

WHAT IS A PRODUCT DESCRIPTION LANGUAGE ?

A Product Description Language (PDL) is a set of photographs and definitions used to describe a product. It focuses on the key quality characteristics of a product and describes them in a way that is readily measured. In this way a PDL can be used by growers, packers, processors, wholesalers, exporters and retail customers to identify what quality attributes are important to them. It also gives the opportunity to specify what style of blemish, size, shape, sweetness or other parameter is available to supply or acceptable to purchase. It is also a useful training tool for packing staff.

WHAT IS THIS REFERENCE GUIDE ?

First, it is worth noting that the Australian Quarantine and Inspection Service (AQIS) Export Control Orders Schedule 21 for Apricots, Schedule 8 for Plums and Schedule 20 for Peaches and Nectarines are no longer enforceable although some businesses still use them as a guide.

Second, the quality management systems that many stone fruit growers and marketers are now implementing require a clear specification of what the customer wants and of what is available to supply. To do this requires a language to describe the product so that the specifications are understood by all parties and are measurable, like equipment or spare parts catalogues for example.

This Product Description Language forms part of the Australian Fresh Stone Fruit Growers Association's (AFSFGA) Quality Management Initiative. This initiative is aimed at removing the obstacles to widespread implementation of quality management and the adoption of best practices in production, packing and marketing of stone fruit. The aim is to increase consumer satisfaction in the product by addressing the key product quality and food safety issues relating to stone fruit. Contact the AFS17GA for more information.

This Reference Guide contains photographs and definitions that specifically relate to the quality of stone fruit. It is designed for use by growers, packers, marketers and buyers of stone fruit to negotiate, or to report on, quality of stone fruit. It is not intended to replace any existing grades or -standards that are used by packers and marketers of stone fruit.

Stone fruit packed under this system can be labelled under any grade standards that may be required such as Codex Alimentarius or OECD agreements so long as the fruit meets these standards.

HOW TO USE THIS PRODUCT DESCRIPTION LANGUAGE

The Reference Guide sets out and defines quality parameters applicable to apricots, peaches, plums and nectarines such as shape, colour, blemish, etc. It then suggests options within each parameter. The options are at three levels (A, B and Q and each level is termed a Style. When buyers order, they negotiate quality parameter types, styles and tolerances. When packing fruit, packers are given the quality parameters of the fruit and the tolerance of each style which is required in the finished pack.

In simple terms this Product Description Language for Stone Fruit does the following:

1. Describes the quality parameters of stone fruit.
2. Specifies styles of each quality parameter.
3. Provides some guidance and suggested documents for use of the language by packers, their suppliers and their customers.

Basic Quality Expectations

In this Reference Guide, stone fruits are assumed to be packed for domestic and export fresh fruit markets. It is acknowledged that substantial quantities of peaches and apricots are processed each season, and that styles of product not depicted in this guide may be necessary for this purpose. Irrespective of the destination of the product, there are some basic attributes which should be met.

1. Intact: stone fruit should be free of major injury or spoilage.
2. Sound: stone fruit should not be overripe, soft or wilted, they should be free of foreign odours and foreign tastes, and free of unhealed injury and blemish which is likely to affect keeping quality.
3. Clean: stone fruit must be free of dirt, dust, unacceptable chemical residues and other foreign matter.
4. Palatable: stone fruit must be of a variety and in a condition which is acceptable to consumers.

MAKING IT WORK

Success with a Product Description Language depends on the ability to measure or assess the fruit to see how it meets the specification. The idea is to minimise the use of words like “reasonably”, “practically”, “usually”, “almost”, “not many” and “few”. These words have many interpretations. They lead to disputes between packers and their customers because both parties have different interpretations of what they mean. The use of photographs assists greatly with interpretation.

By measuring blemish by square centimetres in area or centimetres in length, for example, the room for error and subsequent dispute is minimised. However, the process of packing stone fruit to a specification relies on having adequate procedures for sampling product and recording the results.

Some draft documents for customer specifications and checking packed stone fruit are included following this section, as well as a suggested procedure for using the documents. There are other documents currently in use by packers, and anyone wishing to set up their own product specification sheet and quality check sheet should not encounter any difficulty obtaining ideas from others.

Packers should be aware that there are other aspects to a customer’s specification for stone fruit. Issues that need to be taken into account include:

- Defuzzed/not defuzzed/waxed
- Fruit labelling
- Package construction materials and dimensions
- Pallet dimensions
- Pallet wrapping and strapping
- Corner pieces
- Time of and mode of delivery
- Temperature management
- Transport options

These wider issues are included in the Australian United Fresh Product Description Matrix, with which this document integrates and provides the detail of the matrix options.

USEFUL REFERENCES

Beattle BB *et al* (Eds) (1989) **Postharvest Diseases of Horticultural Produce Vol. 1: Temperate Fruit**

Bennett RR *et al* (Eds) (1993) **Guide to Quality Management - Apples**

Northern Victoria Fruitgrowers' Association Ltd (1998) **Orchard Pest and Disease Handbook 1998-2000**

Primary Industries SA (1996) **Keeping Your Cool - A Quest For Quality**

Department of Agriculture, Western Australia (199 1) **Quality Management for the picking, handling, cooling and storing of plums - Guidelines for growers, packers and exporters.**

The AHC has a number of other more general publications and videos to assist horticultural businesses implement quality management systems.

ACKNOWLEDGMENTS

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PROCEDURES FOR USING THE PRODUCT DESCRIPTION LANGUAGE

There are two documents recommended for use with this Product Description Language (PDL).

1. MARKET SPECIFICATIONS FORM

2. PACKINGHOUSE ANALYSIS SHEET

The MARKET SPECIFICATIONS FORM is used by sellers and buyers of stone fruit to specify the product they wish to buy or sell. The PACKINGHOUSE ANALYSIS SHEET is used in the packinghouse to monitor and analyse the fruit being packed for market.

MARKET SPECIFICATIONS FORM PROCEDURE

For the buyer:

Select each quality parameter required and specify the percentage required of each style (A, B, C). Write the percentage in the appropriate box. If it does not matter what style is required, tick the ANY STYLE box for that quality parameter type. If any quality parameter type is not required to be specified, cross it out.

For the packer:

Use the information from the PACKINGHOUSE ANALYSIS SHEETS to write in the MARKET SPECIFICATIONS FORM what is available. The information can also be used to deliver feedback to grower suppliers.

PACKINGHOUSE ANALYSIS PROCEDURE

The Product Description Language requires objective assessment of the fruit for it to work most effectively. It is ideal for those with a quality management system that ensures correct procedures are followed. The following are recommendations for sampling procedures.

STEP 1.

A representative sample of each line of fruit should be taken as soon as practical after fruit is delivered to the packinghouse. Take a sample of 50 or 100 fruit as this makes calculating percentages easy.

Examine each fruit individually for each quality parameter type and style. Remember, each fruit may have a number of defects and all should be counted. Record each fruit's attributes in the appropriate box by using dots or crosses. After each fruit has been assessed, count the numbers of each style, calculate the percentage and write this in the percentage box.

This information is provided to the grower or orchard manager to indicate a quality profile of the fruit supplied.

STEP 2.

Take a sample of fruit from the line immediately after the sorting table. Take the sample at or soon after the start of packing for the session. Take further samples as required such as after a change of growers or orchard blocks or after an elapsed time such as 30 minutes or one hour.

Write down the percentage of the required styles in the appropriate box on the **PACKINGHOUSE ANALYSIS SHEET**. Examine each fruit and record results as described above. Compare the percentages with what is required. Advise the sorters to modify their sorting if the analysis shows the fruit does not conform with the product specifications required.

STEP 3.

Take a sample carton or tray after packing and go through the same procedure. Sample packages at about one tray or carton every two pallets, one per hour or session or according to requirements.

Examine the **PACKINGHOUSE ANALYSIS SHEETS** closely over time to build up a profile of the fruit. The trends in quality parameters can then be established for a packinghouse and linked to market requirements. It is expected that a packinghouse will develop a range of combinations of quality parameters and styles that will become their market benchmarks.

These are only recommended procedures. Packers, marketers and customers should evolve procedures which best suit their own needs, with documents to match.

MARKET SPECIFICATIONS FORM - STONE FRUIT

TYPE/VARIETY:				
COUNT, SIZE or WEIGHT:			MATURITY:	
ADDITIONAL REQUIREMENTS:				
QUALITY PARAMETER	STYLE A Write tolerance percentage or tick for 100%	STYLE B Write tolerance percentage or tick for 100%	STYLE C Write tolerance percentage or tick for 100%	ANY STYLE Tick if style does not matter
Colour (external)				
Colour (internal)				
Minor blemish				
Major blemish				
Cracking				
Bruising				
Split stone				
Shape				
Misshape				

PACKHOUSE ANALYSIS SHEET - STONE FRUIT

Date:	Time:		Identification:		Count, Size Or Weight:	
Quality Parameter	Style A		Style B		Style C	
	Required %	Actual %	Required%	Actual %	Required %	Actual %
Colour (external)						
		%		%		%
Colour (internal)						
		%		%		%
Minor Blemish						
		%		%		%
Major Blemish						
		%		%		%
Cracking						
		%		%		%
Bruising						
		%		%		%
Split Stone						
		%		%		%
Shape						
		%		%		%
Misshape						
		%		%		%

PACKHOUSE ANALYSIS SHEET (sample 2)

Date							
Time							
Supplier							
Batch No.							
Variety							
Temp							
Pressure							
TSS							
Waxing							
Weight							
Label details							
Colour external							
Minor blemish							
Major blemish							
Cracking							
Bruising							
Split stone							
Shape							
Misshape							
Total							
Tolerance							
Pass (P) or Fail (F)							
Initials							

Comments:

STONE FRUIT SIZES

The following size ranges are based on Price Look Up (PLU) Guidelines administered by EAN Australia. PLU numbers are those printed on fruit stickers and used by a checkout clerk at a computerised Point Of Sale in a supermarket to identify the produce. The item is placed on the checkout scale and the PLU number is entered into the register by the checkout clerk. The computer identifies the item and multiplies the weight of the item by the price per kilogram to give the total sale price. For items sold by the unit, the calculation is number of units of the same PLU number by price per unit.

