

Color space (RGB and CMY) properties of pixel for peel of Mango's fruit on digital photos and mathematical relations with total pigments

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Abstract—This study experimented the peel of fourteen cultivars were healthy ripe of Mango fruits (*Mangifera indica* L.) selected after picking from Mango Spp. under two color space tests (RGB: Red, Green and Blue) and (CMY: Cyan, Magenta and Yellow) utilizing digital color photographs as tool for obtainment the natural color information for each cultivar as a non-destructive analyses then the result linked with total pigment estimation as a destructive analyses. Our study was suggested the concentration (%) of structure pigments as well as some Pigment Index formula opposite some Color Space Index. To study and determine precisely the mathematical relations between concentration (%) of structure pigments and the digital visual color for purpose the interpretations and illustrations of the structure pigments induction on the color space elements. The result indicated to strong numeric correlation between total pigment data and color space data which the color space tests approach to evaluation the total pigment.

Keywords— Color space tests, Mango fruits, *Mangifera indica* L., RGB and CMY, Total pigments, non-destructive analyses, destructive analyses.

I. INTRODUCTION

THE Mango is (*Mangifera indica* L.) Family *Anacardiaceae* (cashew family). Several physical and biochemical studies on the growth, development and maturation of Mango fruit openly cultivated in tropical areas have been reported (Krishnamurthy and Subramanyam, 1970; Lakshminarayana *et al.*, 1970; Kalra and Tandon, 1983). Physiological maturity shows changes in the pulp colour, breaking to yellow; hence it can be tested by slicing a fruit before harvesting. An ancient

advice for Mango harvesting says that, when first fruits begin to drop, the crop is ready for picking (Tasneem, 2004). Changes in surface and flesh colours during maturation seem useful as a good index of fruit maturity and determination factors of optimal harvesting time as reported by (Malevski *et al.*, 1977). Mango fruits ripen unevenly on the tree and fruits are picked by hand at an average maturity. Tree ripe fruits show bright skin colour with uniformly softened flesh and developed flavor, but those fruits have a very short shelf life. For distant markets or for export, half ripe or unripe Mangoes are used depending on the market distance, but ripe fruits are preferred for local marketing. To extend the shelf life of the product, certain treatments are used to delay the ripening process of the Mangoes (Tasneem, 2004). Physical theory, In 1931 CIE or Commission Internationale de IEChlirage (International Commission on Illumination) standardized the colour order systems which provides a qualitative as well as quantitative description of the colour. It is based on the theory that the colour is a combination of three primary colours, including red, green and blue. To locate a colour in a colour space the CIE colour system utilizes three co-ordinates. The colour spaces are CIE XYZ, CIE L* a* b* and CIE L* C* h°. Minolta chromameter can be used for determination of colour attributes expressed in CIE L* a* b* co-ordinates where L* defines lightness, a* represent red/green value and b* denotes the blue/yellow colour value (McGuire 1992). a* axis and +a direction shift towards red while along the b* axis +b movement shift toward yellow. The center L* axis the degree of lightness (L = 0 for black to 100 for white) on a vertical axis (McGuire

1992). Our goal in the present study is Classification and analysis of digital specific colour (Colour notation for healthy Mango fruit Spp. As a digital colour space index and digital Munsell computerized munsell for assessing post-harvest changes in Mango fruits correlation with pigment concentrations as well as the visual colour and the pigment concentrations are the major issues to appear the colour tone on the digital picture; using some colour measurements software. Finally, to designed (color space-total

The peel for fourteen cultivars of healthy ripe Mango fruits selected after picking; corresponding fourteen cultivars from Mango Spp. namely Taimour [Ta], Dabsha [Da], Aromanis [Ar], Zebda [Ze], Fagri Kelan [Fa],

Destructive method

Chlorophyll contents of mango organ are determined according to (Wettstein 1957) as follows : five grams of the organ was mixed with 30ml of 85% acetone in a dark bottle and then left to stand for 15 hours at room temperature. The samples were then filtered on glass wool into a 100ml. volumetric flask, and made up to volume by 85% acetone solution. The optical density of the samples was then measured in Carl Zeiss spectrophotometer at 644 and 662 nm. Acetone (85%) was used as a blank

Non-destructive method

The actually investigation emphasized classification and analysis study of natural colour tone signal characteristics utilizing picture of portions samples (skin) for each fourteen Spp. of healthy ripe Mango fruits after picking; snapshot using scanner model (Scan Prisa 640P ACER); this method was done then confirmed it (Murakami et. al., 2005). The natural colour tone signal of varieties fruits (skin) were analyzed via measurements the replicates of 4 pixels from each 14 various samples carried with image. Whereas that were taken with collection by putting to use parcelling of colourimeter software to measure Red, Green and Blue (basic additive colors) component RGB (0-255), Cyan, Magenta and Yellow (subtractive colors) component (CMY) in colour range (0-255) and Hexadecimal (#HTML), Adobe Photoshop software was used after that to finding out electronic natural colour pixel (greenish-yellowish scale) Color Pixel Grade consistently with 14 various samples natural

pigments structures concentrations) calculator after the measuring for the plant organs from the digital picture. These goals are importance for determine the initial quality of the Mango fruits, quality assessment, quality of Mangoes after storage and quality evaluation after ripening for skin colour correlation with other chemical ways.

II. METHODOLOGY

Plant materials

Alphonse [Al], Bulbek heart [Bu], Hindi-Sinnara [Hi], Compania [Co], Langra [La], Mestikawi [Me], Ewais [Ew], Montakhab El Kanater [Mo] and Mabroka [Ma].

at each measurement. the contents of total chlorophyll were calculated using the following equations:

$$\text{Chlorophyll a} = (9.78 \times E_{662}) - (0.99 \times E_{644}) = \text{mg/Liter}$$

$$\text{Chlorophyll b} = (21.426 \times E_{644}) - (4.65 \times E_{662}) = \text{mg/Liter}$$

$$\text{Caroten} = 4.695(\text{read } 440) - 0.268(\text{chl-a-chl-b}) \text{ mgm/liter}$$

Where E = sample optical density at the indicated wave length.

colour tone degrees. Colour calculator software was used to checkup of colouring data accuracy. In clouding that, Originality Technique for Colour Measurements was designed by (Hammad 2007).. In this respect, the colour tests RGB, CMY, HTML, and electronic natural colour (greenish-yellowish scale) Color Pixel Grade were selected in the recently study from 16 colour vision tests which Designed by (Hammad 2007).. The analysis performed to investigate the visual natural colour tone characteristic of 14 healthy ripe Mango fruits after picking (skin) and natural colour (greenish-yellowish scale) grades) creating with the photo. Our investigated was suggested the concentration (%) of structure pigments as well as some Pigment Index formula such as (Chl-a-Chl-b, Cla+Chl-b, and Chl-a-Ca) opposite for color Space Index such as (R-G, R+G+B, R+G, C+M+Y and C+M).

III. RESULTS AND DISCUSSION

III. 1. The link between Destructive analyses data and Non-destructive analyses data for cultivars of Mango's peel

The concentrations of pigments structures in any plant material as well as the pulp and flesh/skin of fruit is a major factor to appearance the coloring for sensing by human eyes and in picture/image as in shown in (Plate 1.) for Aromanis cultivar of healthy ripe Mango fruits selected after picking.

In the present study the skin for fourteen Mango fruit cultivars (Symbol: Ta, Da, Ar, Ze, Fa, Al, La, Hi, Co, Bu, Me, Ew, Mo and Ma) were created on the picture and the colour tone of the skin was experimented by nine color measurements such as RGB, CMY, HTML and Color Pixel Grade\Scale the output of these estimation were manifested in (Table 1). The data consider as an active average values\color number which these values are available for treatment in color space programs to extracting the HTML and Color Pixel Grade.

Specific color measurements were correlated with the pigments structure concentrations analysis these data were listing in (Table 1.). The color data were a handsome and easy to categorization the digital color elements. In this attachment, our location study in the visual green, yellow and orange color degrees from the visible color of electromagnetic spectrum in wavelength between (~500 to 625) nm and frequency between (~ 600 to 480) THz, see (Plate 2.).

