	Agricultural. The berry borer beetle is one of the most serious pests in coffee agriculture. The borer ( <i>Hypothenemus hampei</i> ) burrows into the cherry while still on the tree, tunneling into the soft seed inside to reproduce. The young often emerge from the other side, creating a bean with two holes in it. It is not uncommon for a single bean to have multiple sets of pathways. The incidence of broca tends to decline as altitude increases.
Remedies:	1) AGRICULTURAL: The best way to avoid borer-damaged coffee after careful inspection eradicate conditions that favor borer propagation. Chemical spraying is one option, but its limited effect has led to interest in integrated pest management techniques (such as specially designed fungi) ( <i>Beauveria bassiana</i> ) and the use of African Wasps ( <i>C. stephanoderis</i> ), since borer beetles reproduce inside the seed picking up all cherries that fall to the ground is necessary to eliminate conditions of proliferation. In addition, ripe cherry pulp can carry the insect and so should be kept at a reasonable distance from the trees until fully composted. It is not feasible to expect harvesters to distinguish between healthy cherries and insect damaged cherries, as the damage is typically on the inside and not visible without very careful inspection. 2) PROCESSING: Once delivered to the dry mill, insect damaged coffee will become apparent when the pergamino is removed. At this stage, density sorters can remove most of the severely insect damaged coffee. In case of heavy infestation, the coffee should be sorted by hand. Heavy borer infestation can be devastating to farmers, rendering large portions of the harvest non-exportable.



SEVERE INSECT  
DAMAGE



YOUR SAMPLE  
5 Beans = 1 Defect



YOUR SAMPLE  
10 Beans = 1 Defect



SLIGHT INSECT  
DAMAGE

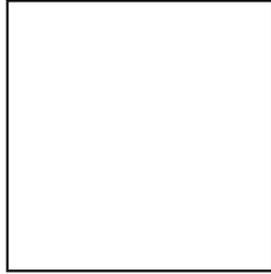
**PHYSICAL DESCRIPTION:** Broca beans, as they are commonly called, are distinguished by small (0.3—1.5 mm dia.) dark holes, often on opposite sides of the bean. The path can be at any angle, including longitudinally. Some beans may have extended damage and three or more perforations are common. They are scored as 5 beans = 1 defect for badly damaged beans (3 or more perforations) or 10 beans = 1 full defect for slightly damaged beans.

## **BROKEN, CHIPPED, CUT**

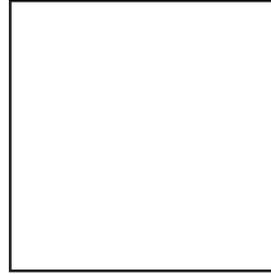
Defect Name:	Broken, Chipped, Cut
Spanish Name:	Grano partido, Mordido, Cortado
SCAA Classification:	Secondary defect: 5 broken beans = 1 full defect
Effect on Cup Quality:	Can cause earthy, dirty, sour, or fermented tastes
Other issues:	Affects appearance of the green and roasted beans
Cause(s):	Processing. Broken, Chipped or Cut beans usually occur during the pulping process or the dry milling process where adjustment of the equipment is faulty and excessive friction or pressure to the bean is applied.
Remedies:	1) AGRICULTURAL: Pick and process only ripe cherries, since green and partially ripe cherries do not pulp correctly. Green cherries do not pulp at all. 2) PROCESSING: a) Carefully adjust the pulping equipment to avoid extreme pressure or friction to the bean. b) At the dry mill, adjust the huller machine to avoid friction on the beans and remove small size broken chipped, or cut beans with density sorting or screening machines. Larger beans must be removed by color sorters or hand sorting.



BROKEN, CHIPPED, CUT  
BROKEN AT DRY MILL



YOUR SAMPLE  
5 Beans = 1 Defect



YOUR SAMPLE  
5 Beans = 1 Defect



BROKEN, CHIPPED, CUT  
BROKEN AT WET MILL

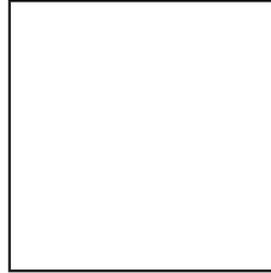
**PHYSICAL DESCRIPTION:** Chipped or cut beans usually have a dark reddish color due to oxidation of the area where the cut/chip took place during the pulping. This can lead to fermentation, mold development, and bacterial activity, resulting in a wide variety of cup defects. Chipped/broken beans occur during the dry mill process, therefore fragments of the bean are usually clean with no signs of oxidation.