PLU numbers assist the industry by ensuring that suppliers and retailers receive the correct price for produce by differentiating on the basis of fruit type, size and variety. PLU numbers also enable electronic inventory management systems to avoid over and under stocking by relating demand (sales) to supply (purchase orders).

The following PLU numbers are the stone fruit numbers for sales of loose produce available in the Australian market. They are extracted from “Guidelines for a National Fresh Fruit and Vegetable PLU Catalogue, amended January 1999”. Packers are recommended to obtain their own copy of the most recent catalogue from EAN Australia (Toll free telephone 1300 366 033).

For the purpose of Price Look Up numbers, the following sizes have been selected by a combination of industry and retailer representatives.

Apricots	Large	56 mm and larger
Apricots	Medium	45 mm to 55 mm
Apricots	Small	44 mm and smaller
Nectarines	Large	67 mm and greater
Nectarines	Medium	56 mm to 66 mm
Nectarines	Small	55 mm and smaller
Peaches	Large	70 mm and larger
Peaches	Medium	58 mm to 69 mm
Peaches	Small	57 mm and smaller
Plums	Large	50 mm and larger
Plums	Small	49 mm and smaller

PRICE LOOK UP (PLU) NUMBER GUIDE

5049	Apricots		Large
4218	Apricots		Medium
5050	Apricots		Small
4378	Nectarines	Tree ripened	
5459	Nectarines	Organic	
3035	Nectarines	White flesh	Large
4188	Nectarines	White flesh	Medium
5796	Nectarines	White flesh	Small
4036	Nectarines	Yellow flesh	Large
4035	Nectarines	Yellow flesh	Medium
5458	Nectarines	Yellow flesh	Small
5496	Peacharines		
4038	Peaches	Yellow	Large
4037	Peaches	Yellow	Medium
5497	Peaches	Yellow	Small
5498	Peaches	Golden Queen	
4401	Peaches	White fleshed	Large
4400	Peaches	White fleshed	Medium
5502	Peaches	White fleshed	Small
3126	Plumcot		
5538	Plums	Amber Jewel	
5539	Plums	Angelina	
5540	Plums	Autumn Giant	
4040	Plums	Black	
5541	Plums	Black Amber	
5542	Plums	Black Friar	
5543	Plums	Blood	

5544	Plums	Cherry	
4435	Plums	Green	Large
4434	Plums	Green	Small
5545	Plums	Green Guage	
5805	Plums	KingBilly	
5546	Plums	Mariposa	
5547	Plums	Narabeen	
5537	Plums	Organic	
5549	Plums	President	
3274	Plums	Prunes	Fresh
4438	Plums	Purple	Large
4437	Plums	Purple	Small
5550	Plums	Queen Ann	
5936	Plums	Radiance	
4042	Plums	Red	Large
4041	Plums	Red	Small
5551	Plums	Red Ace	
4440	Plums	Ripened	Large
4439	Plums	Ripened	Small
5552	Plums	Santa Rosa	
5553	Plums	Satsuma	
5554	Plums	Shiro	
5555	Plums	Simka	
4436	Plums	Sugar	
5556	Plums	Teagan Blue	
5557	Plums	Wickson	
5558	Plums	Wilson	
4442	Plums	Yellow	Large
4441	Plums	Yellow	Small

STONE FRUIT WEIGHT AND COUNT

In Australia, most stone fruit is sold in single and double layer trays, usually by count (the number of fruit per package). The exception to this is the use of bulk packs, usually 10 kg or 12.5 kg in weight.

Retailers, having purchased by count, usually sell by weight (kilograms).

In order to develop some degree of industry uniformity, so that retailers would have a high degree of confidence that they were purchasing a known weight even if it was expressed as a count, a stone fruit packaging committee agreed to the following criteria in 1987.

Count	Diameter (mm)	Count	Diameter (mm)
13	92.5	28	65
14	88	30	63.5
16	83.5	32	62
18	79	36	58.5
20	76	40	55
23	72.5	42	52.5
25	69	46	50
		52	47

The count refers to the number of pieces of fruit packed in a single layer tray and the diameter refers to the diameter of each cell in that tray. It was further recommended that there should be a minimum gap of 3 mm between cells to ensure that fruit does not touch and that cells could be scalloped to assist with fruit removal from the cell.

The aim was for single layer tray weights to be in the range of 3.8 kilograms to 4.1 kilograms depending on fruit type, variety, time of season, etc. Some retailers are known to insist on a minimum of 4 kg net weight regardless of count.

Packing under weight only deceives customers and is contrary to the professional aims of the stone fruit industry.

STONE FRUIT MATURITY

Stone fruit maturity is an increasingly important part of a product specification. Although cool chain guidelines are being implemented to an increasing extent in the stone fruit industry, losses can be experienced throughout the marketing chain due to fruit which is immature or over mature at harvest.

Guidelines for stone fruit harvest and marketing maturity do not currently exist in Australia. Most growers, packers, wholesalers, exporters and retailers rely on external background colour and sampling as the main method of assessing maturity.

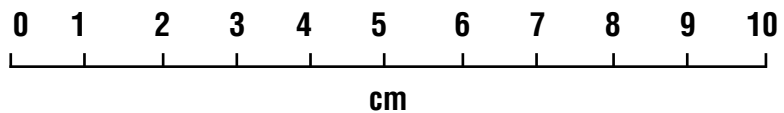
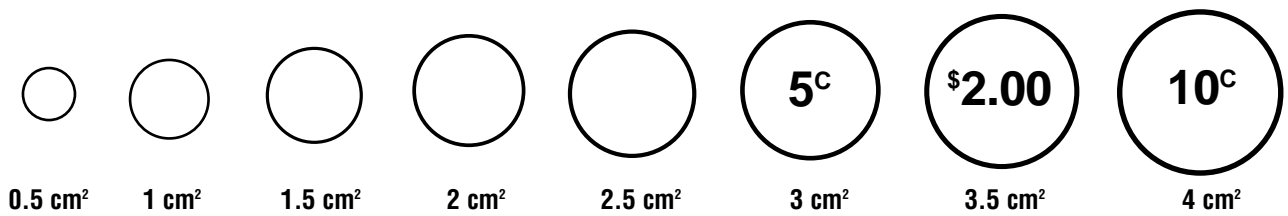
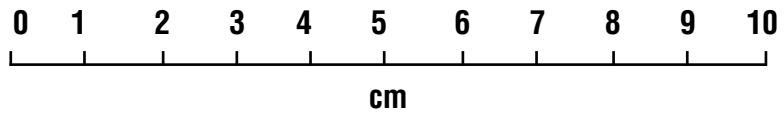
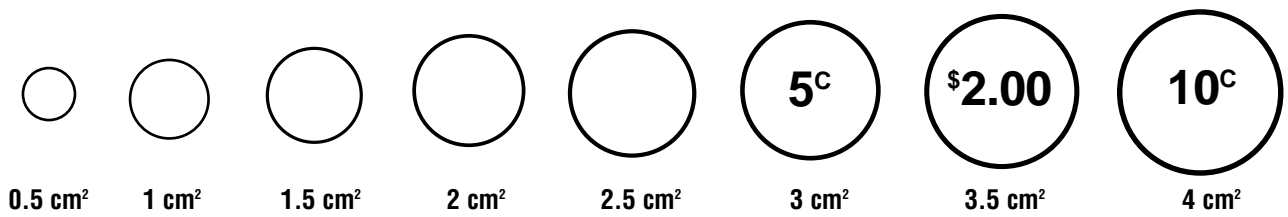
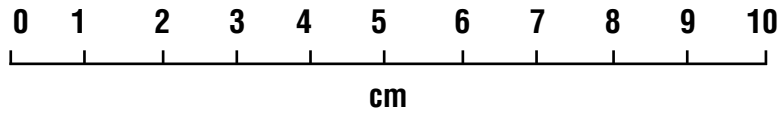
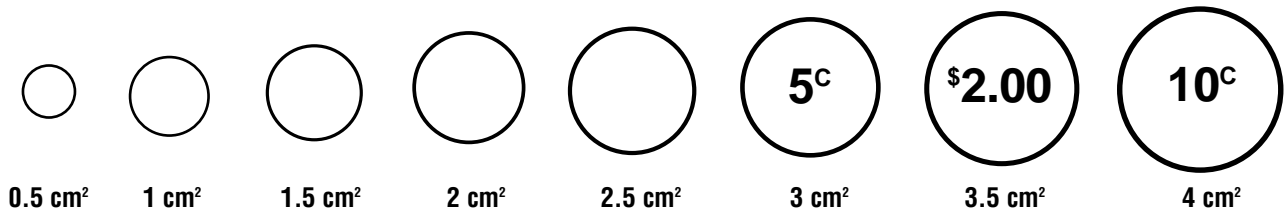
Sugar content may be used as an indicator of harvest maturity and a 'rule of thumb' is that 11° Brix should be the minimum for peaches and nectarines. However, as sugar content does not increase during ripening and fruit firmness gradually decreases, measuring fruit firmness is a more reliable indicator of advancing maturity postharvest.

Research in the USA* *using a standard fruit penetrometer with an 8 millimetre tip* has indicated a close correlation between fruit firmness and customer satisfaction with stone fruit. The rate of softening has also been measured and it varies according to type and variety and temperature. The following pressures divide stone fruit types into appropriate categories for harvest and marketing.