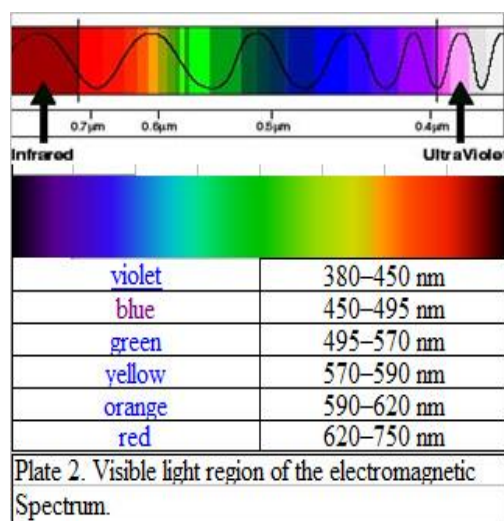


Plate 1. Visual normal color tone of digit picture as an example for pulp and peel color in Aromanis cultivar.

Table 1. The link between Destructive analyses data and Non-destructive analyses data for cultivars of Mango's peel

Sample No.	Symbol	Cultivar	Destructive analyses									Sum
			µg/g			%			Pigment Index			
			Chl a	Chl b	Carotene	Chl a	Chl b	Carotene	Chl a -Chl b	Chl a-Ca	Chl b-Ca	
1	Ta	Taimour	235.75	244.75	200.05	35	36	29	1	6	7	71
2	Ar	Aromanis	216.60	238.73	178.85	34	38	28	4	6	10	72
3	Fa	Fagri Kelan	271.13	320.15	227.48	33	39	28	6	5	11	72
4	Al	Alphonse	265.58	295.65	228.05	34	37	29	3	5	8	71
5	La	Langra	255.95	282.85	203.93	34	39	27	5	7	12	73
6	Ew	Ewais	240.68	264.10	191.55	35	37	28	2	7	9	72
7	Me	Mestikawi	248.85	276.33	254.98	32	35	33	3	-1	2	67
8	Mo	Montakhab El Kanater	158.05	206.30	187.48	29	37	34	8	-5	3	66
9	Ma	Mabroka	181.48	216.58	195.48	31	36	33	5	-2	3	67
10	Da	Dabsha	375.60	395.13	443.85	31	33	36	2	-5	-3	64
11	Hi	Hindi-Sinnara	136.03	145.53	195.35	29	31	40	2	-11	-9	60
12	Ze	Zaldi	258.50	243.28	281.53	33	31	36	-2	-3	-5	64
13	Bu	Budha heart	311.48	285.88	330.73	34	31	35	-3	-1	-4	65
14	Co	Compania	395.98	375.45	389.83	34	32	34	-2	0	-2	66
		Average	254	271	251	33	35	32	2	1	3	68
		Legend		>		>						

Table 1. Continue.....

Symbol	(0-255) Color Degree						Non-destructive analyses								Color Pixel Grade	
	RGB			CMY			R+G	R-G	C+M	C-M	R+G+B	C+M+Y	Sum CST	CST+Index		# HTML
	R	G	B	C	M	Y										
Ta	66	73	28	189	182	227	139	-7	371	7	167	598	765	2040	42491C	
Ar	77	84	31	178	171	224	161	-7	349	7	192	573	765	2040	4D541F	
Fa	64	76	26	191	179	229	140	-12	370	12	166	599	765	2040	404C1A	
Al	106	109	26	149	146	229	215	-3	295	3	241	524	765	2040	6A6D1A	
La	82	96	32	173	159	223	178	-14	332	14	210	555	765	2040	526020	
Ew	130	113	29	125	142	226	243	17	267	-17	272	493	765	2040	82711D	
Me	102	94	28	153	161	227	196	8	314	-8	224	541	765	2040	665E1C	
Mo	150	117	47	105	138	208	267	33	243	-33	314	451	765	2040	96752F	
Ma	158	108	24	97	147	231	266	50	244	-50	290	475	765	2040	9E6C18	
Da	88	90	26	167	165	229	178	-2	332	2	204	561	765	2040	585A1A	
Hi	75	87	33	180	168	222	162	-12	348	12	195	570	765	2040	4B5721	
Ze	74	77	26	181	178	229	151	-3	359	3	177	588	765	2040	4A4D1A	
Bu	77	76	30	178	179	225	153	1	357	-1	183	582	765	2040	4D4C1E	
Co	71	71	23	184	184	232	142	0	368	0	165	600	765	2040	474717	
	91	91	29	161	164	226	185	4	325	-4	214	551				

Legend >

SCT= Color Space Test

III. 2. Properties of pointers RGB and CMY senses

Concerning this, in (Table1) **RGB (basic colors)/(additive colors) component:** RGB is common color space. As the general, the higher data Classified in two main parameters R & G; while B for lower data. Noted that in the R & G the trend of the data was divided between them which found that in (Ta, Da, Ar, Ze, Fa, Al, La and Hi) the data in G were a higher than the data in R and vice-versa the data for other cultivars (Bu, Me, Ew, Mo and Ma) were a higher R than G. these reasonability attribute in (Table 1) to increase the colors pigments in the latter cultivars. In Compania the R=G this especially statues indicated that to occurrence balance between green pigment and colour pigment concentration which the pigment structure in the (Table 1.) verify\confirm for this point. Another addition, the higher value of R was Mabroka and lower value in R was Taimour which (Ma) more coloration than (Ta) see the Color Pixel Grade in the (Table 1.). The Compania was lower values in G and B while the Montakhab El Kanater was higher values in G and B. Taimour was also lower value in G. On the other hand, some congener value such as value 77 with (Ar) and (Bu) in R, value 76 with

(Fa) and (Bu) in G and value 28 with Ta and Me also (Ze, Fa and Al) equal 26 in B. This congener value is weaken the capability of the Classification for plant samples in single parameter such as R or G or B while the Classification via component such as RGB is completely identified and the values are as the same color signature for the samples see also HTML in (Table 1.) in spite of hard difficult the differentiation within the color in the Color Pixel Grade (Table 1.) by human eyes. The main average for all skin of fruit cultivars was R>G>B format this mean the coloring pigment is most prevailing. As the general, the interpenetration and the degree of Chla, Chlb and Carotene concentrations importance factors for the repartition color data in the RGB component. In this respect, the R, G and B not work solitary but work at the all; as the same entire color space component. Summation R, G, and B: not found congener values consequently, dependable for pure Classification; notice higher value was with (Mo) and lower value in (Co). **CMY (subtractive colors) component:** In the first, physically theory according to (Mannising 2003) CMY is vice-a-versa\reverse RGB which it is active view and CMY is passive view as shown in (Plate 3 a., b. & C.). Our CMY data in (Table 1.) were typical for this theory. See also columns (R-G) and (C-M) absolutely as the

theory. Consequently, the values in the all C and M columns were interchanging the higher and lower values for cultivar by comparison of the values in the R and G columns. Nevertheless, the values in C, M and Y were very higher than R, G and B values. Unless C=M for Compania as the same in R and G but the difference was C and M values very higher than R and G values (184 opposite to 71). On the other hand, found character colours as reason to affecting the structures of pigment concentrations and the other said, the physical properties for the colour self-explanatory in (Flowchart 1) which the first, in the item C was (Ma) lower value while in R zone was higher value; on the other hand, the

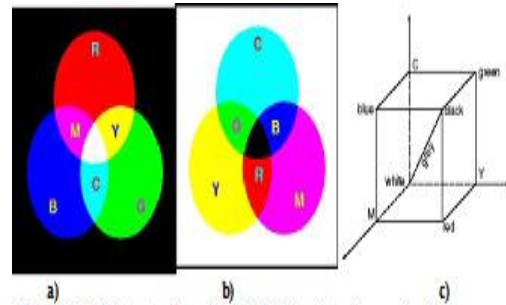


Plate 3. RGB (basic colors) and CMY (subtractive colors) Which a) The RGB primary and secondary colours., b) The CMY(K) primary and secondary colours. And c) The RGB and CMY(K) colour space. After (Mannising 2003).