## IMMATURE BEAN

Defect Name:	Immature bean
Other Names:	Unripe, Quaker (when roasted)
Spanish Name:	Inmaduro
SCAA Classification:	Secondary Defect. 5 Immature beans = 1 full defect
Effect on Cup Quality:	Varies. Generally imparts grassy, straw-like or greenish and is the main source of astringent flavors in coffee.
Other issues:	Impacts the appearance of roasted beans.
Cause(s):	Agricultural. The immature or unripe bean is not fully developed for several reasons, including improper picking of unripe cherries and uneven ripening on late ripening varieties growing at high altitude.
Remedies:	1) AGRICULTURAL. Immature beans can be avoided by harvesting only ripe cherries and by cultivating early to medium maturing varieties at medium to high altitudes. 2) PROCESSING. Immature beans can be removed during both wet and dry processing. At the wet mill, many immature beans can be separated with screens immediately after the pulping process. Many immature beans can be removed during the density sorting process at the dry mill, but most color sorters are unable to remove this defect.



IMMATURE BEAN



YOUR SAMPLE  
5 Beans = 1 Defect

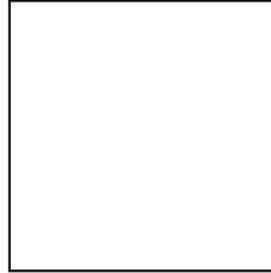
**PHYSICAL DESCRIPTION:** Immature or unripe beans are distinguished by the pallid, yellow-greenish color of the tegument or silver skin. The silver skin is tightly attached to the bean. They are often smaller, curved inward in a concave shape with sharp edges

## WITHERED BEAN

Defect Name:	Withered
Spanish Name:	Averanado, arrugado
SCAA Classification:	Secondary defect. 5 withered beans = 1 full defect Effect on Cup Quality Weed-like, grassy, straw-like taste depending on quantity
Other issues:	Affects the appearance of the green.
Cause(s):	Agricultural. The withered bean is mainly caused by lack of water (drought) during development of the bean within the cherry. The damage depends on the intensity and duration of the drought. The proportion of damaged beans can be quite high if the plants are weak or in poor health.
Remedies:	1) AGRICULTURAL. Keeping coffee trees properly fertilized and in good health reduces the severity of the damage. However climate disorders like “el niño” can have disastrous effects on the crops. Too many or the wrong type of shade trees can compete with coffee trees for available ground moisture during dry periods. 2) PROCESSING. Severely withered beans are less dense and will float on the surface of water. They can then be removed by skimming early in the washing process. At the dry mill, more of the remaining withered beans are removed by density sorting machines due to their small size and low density. Larger, bolder beans may have to be removed by hand.



WITHERED BEAN



YOUR SAMPLE  
5 Beans = 1 Defect

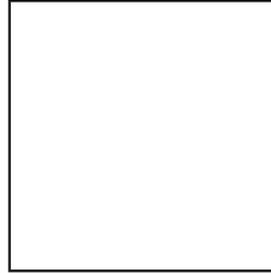
**PHYSICAL DESCRIPTION:** Withered beans are usually smaller and malformed with wrinkles that resemble those of a raisin.

## SHELL

Defect Name:	Shell
Spanish Name:	Concha
SCAA Classification:	Secondary defect. 5 shells = 1 full defect
Effect on Cup Quality:	Shells may char and produce burnt or charred flavor.
Other issues:	May cause uneven roasting in high enough quantity.
Cause(s):	Agricultural. This is a naturally occurring phenomena, caused by genetics.
Remedies:	1) AGRICULTURAL. Select proper coffee varieties and optimum growing conditions. 2) PROCESSING. At the dry mill, shells are removed using a density sorter.