	Style A Mature, unripe (preferred harvest - export)	Style B Semi ripe (preferred harvest - domestic)	Style C Ripe
Nectarines	10 - 14 psi	6 - 8 psi	2 - 3 psi
Peaches	10 - 14 psi	6 - 8 psi	2 - 3 psi
Plums	8 - 12 psi	4 - 5 psi	2 - 3 psi
Apricots - no figures provided			

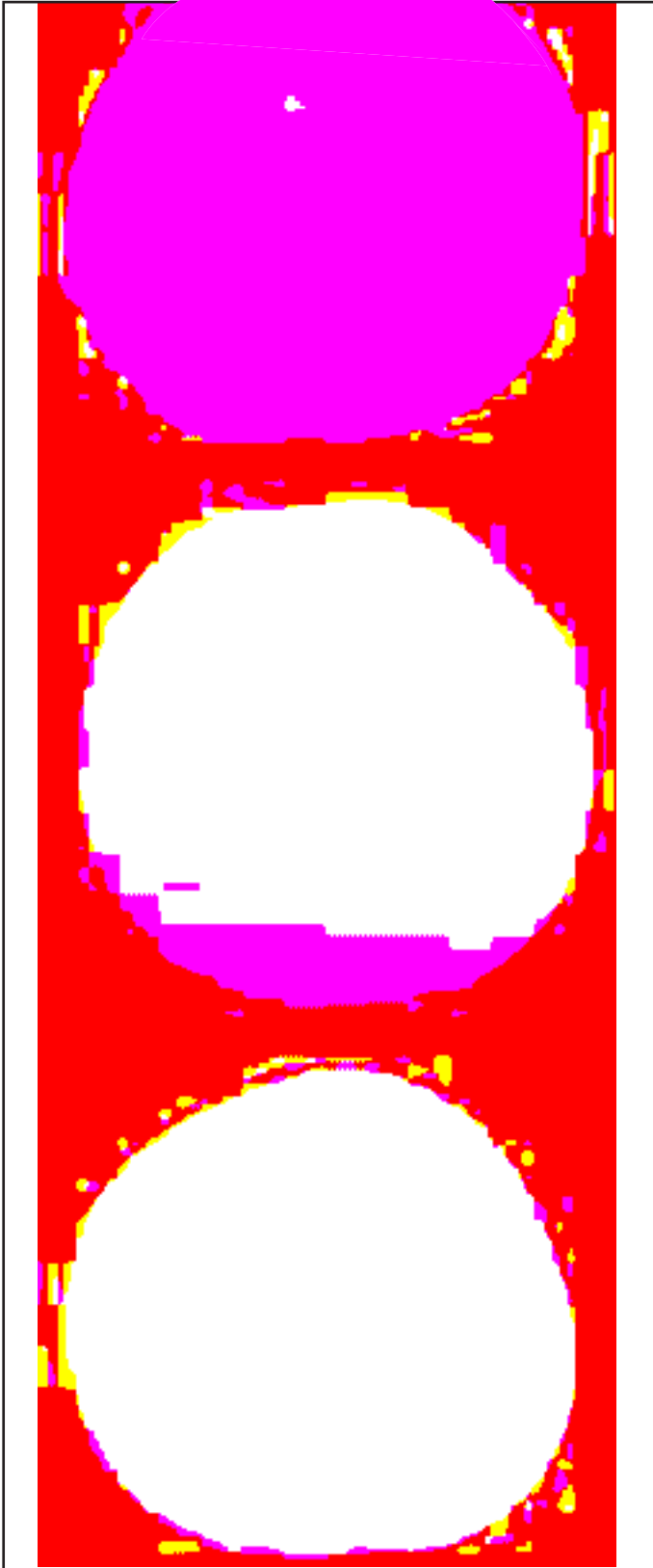
The Peach* Plum* Nectarine Book, California Tree Fruit Agreement, Reedley, CA

Growers must realise the importance of harvest maturity to customer satisfaction and repeat purchases and train and supervise pickers accordingly. Any compromise on maturity rapidly erodes prices, demand and customer satisfaction.



COLOUR

Fruit colour of apricots is one indicator of maturity, although colour also depends on the variety. Some varieties have a characteristic pink to red blush



STYLE A

Immature

STYLE B

Mature, not ripe

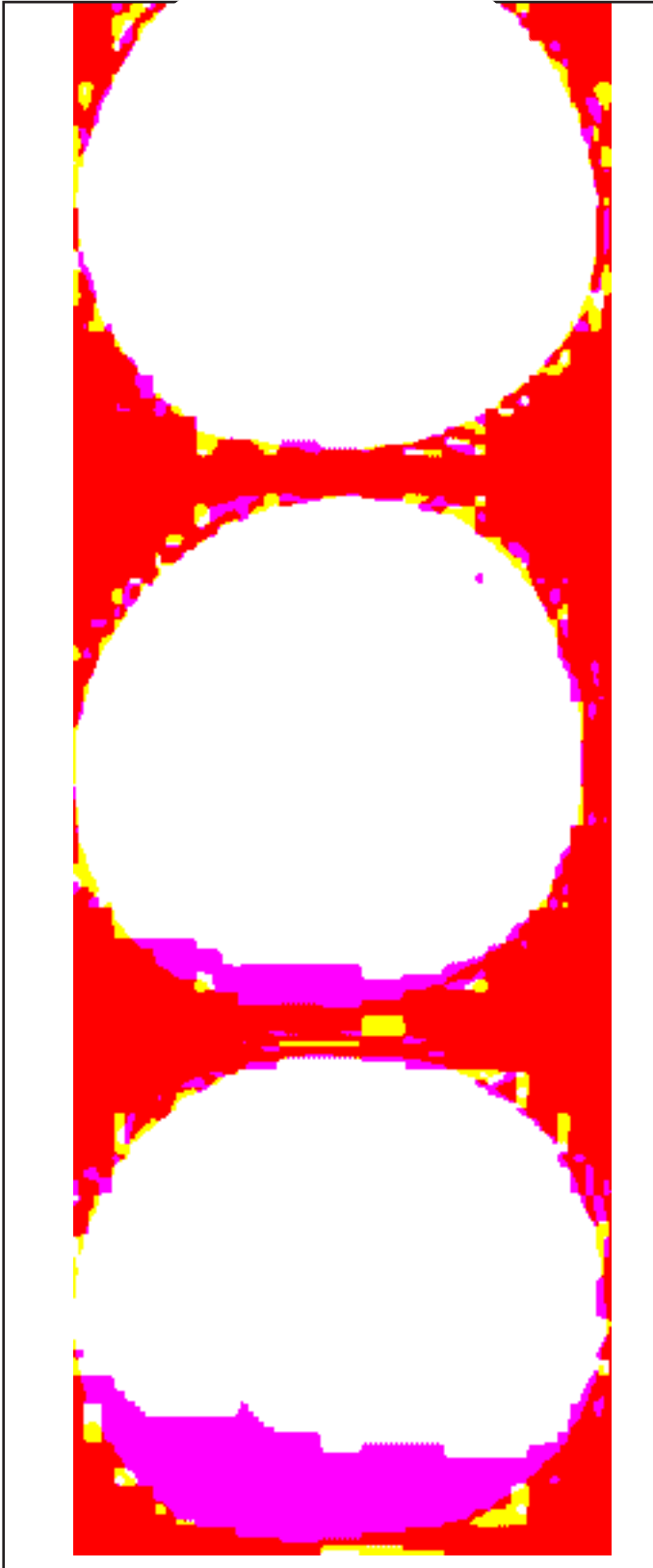
STYLE C

Mature and ripe

MINOR BLEMISH

Minor blemish includes light, slight and healed injuries. These injuries include minor healed cuts, punctures, scuffing and scratches such as from hail, limb rub, pests and diseases, minor spray and frost injury, minor russet and minor mechanical damage which might occur during harvest and handling.

No unhealed blemish is to be packed.