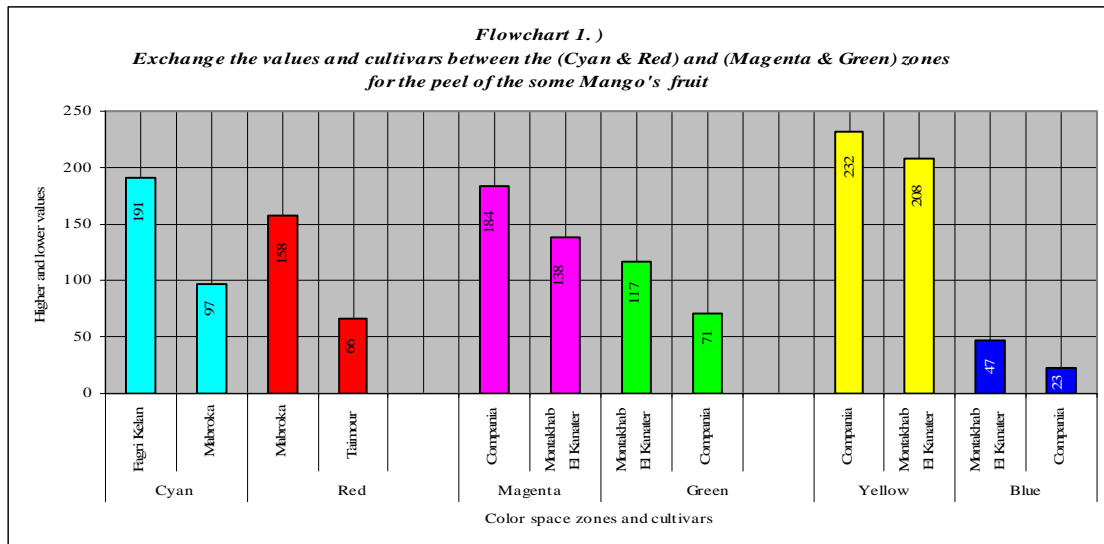


Diagram 1 The symbol data of C, M and Y as ascending order for R, G and B also symatic cell for C, M and Y as the same symbol in R, G and B

	C	R	M	G	Y	B						
Fa	191	Ma	158	Co	184	Mo	117	Co	232	Mo	47	
Ta	189	Mo	150	Ta	182	Ew	113	Ma	231	Hi	33	
Co	184	Ew	130	Fa	179	Al	109	Ze	229	La	32	
Ze	181	Al	106	Bu		Ma	108	Da		Ar	31	
Hi	180	Me	102	Ze	178	La	96	Al		Bu	30	
Ar	178	Da	88	Ar	171	Me	94	Fa		Ew	29	
Bu		La	82	Hi	168	Da	90	Me	Ta	28		
La	173	Bu	77	Da	165	Hi	87	Ta	227		Me	26
Da	167	Ar		Me	161	Ar	84	Ew		226	Fa	
Me	153	Hi	75	La	159	Ze	77	Bu		225	Al	
Al	149	Ze	74	Ma	147	Bu	76	Ar		224	Da	
Ew	125	Co	71	Al	146	Fa		La	223	Ze		
Mo	105	Ta	66	Ew	142	Ta	73	Hi	222	Ma	24	
Ma	97	Fa	64	Mo	138	Co	71	Mo	208	Co	23	

higher point in C was (Fa 191) opponent to lower value in R was (Fa 64). Second instruction, in M was Compania higher values and Montakhab El Kanater was lower values and completely exchange the turn as vice versa in G parameter for those cultivars; as the same position for this cultivars in zone Yellow with Blue. According to that the symbol data of C as ascending order for data in R, the symbol data of M as ascending order for data in G and symbol data of Y as ascending order for data in Blue. Meanwhile, found symmetric value in the C as the same symbol in the R, symmetric value in the M as the same symbol in the G and symmetric value in the Y as the same symbol in the B see (Diagram 1.).

Repeating cells were in C and M showing with as the same cultivars in the R and G and listed as the higher scale. Y tape in our (Table 1) was as registration remark for natural colour pixel of fruit which the character of all values was highest than C and M. furthermore, counteractive for B tape in RGB which including data more lowly than the all. Summation of CMY was as the same Sum. of RGB which was not including any number from congener cell.

Hexadecimal measurements (#HTML) and Color Pixel Grade (CPG)/Scale Color: In (Table 1.) for credibility and adjustment of the colors degrees data the Hexadecimal and Color Pixel Grade-the benefit form in the computerized checkup and not using for a human eyes differentiation-were setting referring to each color degrees of electronic pictures for fruits peel cultivars. The color spaces components such as RGB, CMY, (#HTML),...etc as the voice\telephone number to call the pixel tone personal.

III. .3. Properties of pointers total pigments structure and concentrations senses

In this context, in the (Table 1.) we showed such trends for the pigments structures Ch_l & Ch_b and Carotene ($\mu\text{g/g}$) which divided the cultivars to five formats: 1. $Ch_b > Ch_l > \text{Carotene}$ for (Ta, Ar, Fa, Al, LA and Ew), 2. $Ch_b > \text{Carotene} > Ch_l$ for (Me, Mo, and Ma)* notice that, it is for the most the coloring fruits, 3. $\text{Carotene} > Ch_b > Ch_l$ for (Da & Hi), 4. $\text{Carotene} > Ch_l > Ch_b$ for (Ze & Bu) and 5. $Ch_l > \text{Carotene} > Ch_b$ for (Co). In the pigments concentrations Ch_l & Ch_b and Carotene (%) found as the same trends for the cultivars; remarkable exceptional was Compania which the $Ch_l = \text{Carotene} > Ch_b$. moreover, the

congener cell not apparent in Ch_l & Ch_b and Carotene ($\mu\text{g/g}$) while in Ch_l & Ch_b and Carotene (%) found more cells were repeating. Subsequently, the minimum and maximum values were more changing compare between pigments structures ($\mu\text{g/g}$) and its concentrations (%). The general average in the pigments structures ($\mu\text{g/g}$) & concentrations (%) pigments were $Ch_b > Ch_l > \text{Carotene}$. Major trend was Sum ($Ch_l + Ch_b$) which the cultivars manifested in two trends as for values (71, 72 and 73) were (Ta, Ar, Fa, Al, La and Ew) and values (60, 64, 65, 66, and 67) were (Me, Mo, Ma, Da, Hi, Ze, Bu and Co). In (Ch_l -ca) as the same directions for the same cultivars in the Sum ($Ch_l + Ch_b$) which the positive values for (Ta, Ar, Fa, Al, La and Ew) Chclassified as 6 for (Ta & A), 5 for (Fa & Al) and 7 for (La & Ew). And negative values for (Ta, Ar, Fa, Al, La and Ew) no symmetric values. The zero was for (Co) another remark. (Ch_b -ca) approach was higher values for (Ta, Ar, Fa, Al, La and Ew), middle values was 2 for Mestikawi and 3 for (Mo & Ma) and lower values were negative for (Da, Hi, Ze, Bu and Co) on the orderliness. In formula ($Ch_l - Ch_b$) the values were more scatter; nevertheless, the positive values were from Ta to Hi and negative values were from Ze to Co orderliness; symmetric between (Ze & Co). Symmetric points for (Ar & Fa) in model ($Ch_l + Ch_b$) were harmonized with Carotene %. (Me and Ma) in zone ($Ch_l + Ch_b$) were agreement in Carotene % as another Symmetric points. All these properties of the pigments structures and concentrations are essentials in the digital inductions for color vision\specific colour tones degrees.

III. 4. Intercommunions between pigments structures and concentrations and (RGB & CMY) color spaces

As regarding this, utilizing experience looking, in (Table 1.) and were discovered an opulent as-(each looking will found more logic relationships)-digital\numeric relationships between all the elements (rows and columns) of the destructive analyses and non-destructive analyses\ (chemicals analyses and physical analyses). Where formula (Ch_l -ca) for (Ta & Ar) was reflected the values of formula (R-G) and formula (C-M) was reinforcement for that. In the item (Ch_l -ca) for (Fa & Al) was affinity with B and Y was proved that. The Digital rapprochement in columns (Ch_l and Ch_b) % which the values were (35 & 36) registered for

Taimour moreover, a pioneer shift within all values in the issue (Ch_a-Ch_b) for the same cultivar which the result of the value was equal (1) these causing the lowest point degree for (Ta) in ingredient (R) and formula (R+G). See also, such a liaison straight for Alphonse in the equation (Ch_a-Ch_b) the value here (3) gave negative sensing (-3) for the equation (R-G) and the equation (C-M) was translated that positive sensing (3). A creative junctures as following colouring peel team (Me, Mo and Ma) where the control trend lower in Ch_a % and in higher for

50) and the mirror (C-M) was received that as negative values (-8, -33 and -50). As the same signature sound for specific pigments columns were audible and certified the (B, (R+G+B), {(R+G)}, C, M, Y, (C+M+Y). Moreover, the specific numerical (8) for the formula (Ch_a-Ch_b) was highest value not only for the symbol (Mo) fruits peel within (Me, Mo and Ma) but also within the all 14 cultivars this signal was as an active a nature influential to switching the light-as the same role arranging which was played it cell (8) within the 14 cultivars- in favor