SHELLS



YOUR SAMPLE  
5 Beans = 1 Defect

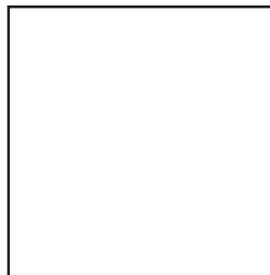
**PHYSICAL DESCRIPTION:** Shell beans are malformed and consist of an inner or outer part separately or together. One or both may be found, and in some instances they will still be together. The outer section has a seashell shape. The inner section can be conical or cylindrical.

## FLOATER

Defect Name:	Floater
Spanish Name:	Flotador
SCAA Classification:	Secondary Defect: 5 floater beans = 1 full defect
Effect on Cup Quality:	Varies. Ferment, weed-like, straw-like, earthy, moldy tastes. Can dilute coffee flavor without causing off-flavors.
Other issues:	Affects the appearance of the green.
Cause(s):	Processing. This defect is caused by improper storage or drying. Parchment beans left in the corners of the drying machines or patios usually result in a faded, low-density bean. Parchment coffee stored in excessively humid conditions can also result in floater beans.
Remedies:	1) AGRICULTURAL. None. 2) PROCESSING. Parchment coffee must be dried evenly and gradually to an appropriate moisture content. At the dry mill, some low-density floaters can be removed using density sorters, but some of higher density require color sorting or hand sorting.



FLOATER



YOUR SAMPLE  
5 Beans = 1 Defect

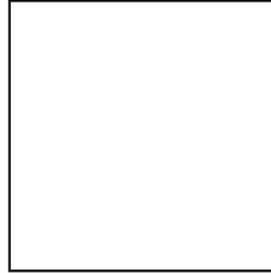
**PHYSICAL DESCRIPTION:** Floater beans appear distinctively white and faded, giving a green bean sample a mottled appearance. Floaters are low density beans - if there is any doubt, place beans in water - they float!

## PARCHMENT

Defect Name:	Parchment
Spanish Name:	Pergamino
SCAA Classification:	Secondary defect. 5 parchment beans = 1 full defect
Effect on Cup Quality:	None
Other issues:	Affects appearance of the green and is indicative of poor grading.
Cause(s):	Processing. This defect occurs in the dry mill, due to improper calibration of the hulling machine.
Remedies:	1) AGRICULTURAL. None. 2) PROCESSING. At the dry mill, keep the hulling machine properly calibrated and maintained. Stray parchment beans can be removed with a density sorter.



PARCHMENT



YOUR SAMPLE  
5 Beans = 1 Defect

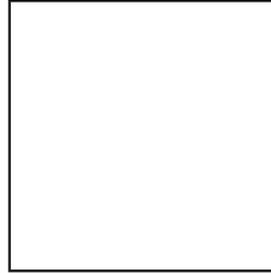
**PHYSICAL DESCRIPTION:** Parchment beans are partially or fully enclosed in a thick, papery husk that is white or tan in color.

## HULL / HUSK

Defect Name:	Hull or Husk
Spanish Name:	Guayaba, Cereza Seca
SCAA Classification:	Secondary defect. 5 husks = 1 full defect
Effect on Cup Quality:	In sufficient quantities may cause dirty, earthy, moldy, ferment or phenolic taste.
Other issues:	Affects appearance of the green
Cause(s):	Processing. Hulls or husks also appear in natural processed coffee that has not been properly cleaned. Poor calibration of depulping machines will result in fruit skin pieces that eventually dry into husk fragments.
Remedies:	1) AGRICULTURAL. None. 2) PROCESSING. Wet Mill: Correct calibration and adjustment of the pulping machines; Dry Mill: Attention to ventilation (winnowing) processes. Attention to density sorter calibration and adjustment.



HULL/HUSKS



YOUR SAMPLE

5 HULL/HUSK = 1 DEFECT

**PHYSICAL DESCRIPTION:** Husks are a fragment of dried pulp that has a dark red color.

Because great coffee doesn't just happen.®



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Specialty Coffee Association of America

[scaa.org](http://scaa.org)