STYLE A

Less than 0.5 square cm in area

STYLE B

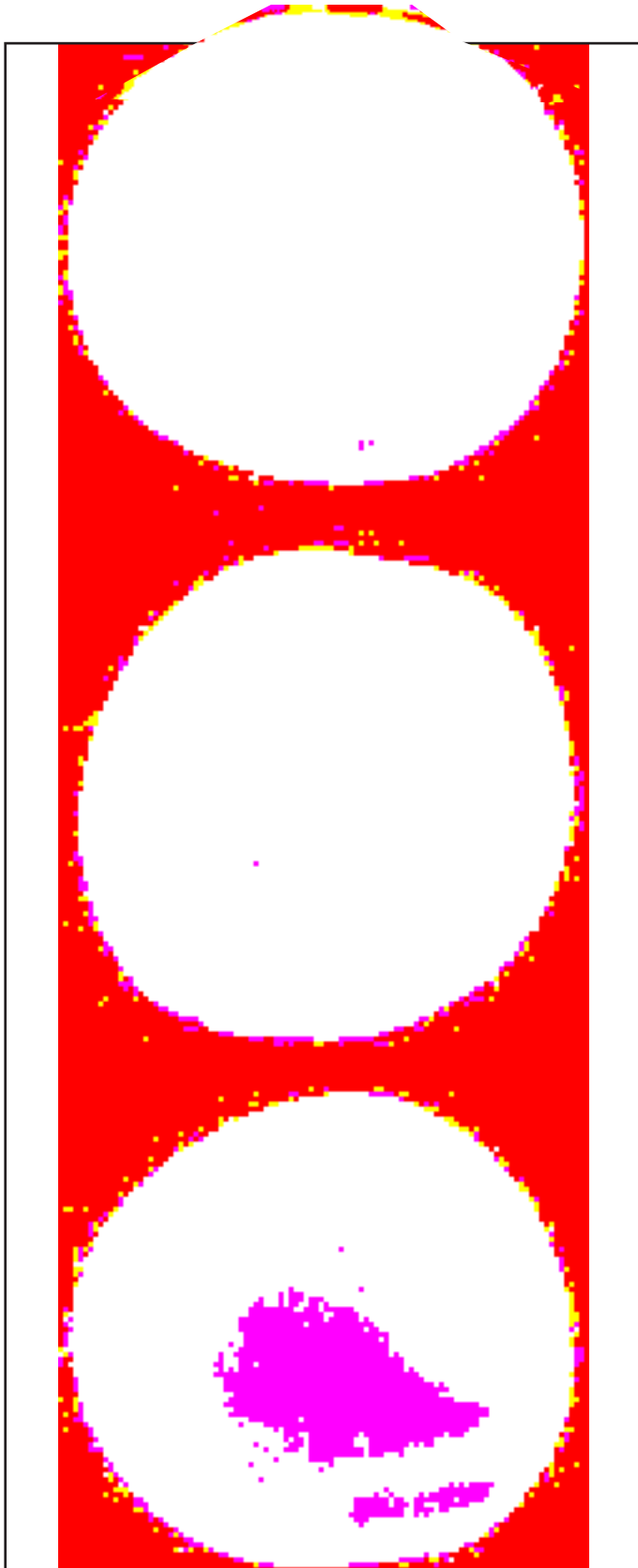
Less than 1.0 square cm in area

STYLE C

Less than 2.0 square cm in area

MAJOR BLEMISH

Major blemish includes deep, dark and more severe injuries. These injuries include minor healed cuts, punctures, scuffing and scratches such as from hail, limb rub, pests and diseases, minor spray and frost injury, minor russet and minor mechanical damage which might occur during harvest and handling. No unhealed blemish is to be packed.



STYLE A

Less than 0.5 square cm in area

STYLE B

Less than 1.0 square cm in area

STYLE C

Less than 2.0 square cm in area

CRACKING

Cracking is due to excess uptake of water by fruit shortly before harvest. Two types of cracking occur; small shoulder cracking and much larger cracks along the suture and tips. The degree of cracking depends on the cultivar, stage of maturity, fruit load and rainfall/irrigation strategy immediately before harvest.



STYLE A

Less than 1.0 cm in length

STYLE B

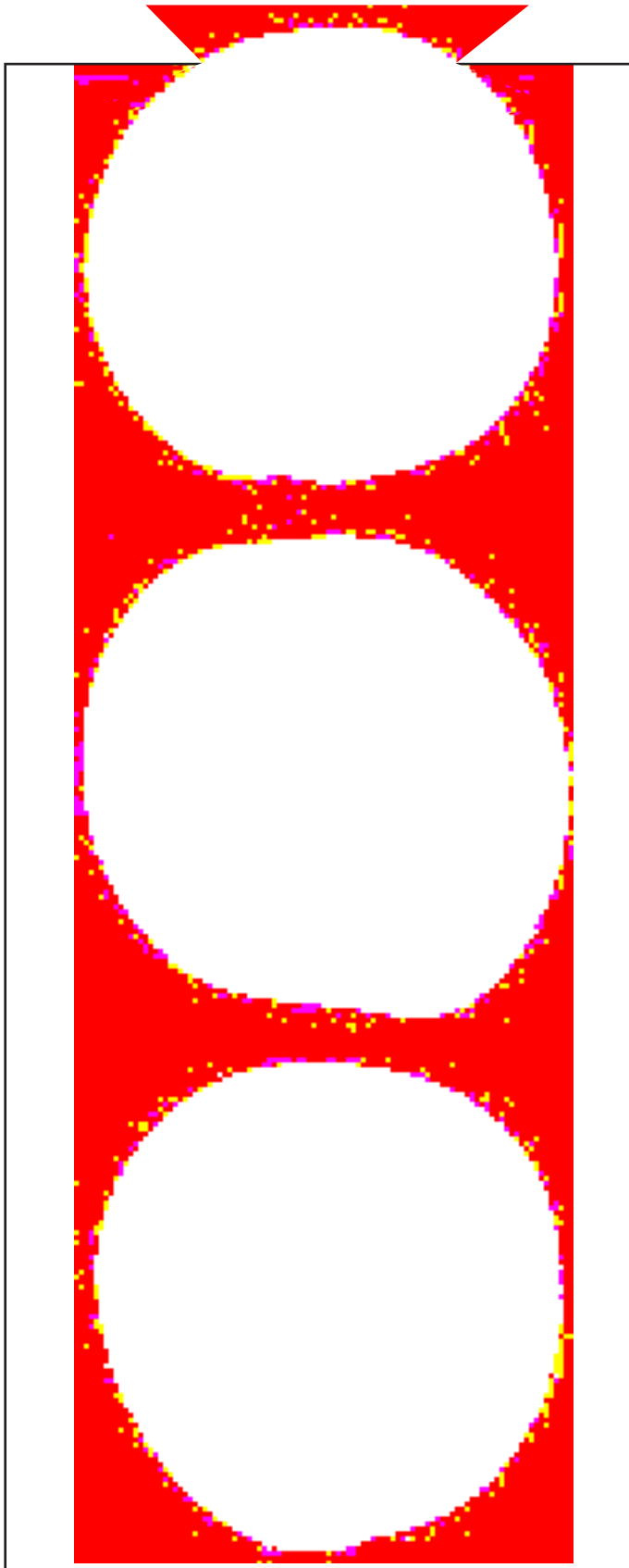
Less than 1.5 cm in length

STYLE C

Less than 3.0 cm in length

BRUISING

Bruising occurs due to rough handling at harvest, transport to packhouse, handling in the packhouse including packing and in the marketing chain. Dropping fruit and overfilling bins and cartons also contribute to bruising.



STYLE A

No bruising

STYLE B

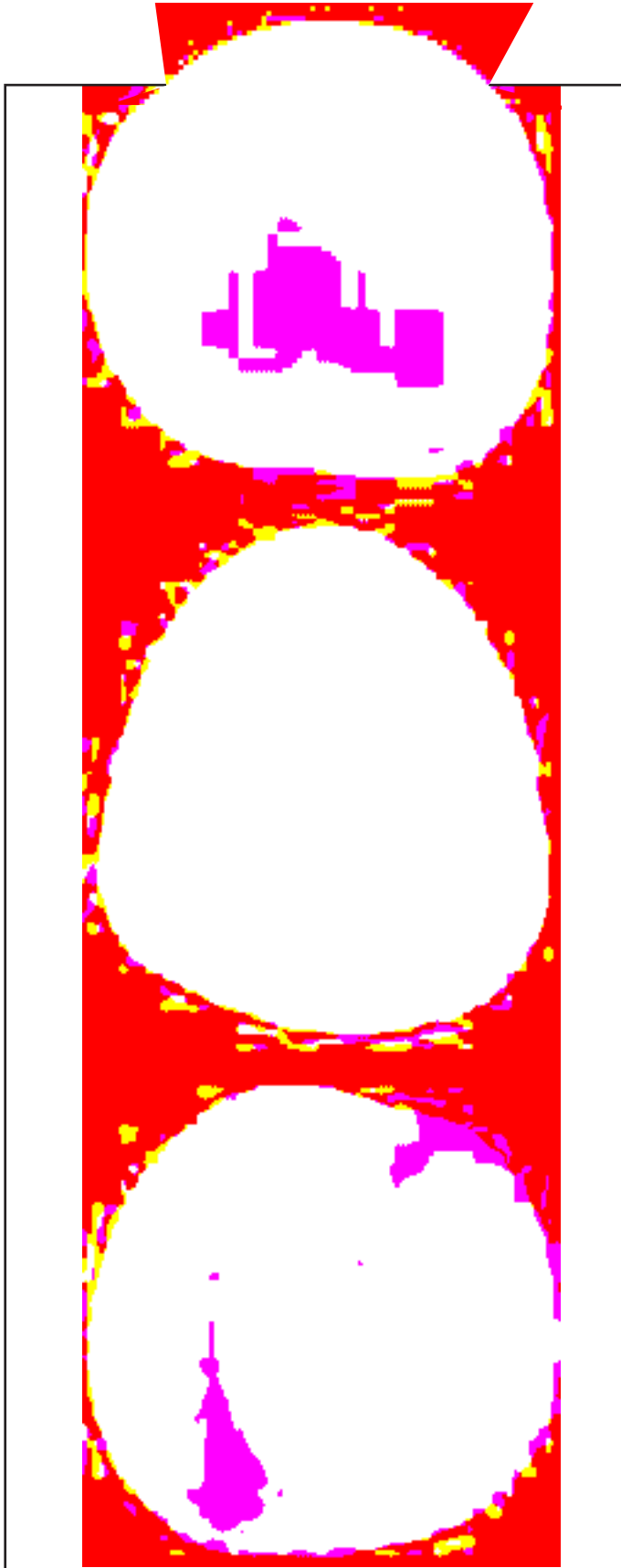
Less than 2.0 square cm of light bruising

STYLE C

Less than 5.0 square cm of light bruising

MISSHAPE

Misshape fruit is usually due to poor pollination. It can also be due to physical injury, such as from frost, hail, pests and diseases, occurring early in the growing season and leading to distorted growth.