Table 2. Intercommunions between pigments structures and concentrations data and color vision (RG and CM) data

Symbol	Chl a %	Chl b %	Chl a - Chl b	Ca %	Chl a - Ca	G	R-G	B	R+G+B	R+G	C	M	C-M	Y	C+M+Y	C+M
Me	32	35	3	33	-1	94	8	28	224	196	153	161	-8	227	541	314
Mo	29	37	8	34	-5	117	33	47	314	267	105	138	-33	208	451	243
Ma	31	36	5	33	-2	108	50	24	290	266	97	147	-50	231	475	244

Ch_b % and the values were (35, 37 and 36) and (32, 29 and 31) these equal (3, 8 and 5) in (Ch_a-Ch_b) while the formula (Ch_a-Ca) indicating to negative points (-1, -5 and -2) on the arrangement, was explained the features in the case (R-G) which the values were (8, 33 and 50). On the other hand, in (Table 1) Dabsha cell in type (Ch_a-Ch_b) was signing as (2) which that was intelligibility linked with R-G as negative vocative (-2) while the C-M was rehabilitation as positive vocative (2). Brilliant lines for symbol pulp fruits (Hi, Ze and Bu) in (Table 1.) which the factor pigment (Ch_a-Ca) was interaction with visual colour formulas (R-G) and (C-M) which the (Ch_a-Ca) values were negative (-11*, -3 and -1) opposite symmetric values were negative for two and positive for one that in equation (R-G) *just ((Hi) (-12) minus on degree than (Hi) in the pigment formula. Subtractive colours type (C-M) was exactly vice-versa for (R-G). In the same lines, pioneer view for (Compania) which all data for pigment and color spaces were zero this explained the pigments effect in the color spaces which the symmetric values as (34) for concentrations (Ch_a) and (Carotene) % and confirmed that as strong correlation R and G parameters colour space which the values were symmetric (71) moreover, on the other side C and M were symmetric values too (184) furthermore C and M were higher than R and G. Nevertheless, the value of G was lowest within

of (G, B, (R+G+B) and (R+G) which the values for (Mo) were highest values for all these columns; vice versa the (M, Y, (C+M+Y) and (C+M) parameters translated that to lowest values inside of all the columns. See (Table 2.).

the numeric column while the value of M was opposite direction which was highest value within the column cells. Besides the effect pigments structures and concentrations% showed likewise in (Compania) which as the result for the pigment models% the sound for B was lowest value (22) within the column group while the height value was (165) within the column group (R+G+B). An intelligence relationships, which showed such harmony tone in (Ze with Bu) in total pigments columns as (Ch_a %, Ch_a-Ch_b, Ch_a+Ch_b and Carotene %) which the differences between these values equal directions (+\1) the series continues as the same mode in the color cepace elements G and M subtraction results of between G and M values is (1) for G as the same Carotene% result which M was vice-versa result G which equal direction (-1) as the same result of Ch_a %; Noted that, The G (Ze) cell was under the higher values tape within the cells in the column G compare with R column while G (Bu) was reversal that; commonly the values of M item were physical situation with G values. In this respect too, found that values of Ch_a for (Ze and Bu) same numeral the effect of that appearance in

(positive B) and (negative Y) which the subtraction between the digits of B (Ze-Bu=-4 and Y (Ze-Bu =4 the difference between this result is (0) as the same subtraction result for (Chl_b%) and equal result (Ze-Bu) in (Chl_a%-Carotene%)=(0) show other conjunctions in (Table 3.) in this regard found one difference

with C as the same shape. Subject to that, in the (Ar & Bu) cells of Chl_b% and Carotene% the trends direction within the all values in the columns/general trend were as the follow in (Table 1.): when in Ar\Chl_b% value (38) followed format (Chl_b>Chl_a>Carotene)% that reverse to Bu\Chl_b% the value (31) which

Table3: An example of Mathematic Relations between Total Pigments Chemical tape and Electronic Neutral Tone for (Ze and Bu) peel of fruit

Symbol	Chl a %	Chl b %	Chl a - Chl b	Cl a + Chl b	Ca %	Chl a - Ca	Chl b - Ca	R	G	R - B	R+ G+ B	R+ +	R C	C M	C - Y	C+ M+	C+ +		
Ze	33	31	-2	64	36	-3	-5	74	77	-3	26	177	151	181	178	3	229	588	359
Bu	34	31	-3	65	35	-1	-4	77	76	1	30	183	153	178	179	-1	225	582	357
Subtractive	-1	0	1	-1	1	-2	-1	-3	1	-4	-6	-2	3	-1	4	4	6	2	

point between (Ze and Bu) in the Chl_b% , Carotene% and other chlorophyll index give on difference point for G and M. Around this target, the philosophic study of numerical correlations logic is need to give construction focal point about these symmetric shapes of pigments values effects on positive +RGB and negative -CMY behaviors, which

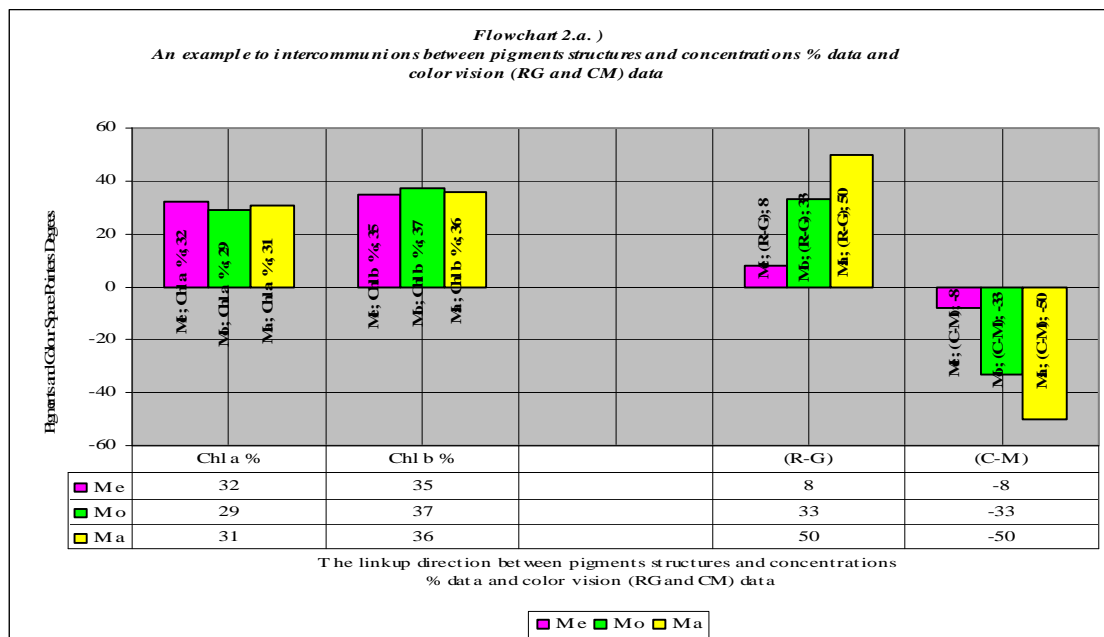
followed format (Chl_b<Chl_a<Carotene)% while occur completely inversion with Ar\Carotene % compare by Bu\Carotene% which the Ar\Carotene % value (38) was followed (Carotene<Chl_a<Chl_b) % this whole antithesis with Bu\Carotene% value (35) which format was (Carotene>Chl_a>Chl_b)% all these the alternations between the structure pigments and

Table 4: An example of Mathematic Relations between Total Pigments Chemical tape and Electronic Neutral Tone for (Ar and Bu) peel of fruit

Symbol	Chl a %	Chl b %	Chl a - Chl b	Cl a + Chl b	Ca %	Chl a - Ca	Chl b - Ca	R	G	R - G	B	R+ G+ B	R+ G	R+ +	C	M	C - M	Y	C+ M+	C+ M
Ar	34	38	4	72	28	6	10	77	84	-7	31	192	161	178	171	7	224	573	349	
Bu	34	31	-3	65	35	-1	-4	77	76	1	30	183	153	178	179	-1	225	582	357	
Subtract.	0	7	7	7	-7	7	14	0	8	-8	1	9	8	0	-8	8	-1	-9	-8	

showed these values in (Chl_b%) for symbol (Ar & Bu) in this the intention, as the same exactly in R for (Ar & Bu) suffer symmetric shape, in the same moment this interactive was direction

concentrations% were the explainer and gave reason for the behaviors trends for specific color items which the pigments gave closely typical character, as well as electronically effects for R