STYLE A

Slight misshape

STYLE B

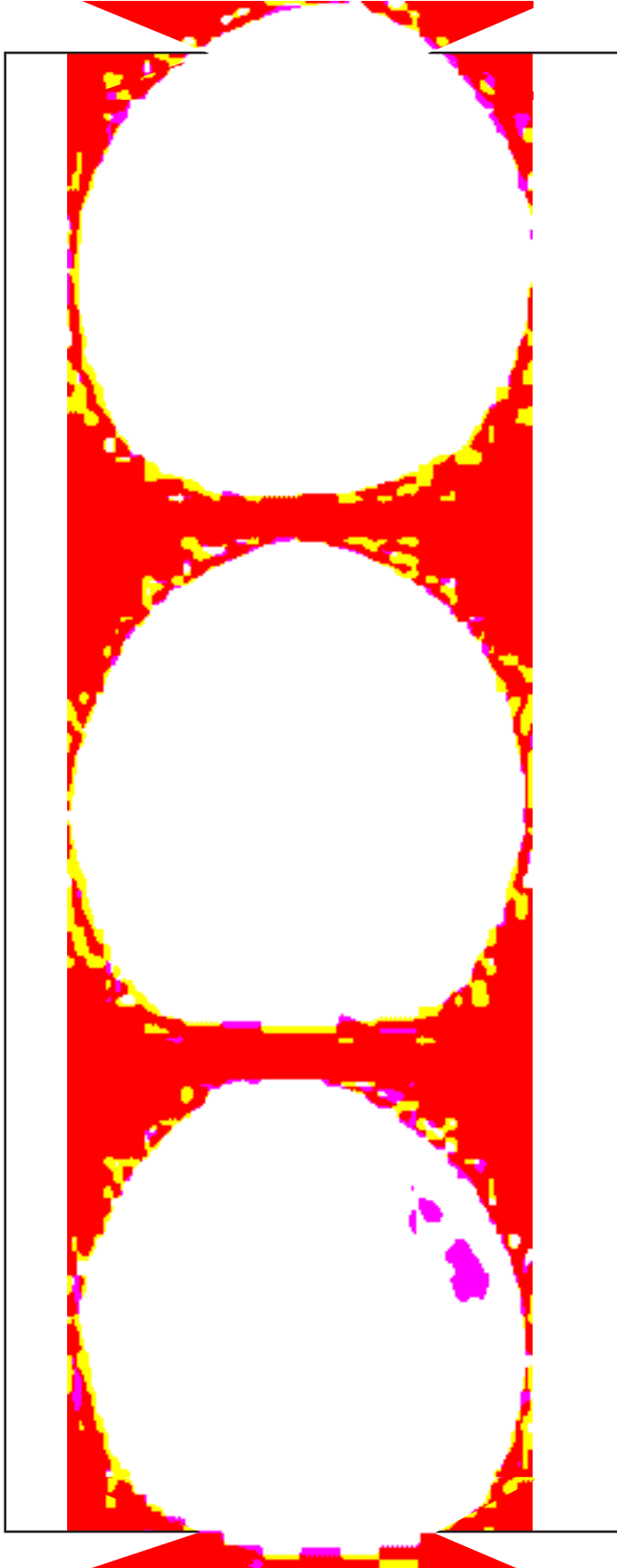
Moderate misshape

STYLE C

Severe misshape

COLOUR (External)

Fruit colour of nectarines varies considerably by variety, both the amount of fruit surface coloured red and the shade of red. This PDL refers to the amount of skin coloured red. Customers specify nectarines by external colour and/or internal colour and/or variety so this indicator needs to be read in conjunction with internal colour and nectarine variety.



STYLE A

Greater than 80% red

STYLE B

Between 50% and 80% red

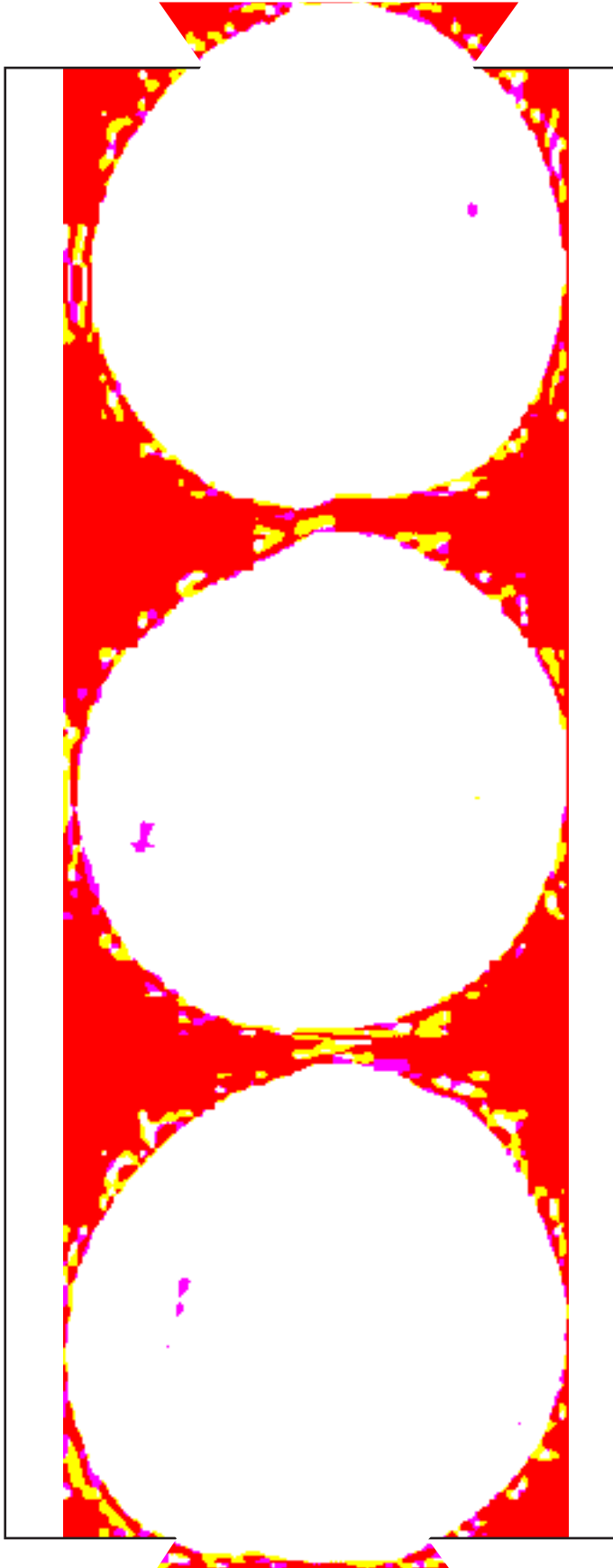
STYLE C

Less than 50% red

MINOR BLEMISH

Minor blemish includes light, slight and healed injuries. These injuries include minor healed cuts, punctures, scuffing and scratches such as from hail, limb rub, pests and diseases, minor spray and frost injury, minor russet and minor mechanical damage which might occur during harvest and handling.

No unhealed blemish is to be packed.



STYLE A

Less than 0.5 square cm in area

STYLE B

Less than 1.0 square cm in area

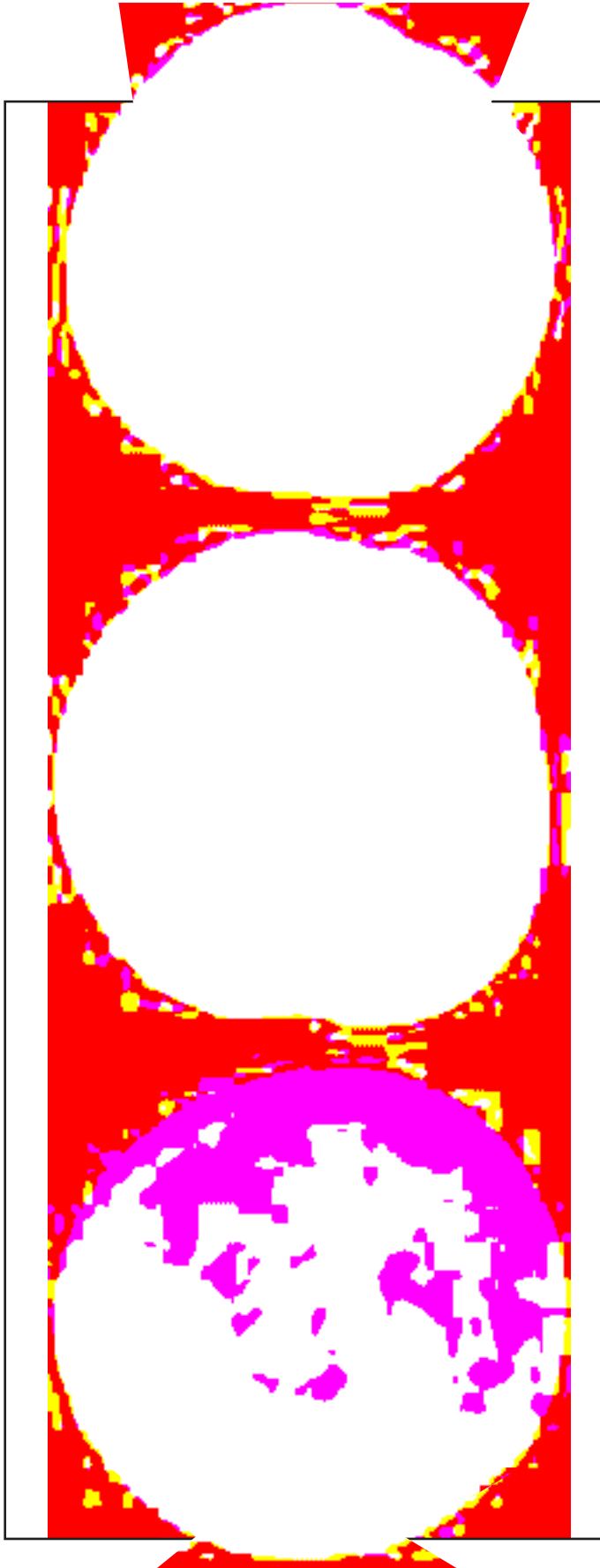
No more than 2.0 cm in length

STYLE C

Less than 3.0 square cm in area

MAJOR BLEMISH

Major blemish includes deep, dark and more severe injuries. Dark blemish is usually caused by the same conditions and events as minor blemish but has healed to a more prominent dark brown or black. No unhealed blemish is to be packed.