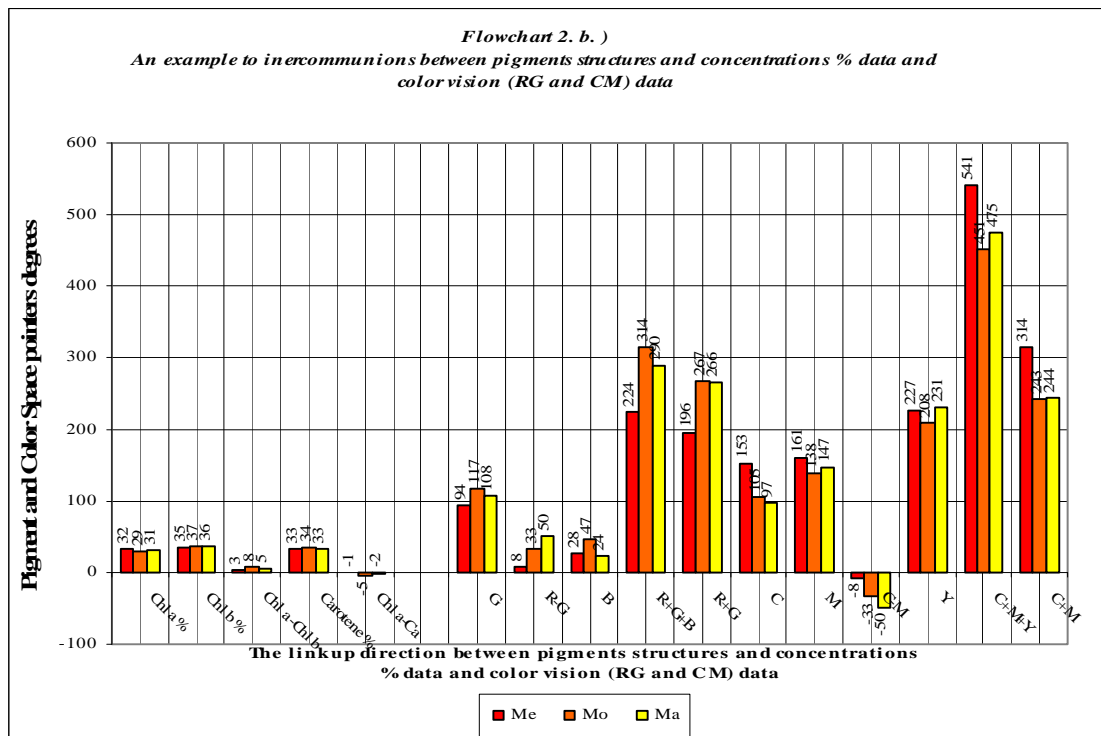
and G notes the interchange of trends cells for R and G those compare within the whole trends/general trends (Table 1.) in the classes R and G. The physically consort C and M were reciprocal with R and G, the focus view in (Table 4.).

see also another natural relations such as these trends between symbols (Ar and Bu) in pigments items (Ch_b%, Ch_a-Ch_b, Ch_a+Ch_b, Ch_a-Ca and Ch_b-Ca) the values in (Ar) were higher than the values (Bu) exceptional Carotene% the (Bu) was higher than (Ar) these add up to, (G, R-G, B, R+G+B, (R+G) and C-M) in (C+M) were higher than the values in (Bu). Opposite (M, Y, C+M+Y and (C+M) higher in (Bu) than the values in (Ar). Moreover, the mathematical differences between these models were (0) values for Ch_a %, R and C and an addition, Subtractive results for (Ar-Bu) in formula {(Ch_{a&b}%)-(Carotene %)}=(B-Y)=0 follow (Table 4.). See too, (Flowchart 2. a. & 2. b.) presented an example to intercommunions between pigments structures

First issue:

in (Table 1.) found that, item (Ew) is an element \in to symbols group data {Ta ' La} in the (Ch_b>Ch_a>Carotene) % trends while (Ew) is an element \in to symbols group data {Me ' Ma} in the (R>G & C<M) trends formats.

For discussed this the interpenetration, the data for symbols form (Ta) to (Ma) was classified for two partitions as the first team which the data followed window (G>R) trends formats this including {Ta ' La} opposite second team which the data followed window (R>G) trends formats and this implied {Me ' Ma}. The (Ew) element data was subtractive comparison between the cells for each row as in the (Table 5.). In the compare between the two general trends for the (G>R) team and (R>G) team the comparative analyses discovered that, the subtractive pigments models cells for trends space of (Ch_a)%, in (G>R) window is extend to negative direction when {Ta-Ew} is start point direction=0, (La, Al and Ar)-Ew fixed in (-1)



and concentrations % data and color vision (RG and CM) data color vision (RG and CM) data.

The investigated needed to study the effects of total and models of pigments on the appearance of the color space digital properties as data analyses. In this respect, the study selected two issues for this reason,

and the end (G>R) the direction in (Fa-Ew) (-2) after that (R>G) is continue as scattering far points in the same direction which the points followed (-3, -6 & -4) for (Me, Ma and Mo)-Ew that in (Flowchart 3. a.). While Ch_a% directions in the windows color space is almost

telescopic with the two windows that in the formula $Ew-(Ta\backslash Ma)=(-1)$ and $(Al\backslash Mo)-Ew=(0)$ other interference that within as the same group $(G>R)$ which $(Fa\backslash La)-Ew=(2)$ was (+) and one point as a positive direction in $(G>R)=(Ar-Ew)=(1)$ and another one as a negative direction $(R>G)=(Me-Ew)=(-2)$. According to these directions the $Chl_b\%$ trend color space inside the composites $(G>R)$ and $(R>G)$ is distribution as start in $(Al\backslash Mo)-Ew=(0)$ $(G>R)\backslash(R>G)$ in and slope to $(Ta\backslash Ma)-Ew=(-1)$ in $(G>R)\backslash(R>G)$ then $(R>G)=(Me-Ew)=(-2)$ to turn rising to $(Fa\backslash La)-$

scattering inside color space group $(R>G)$ $(Me \& Ma)-Ew$ and $(Ew-Mo)=(5\&6)$ geometric progression as in (Flowchart 3. c.).

On the other hand, the distribution trends of the total pigments index in the color spaces groups followed that as summarized in (Chl_a-Chl_b) , (Chl_a+Chl_b) , (Chl_a-Ca) and (Chl_b-Ca) the trends distributions were changing in the color spaces groups $(G>R)\backslash(R>G)$ according to, the results from the differences\summation from each item inside the pigment index formulas related to subtractive processes for total pigments

Table 5. Subtractive processes for data of Ewais cultivars with group rows of {Ta ' La} and {Me ' Ma} comparison between two general trends for the (G>R) and (R>G)

		Chla %	Chlb %	Ca %	Sum	Chla -Chlb	Cl a +Chlb	Cl a-Ca	Cl b-Ca	Sum		
Ew	G>R	Ta	35	36	29	100	1	71	6	7	185	
		Ew	35	37	28	100	2	72	7	9	190	
		Subtract.	0	-1	1	0	-1	-1	-1	-2	-5	
		Ar	34	38	28	100	4	72	6	10	192	
		Ew	35	37	28	100	2	72	7	9	190	
		Subtract.	-1	1	0	0	2	0	-1	1	2	
		Fa	33	39	28	100	6	72	5	11	194	
		Ew	35	37	28	100	2	72	7	9	190	
		Subtract.	-2	2	0	0	4	0	-2	2	4	
		Al	34	37	29	100	3	71	5	8	187	
		Ew	35	37	28	100	2	72	7	9	190	
		Subtract.	-1	0	1	0	1	-1	-2	-1	-3	
		La	34	39	27	100	5	73	7	12	197	
		Ew	35	37	28	100	2	72	7	9	190	
	Subtract.	-1	2	-1	0	3	1	0	3	7		
	Con.	Sum.	-5	4	1	0	9	-1	-6	3	5	
	R>G	Reflector	Me	32	35	33	100	3	67	-1	2	171
		Ew	35	37	28	100	2	72	7	9	190	
		Subtract.	-3	-2	5	0	1	-5	-8	-7	-19	
		Mo	29	37	34	100	8	66	-5	3	172	
		Ew	35	37	28	100	2	72	7	9	190	
		Subtract.	-6	0	6	0	6	-6	-12	-6	-18	
		Ma	31	36	33	100	5	67	-2	3	173	
		Ew	35	37	28	100	2	72	7	9	190	
		Subtract.	-4	-1	5	0	3	-5	-9	-6	-17	
		Con.	Sum.	-13	-3	16	0	10	-16	-29	-19	-54
		Report of Total Pigments Conclusion										
		G>R								%		
No Symmetrically between the groups							4	11				
No Symmetrically between the rows							16	46				
No (0) without Symmetrically							2	6				
							22	20				
R>G								%				
	No Symmetrically between the groups							4	19			
	No Symmetrically between the rows							4	19			
	No (0) without Symmetrically							8	38			
							16	76				
Conclusion Summations												
{Ta ' Ma}-Ew												
	Chl a %	Chl b %	Chl a-Chl b	Cl a+Chl b	Ca %	Cl a-C	Cl b-Ca					
G>R	-5	4	9	-1	1	-6	3					
R>G	-13	-3	10	-16	16	-29	-19					

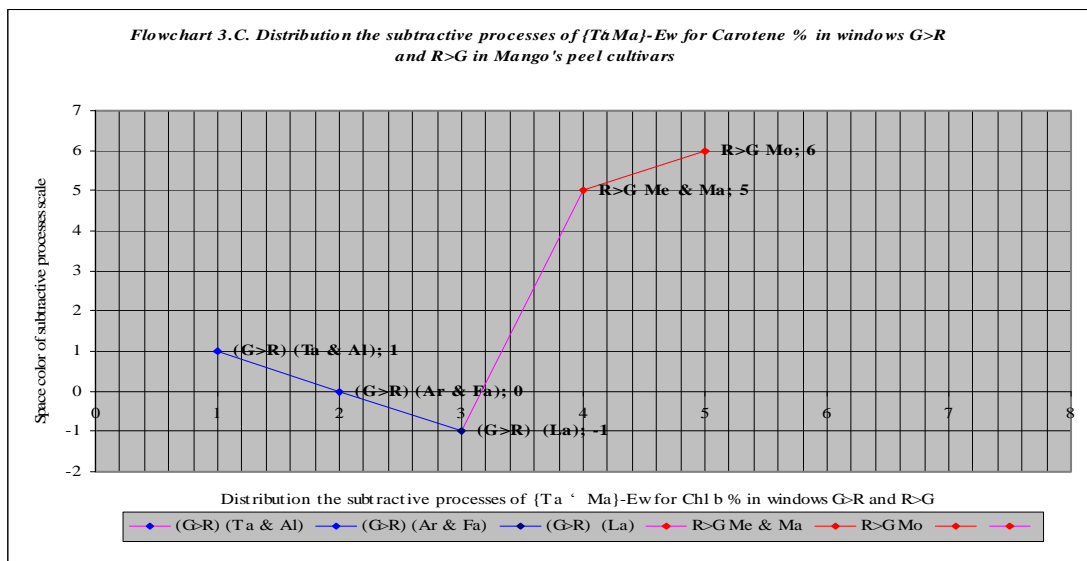
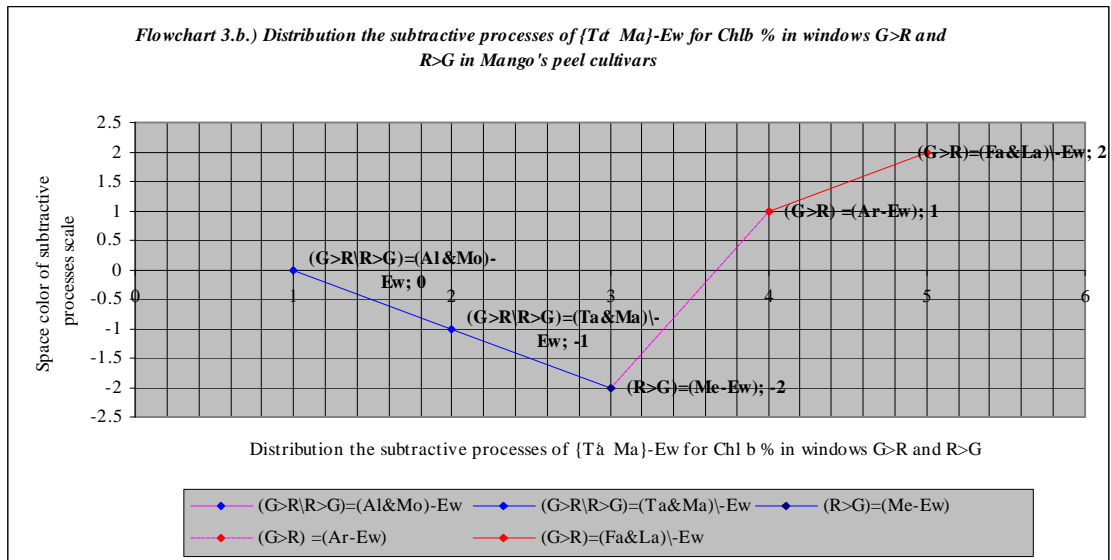
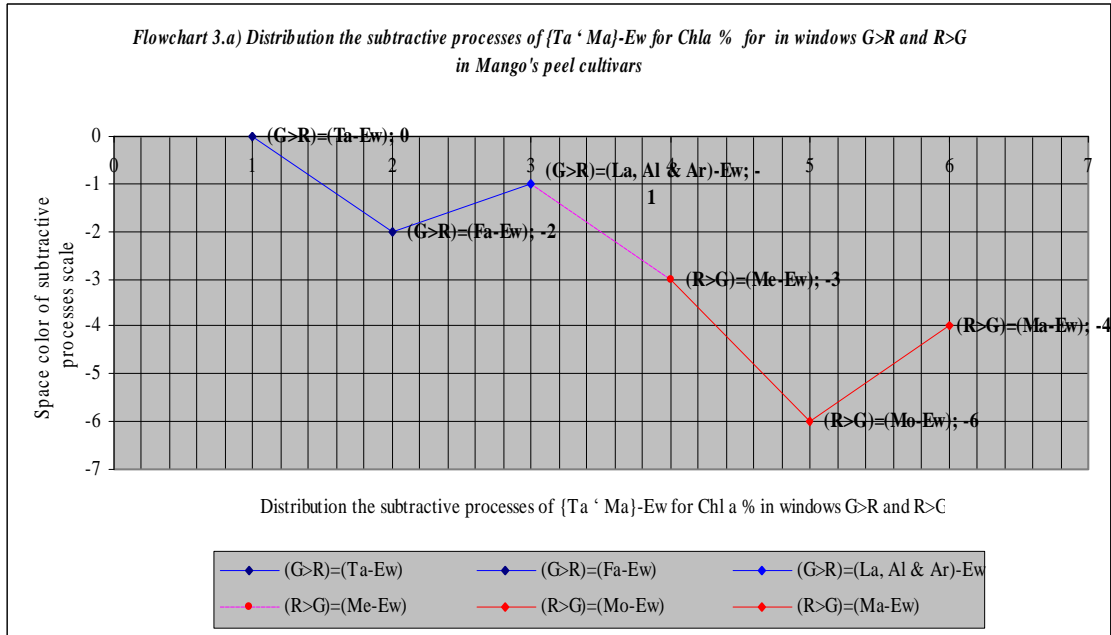
$Ew=(2)$ in $(G>R)$ explanation in (Flowchart 3. b.).

The distribution trends of Carotene% points inside the color spaces group showed that, in the $(G>R)$ group is balance point=(Ar & Fa)- $Ew=(0)$ between (+) direction as formula $(Ta\& Al)-Ew=1$ and $(La-Ew)=(-1)$ opposite (+) statues

concentrations %. Clear view in the (Conception 1. & 2.), scale behaviors of the total pigments concentrations% and pigments index through the windows $(G>R)$ and $(R>G)$ for the subtractive processes of the formula $\{Ta ' Ma\}-Ew$.

Table 5. Contenu.