STYLE A

Less than 0.5 square cm in area

STYLE B

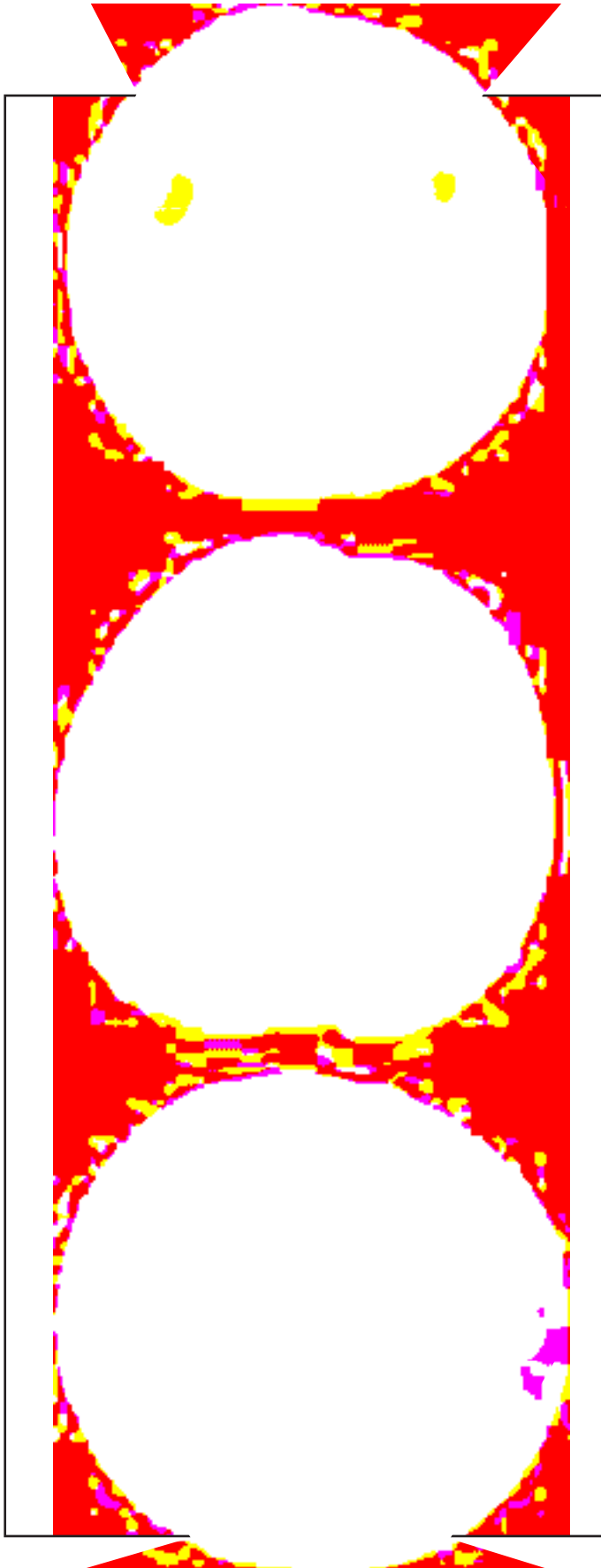
Less than 1.0 square cm in area

STYLE C

Less than 2.0 square cm in area

CRACKING

Cracking is due to excess uptake of water by fruit shortly before harvest. Two types of cracking occur; small shoulder cracking and much larger cracks along the suture and tips. The degree of cracking depends on the cultivar, stage of maturity, fruit load and rainfall/irrigation strategy immediately before harvest.



STYLE A

Less than 1.0 square cm in area or
1 cm in length

STYLE B

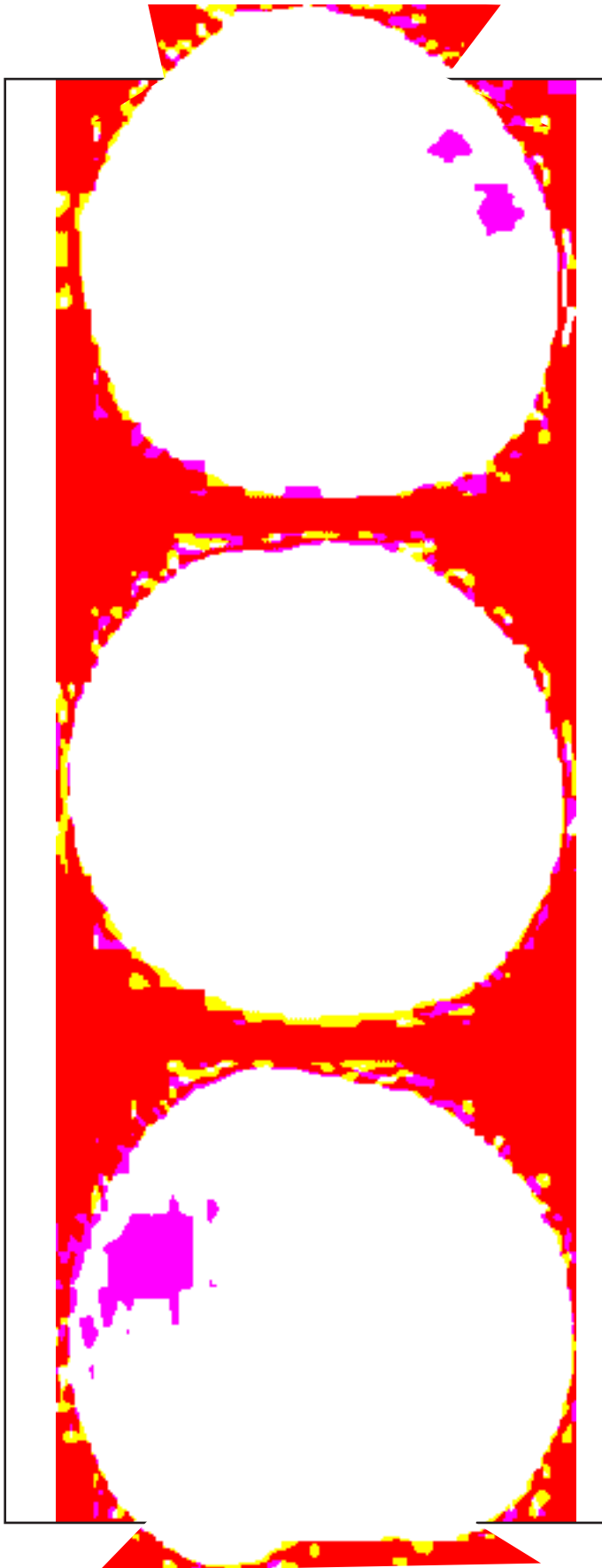
Less than 1.5 square cm in area or
2.5 cm in length

STYLE C

Less than 2.5 square cm in area or
3 cm in length

BRUISING

Bruising occurs due to rough handling at harvest, rough transport to packhouse, rough handling in the packhouse including packing and in the marketing chain. Dropping fruit and overfilling bins and cartons also contribute to bruising. Bruising is rarely tolerated.



STYLE A

No bruising

STYLE B

Less than 2.0 square cm of light bruising

STYLE C

Less than 5.0 square cm of light bruising

SPLIT STONE

All stone fruit, but particularly peaches and nectarines, are susceptible to split stones. Variation also occurs between varieties. Split stone is caused by abnormally rapid growth during the stone hardening phase. Split stone fruit usually mature faster so are more prevalent in the first pick. Not all split stones show the characteristic crack in the flesh in the stem cavity. Where the crack is apparent, this can lead to infection and decay.



STYLE A

Minor split stone

STYLE B

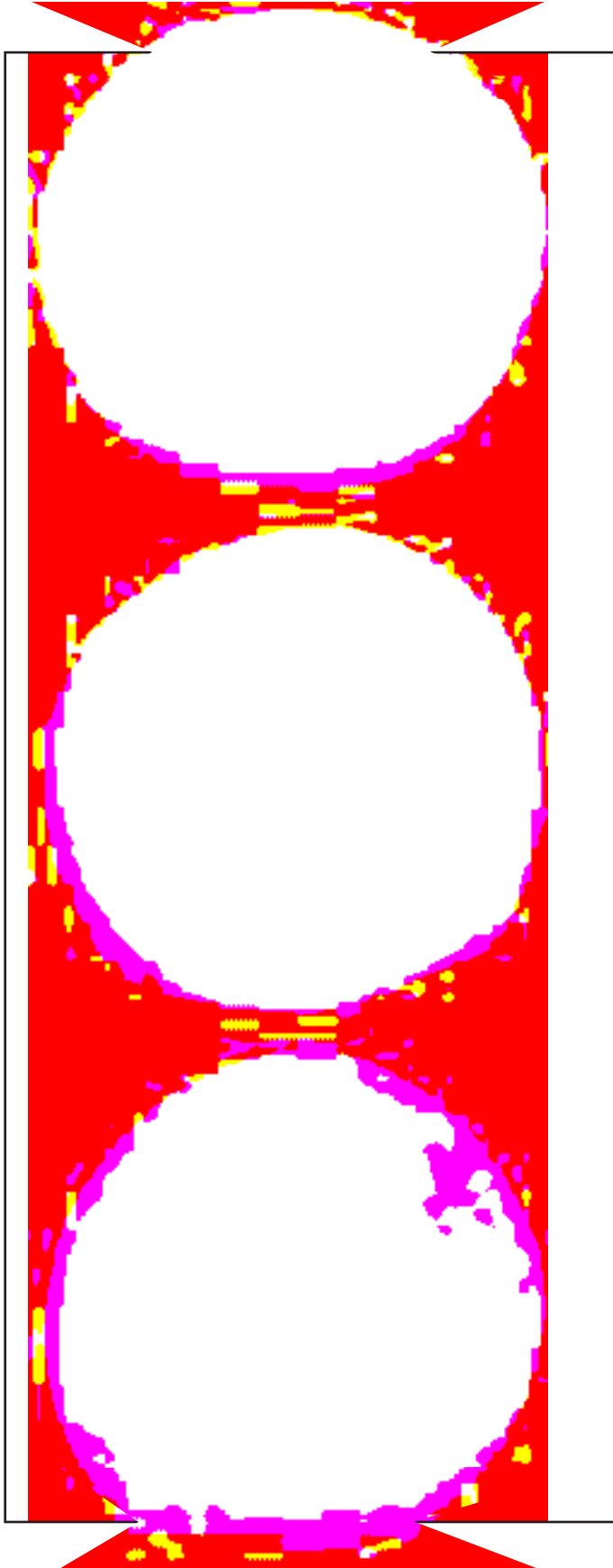
Medium split stone

STYLE C

Major split stone

COLOUR (External)

Fruit colour of peaches varies considerably by variety, both the amount of fruit surface coloured red and the shade of red. This PDL refers to the amount of skin coloured red. Customers specify peaches by external colour and/or internal colour and/or variety so this indicator needs to be read in conjunction with internal colour and peach variety.



STYLE A

Greater than 80% red

STYLE B

Between 50% and 80% red

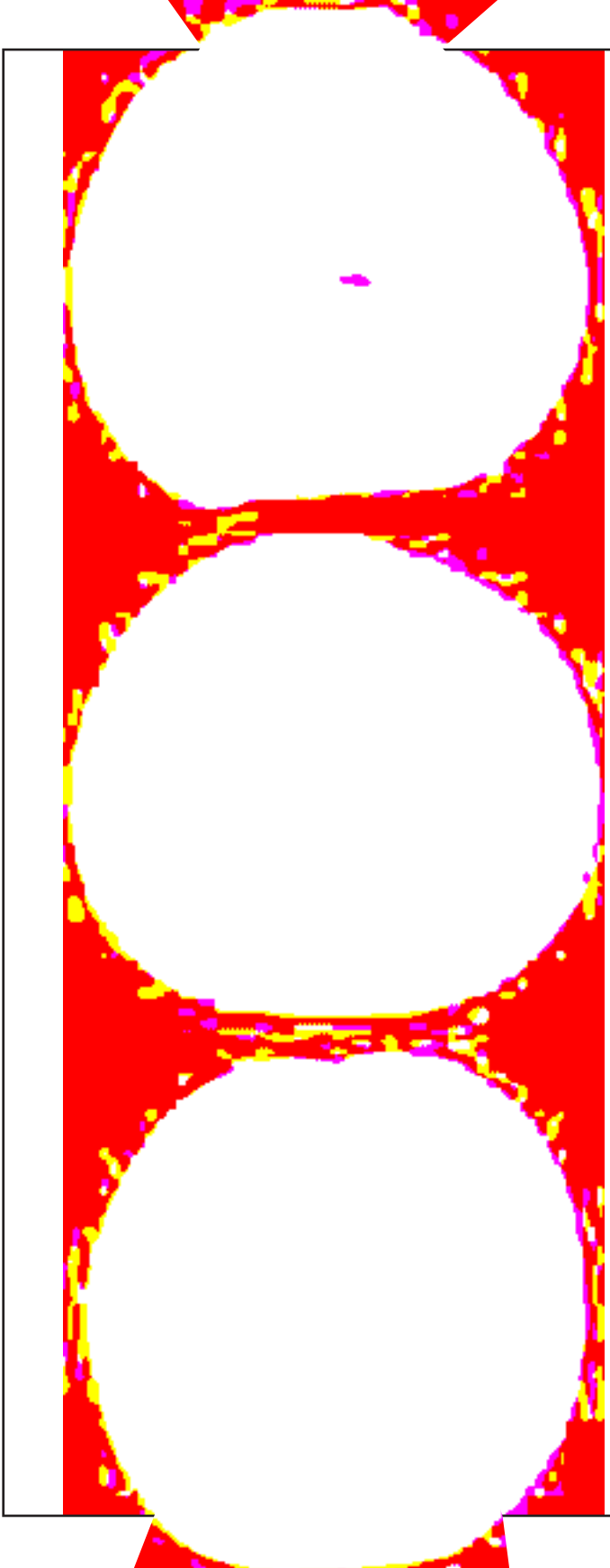
STYLE C

Less than 50% red

MINOR BLEMISH

Minor blemish includes light, slight and healed injuries. These injuries include minor healed cuts, punctures, scuffing and scratches such as from hail, limb rub, pests and diseases, minor spray and frost injury, minor russet and minor mechanical damage which might occur during harvest and handling.

No unhealed blemish is to be packed.



STYLE A

Less than 0.5 square cm in area

STYLE B

Less than 1.0 square cm in area

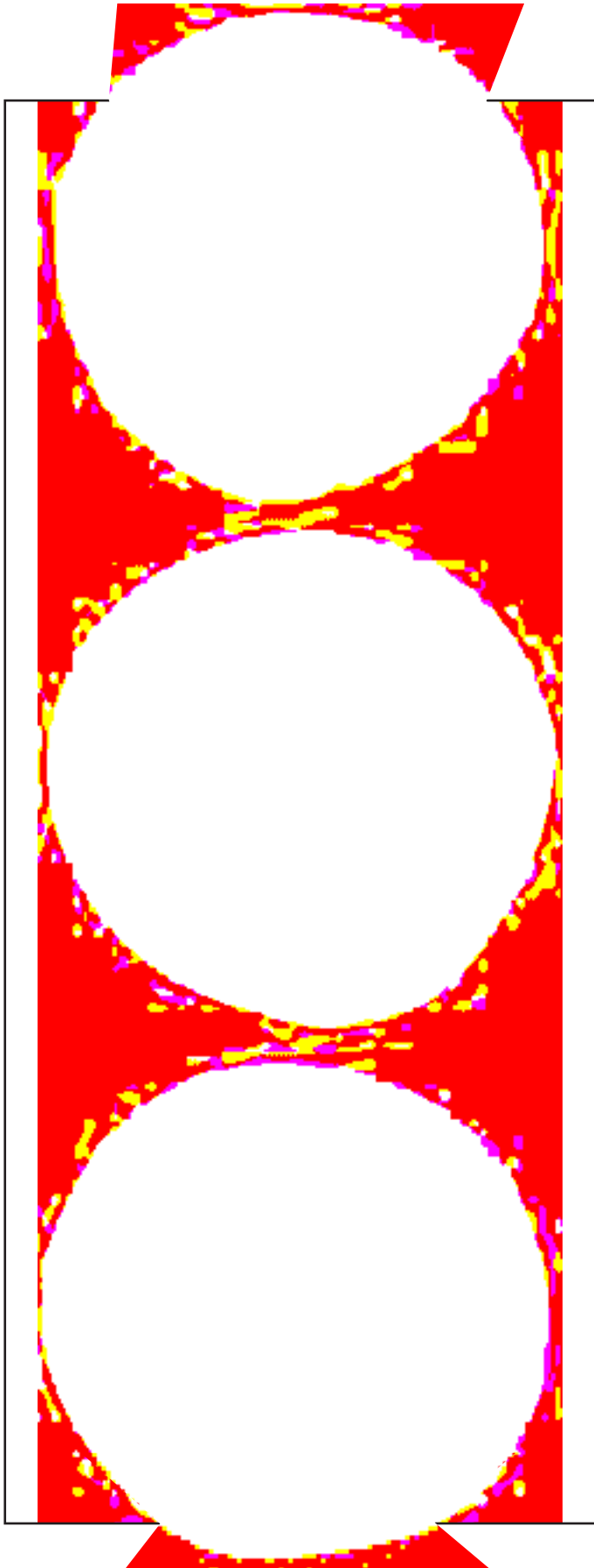
No more than 2.0 cm in length

STYLE C

Less than 3.0 square cm in area

MAJOR BLEMISH

Major blemish includes deep, dark and more severe injuries. Dark blemish is usually caused by the same conditions and events as minor blemish but has healed to a more prominent dark brown or black. No unhealed blemish is to be packed.