		R	G	R-G	B	R+G+B	R+G	C	M	C-M	Y	C+M+Y	C+M	Sum	
Ew	G>R	Ta	66	73	-7	28	167	139	189	182	7	227	598	371	2040
		Ew	130	113	17	29	272	243	125	142	-17	226	493	267	2040
		Subtrac	-64	-40	-24	-1	-105	-104	64	40	24	1	105	104	0
		Ar	77	84	-7	31	192	161	178	171	7	224	573	349	2040
		Ew	130	113	17	29	272	243	125	142	-17	226	493	267	2040
		Subtrac	-53	-29	-24	2	-80	-82	53	29	24	-2	80	82	0
		Fa	64	76	-12	26	166	140	191	179	12	229	599	370	2040
		Ew	130	113	17	29	272	243	125	142	-17	226	493	267	2040
		Subtrac	-66	-37	-29	-3	-106	-103	66	37	29	3	106	103	0
		Al	106	109	-3	26	241	215	149	146	3	229	524	295	2040
	Ew	130	113	17	29	272	243	125	142	-17	226	493	267	2040	
	Subtrac	-24	-4	-20	-3	-31	-28	24	4	20	3	31	28	0	
	La	82	96	-14	32	210	178	173	159	14	223	555	332	2040	
	Ew	130	113	17	29	272	243	125	142	-17	226	493	267	2040	
	Subtrac	-48	-17	-31	3	-62	-65	48	17	31	-3	62	65	0	
	Con.	Sum.	-255	-127	-128	-2	-384	-382	255	127	128	2	384	382	0
	R>G	Me	102	94	8	28	224	196	153	161	-8	227	541	314	2040
		Ew	130	113	17	29	272	243	125	142	-17	226	493	267	2040
		Subtrac	-28	-19	-9	-1	-48	-47	28	19	9	1	48	47	0
		Mo	150	117	33	47	314	267	105	138	-33	208	451	243	2040
Ew		130	113	17	29	272	243	125	142	-17	226	493	267	2040	
Subtrac		20	4	16	18	42	24	-20	-4	-16	-18	-42	-24	0	
Ma		158	108	50	24	290	266	97	147	-50	231	475	244	2040	
Ew		130	113	17	29	272	243	125	142	-17	226	493	267	2040	
Subtrac		28	-5	33	-5	18	23	-28	5	-33	5	-18	-23	0	
Con.		Sum.	20	-20	40	12	12	0	-20	20	-40	-12	-12	0	
Report of Color Space Conclusion															
G>R											%				
	No Symmetrically between the groups										0	0			
	No Symmetrically between the rows										2	2			
	No (0) without Symmetrically										0	0			
										2	2				
R>G											%				
	No Symmetrically between the groups										0	0			
	No Symmetrically between the rows										0	0			
	No (0) without Symmetrically										0	0			
Conclusion Summations															
{Ta ' Ma}-Ew															
	R	G	B	C	M	Y	R-G	R+G	R+G+B	C-M	C+M+Y	C+M			
G>R	-255	-127	-2	255	127	2	-128	-382	-384	128	384	382			
R>G	20	-20	12	-20	20	-12	40	0	12	-40	-12	0			

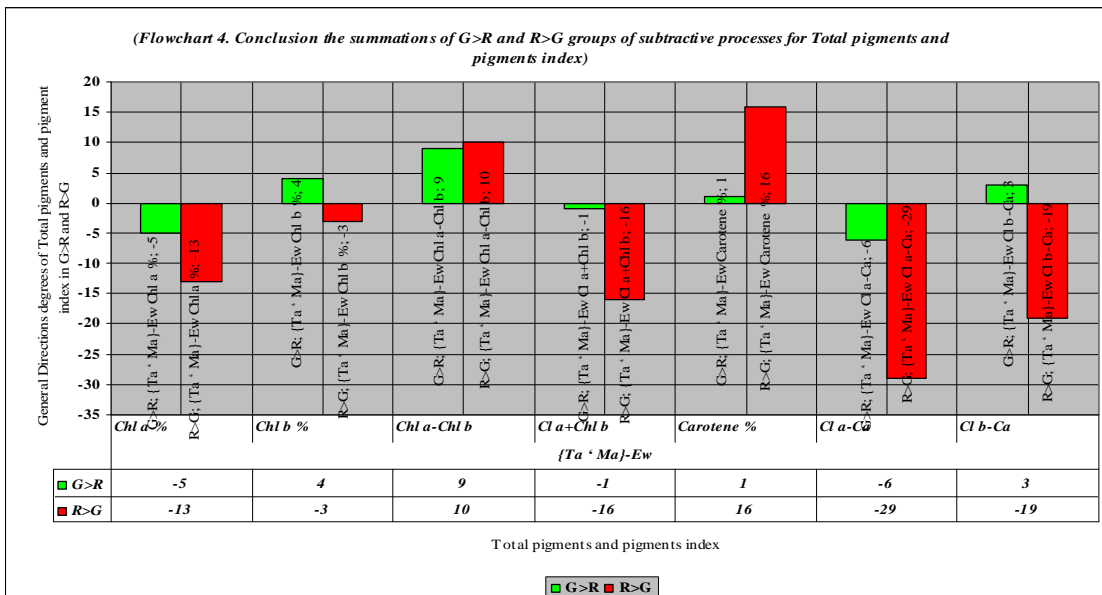


Conception 1. Scale of the total pigments and pigments index behavior directions for {Ta + Ma}-Ew inside the color space group G>R and R>G of subtractive process

G>R						
			Carotene %	Chl a %	Chl b %	Cl a-Ca
	Ta		1	0	-1	-2
		Chl a-Chl b	Chl b %	Carotene %	Cl b-Ca	
	Ar		1	0	-1	
		Cl b-Ca		Cl a+Chl b	Cl a-Ca	
Fa				0	-2	
		Chl a -Chl b			Cl b-Ca	
	Al		1	0	-1	-2
		Chl b %	Cl a+Chl b	Cl a-Ca	Carotene %	
					Chl a %	
R>G						
	Carotene %	Chl a-Chl b	Chl b %	Chl a %	Cl a+Chl b	Cl b-Ca
Me	5	1	-2	-3	-5	-7
						Cl a-Ca
	Chl a-Chl b		Cl a+Chl b			
	Carotene %	Chl b %	Chl a %	Cl a-Ca		
	Carotene %	Chl a-Chl b	Chl b %	Chl a %	Cl a+Chl b	Cl b-Ca
Ma	5	3	-1	-4	-5	-6
						Cl a-Ca

Conception 2. Scale of the total pigments and pigments index behavior directions for {Ta + Ma}-Ew

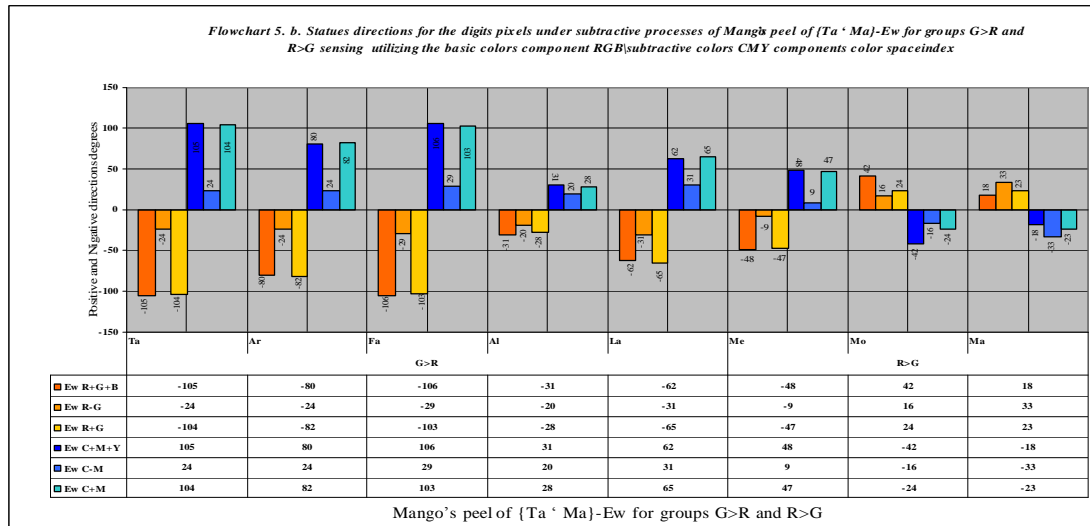
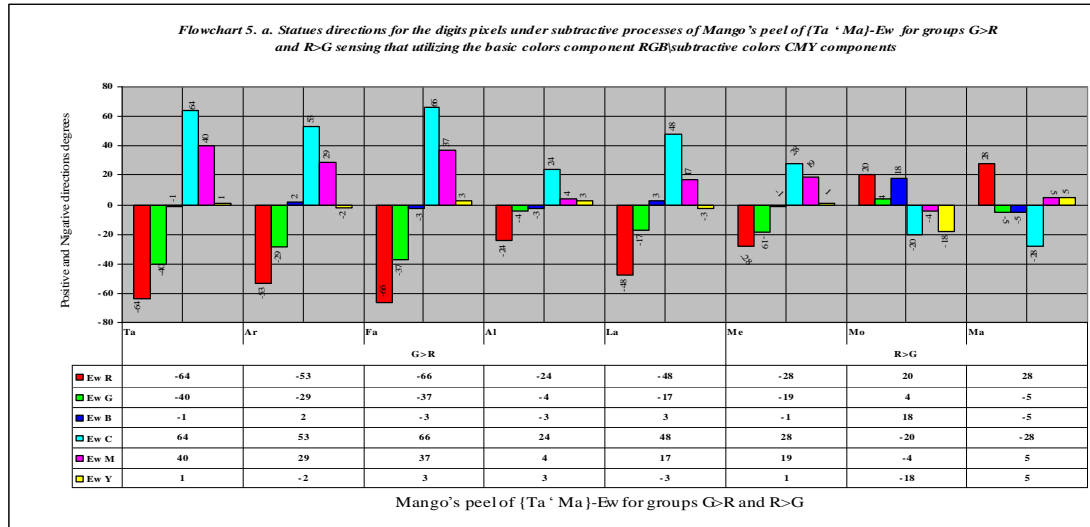
G>R						
Chl a-Chl b	Chl b %	Cl b-Ca	Carotene %	Cl a+Chl b	Chl a %	Cl a-Ca
9	4	3	1	-1	-5	-6
R>G						
Carotene %	Chl a-Chl b	Chl b %	Chl a %	Cl a+Chl b	Cl b-Ca	Cl a-Ca
16	10	-3	-13	-16	-19	-29