STYLE A

Less than 0.5 square cm in area

STYLE B

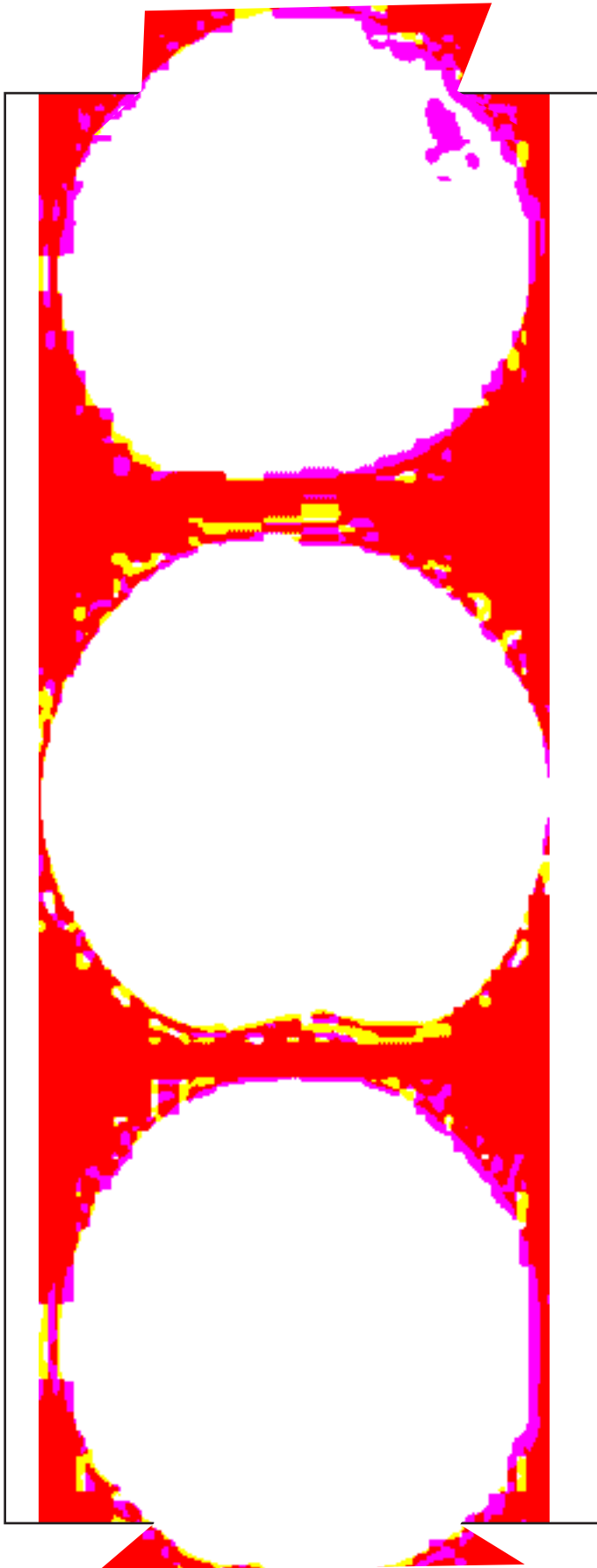
Less than 1.0 square cm in area

STYLE C

Less than 2.0 square cm in area

BRUISING

Bruising occurs due to rough handling at harvest, transport to packhouse, handling in the packhouse including packing and in the marketing chain. Dropping fruit and overfilling bins and cartons also contribute to bruising.



STYLE A

No bruising

STYLE B

Less than 2.0 square cm of light bruising

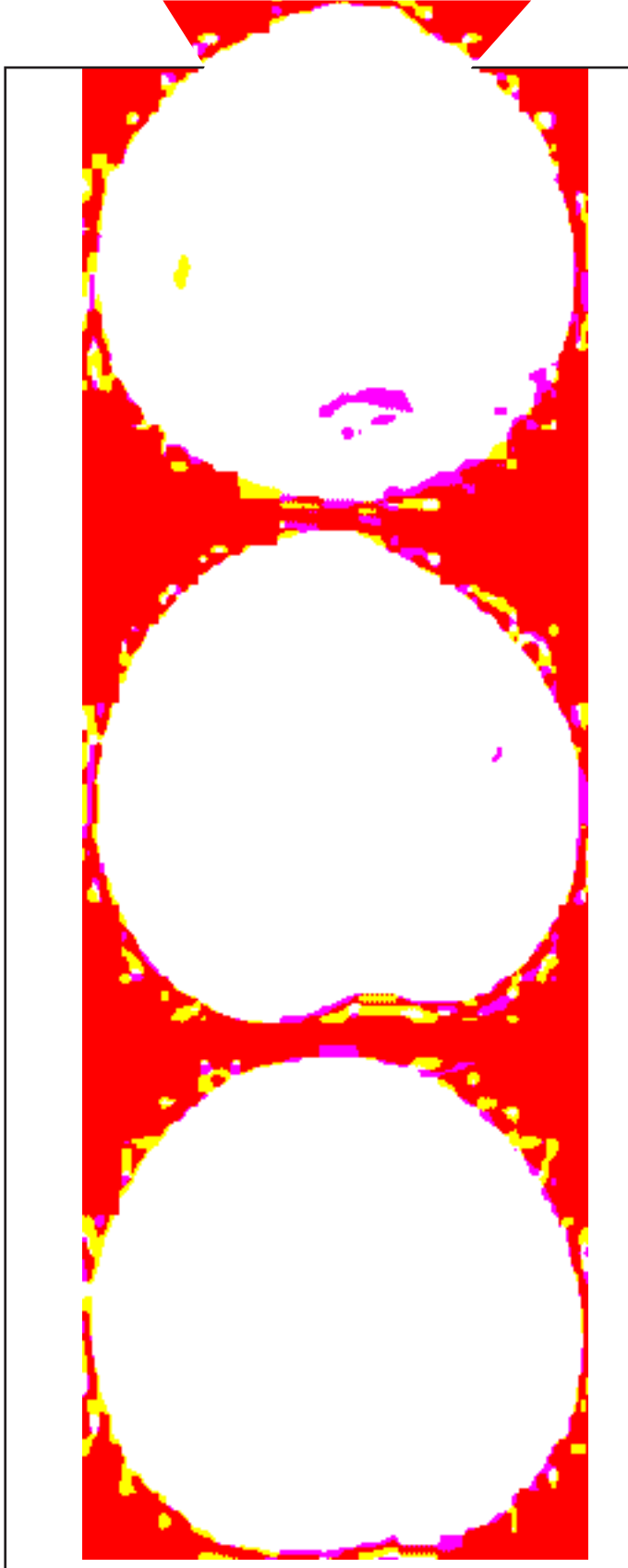
STYLE C

Less than 5.0 square cm in area

MINOR BLEMISH

Minor blemish includes light, slight and healed injuries. These injuries include minor healed cuts, punctures, scuffing and scratches such as from hail, limb rub, pests and diseases, minor spray and frost injury, minor russet and minor mechanical damage which might occur during harvest and handling.

No unhealed blemish is to be packed.



STYLE A

Less than 0.5 square cm in area

STYLE B

Less than 1.0 square cm in area

No more than 2.0 cm in length

STYLE C

Less than 3.0 square cm in area

MAJOR BLEMISH

Major blemish includes deep, dark and more severe injuries. Dark blemish is usually caused by the same conditions and events as minor blemish but has healed to a more prominent dark brown or black. No unhealed blemish is to be packed.



STYLE A

Less than 0.5 square cm in area

STYLE B

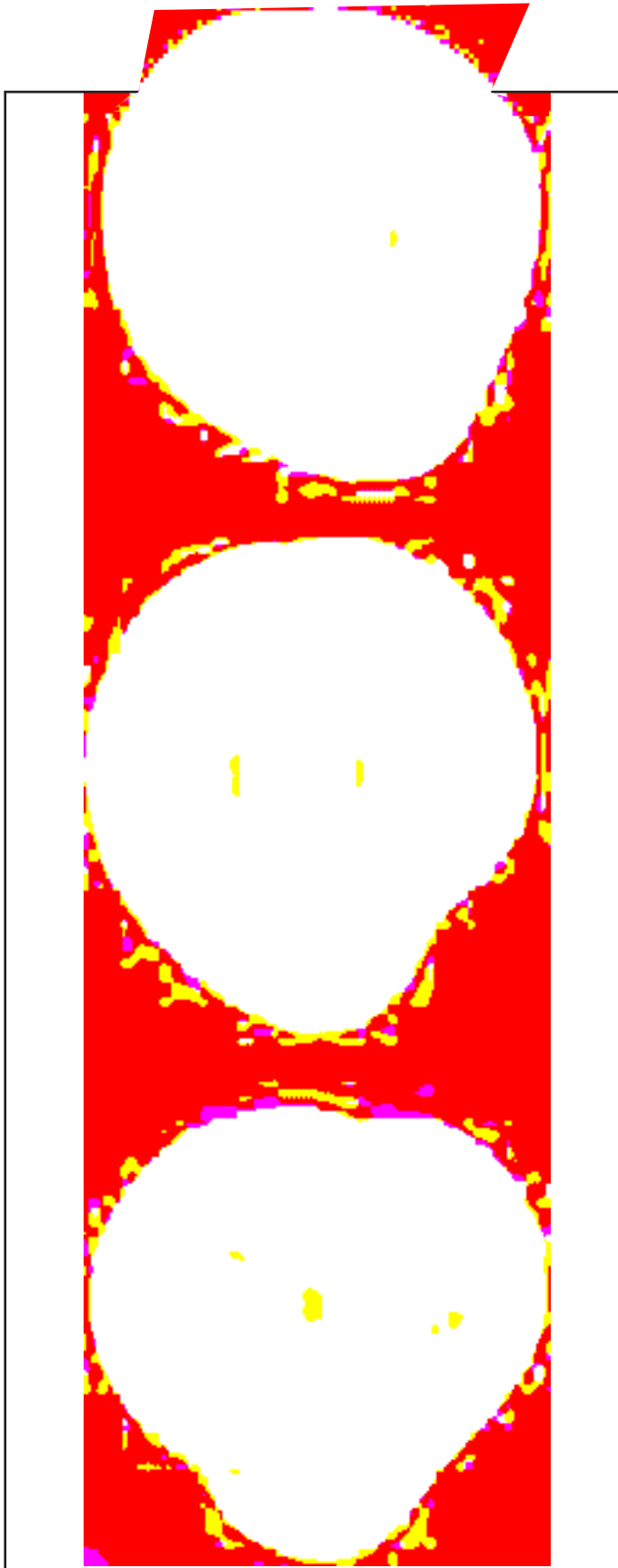
Less than 1.0 square cm in area

STYLE C

Less than 2.0 square cm in area

MISSHAPE

Misshape fruit is usually due to poor pollination. It can also be due to physical injury, such as from frost, hail, pests and diseases, occurring early in the growing season and leading to distorted growth.



STYLE A

Slight misshape

STYLE B

Moderate misshape

STYLE C

Severe misshape