In this conception showed pigments team center

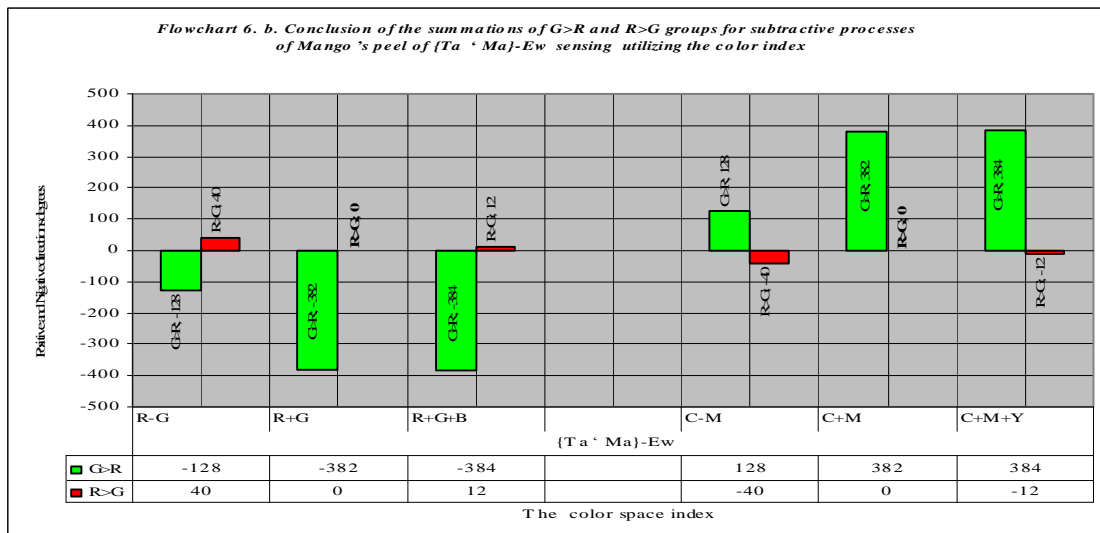
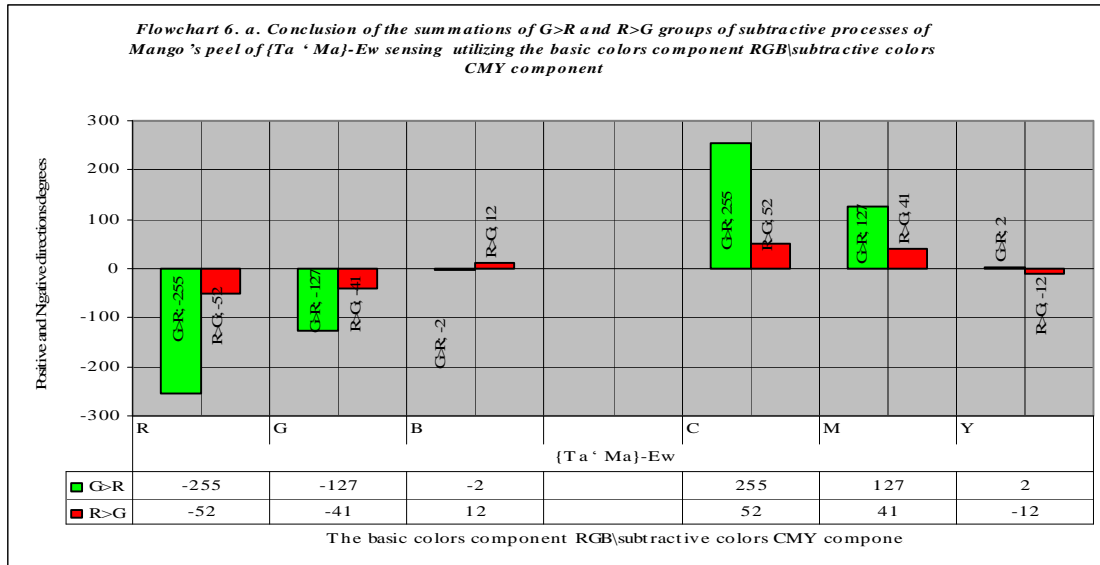
inside the color space ($G>R$) as symmetric point of (0) on the scale which the owners are Chl_a % in (Ew-Ta), (Chl_a+Chl_b and Carotene %) in the (Ar & Fa)-Ew, Chl_b % in the (Al-Ew) and (Chl_a -Ca) in the (La-Ew). In the left from the center bar (0) negative direction (-) in this line Siamese points of (-1) such as $\{Chl_a$ -Ca, Chl_a+Chl_b and $Chl_a-Chl_b\}$ in (Ta-Ew) = $\{Chl_b$ -Ca, Chl_a -Ca and $Chl_a\%$ \} in (Ar-Ew) = $\{Chl_b$ -Ca, Chl_a+Chl_b and $Chl_a\%$ \} in (Al-Ew) = $\{Carotene\%$ and $Chl_a\%$ \} in (La-Ew). Addition, two points were symmetrical in the next degree of $\{Chl_a$ -Ca and Chl_a -Ca\} for (Ta-Ew) and (Al-Ew) orderliness. In the other side, the center bar positive (+) heading which found enzygotic point=(1) in pigments types (Carotene%), ($Chl_b\%$), $\{(Chl_a-Chl_b$ and Carotene%\}) and (Chl_a+Chl_b) in (Ta-Ew), (Ar-Ew), (Al-Ew) and (La-Ew) arithmetic progression. In the same side, the points were isotonic which higher one degree this equal (2) for items of pigments group (Chl_a-Chl_b), $\{Chl_b$ -Ca and $Chl_b\%$ \} and (Chl_a+Chl_b) in $\{Ar$ -Ew, Fa-Ew, La-Ew\}. After that, tow points were scattering via uniformity which increase on degree in the scale these points are (3) and (4) which followed $\{Chl_a$ - Chl_b and Chl_b -Ca\} and (Chl_a-Chl_b) for (La-Ew) and (Fa-Ew) constantly and (Ta-Ew) and (Ar-Ew) arms trends is positive and negative for each other. Nevertheless, in the peel which start coloring, in second a head of color space $R>G$ (more rich in newly relations). Noted that, the general trends are higher level than the values of the scale in $G>R$ and the values starting more scattering than $G>R$. The directions are including one point equal (0) in $Chl_b\%$ in (Ew-Mo). Found this relations, which two points are homological units and as the same time reflectance to themselves in (Me-Ew) = (Ma-Ew) = (5) = Carotene % and reflect (-5) = Chl_a+Chl_b twice another tow points were reflectance to other which (Mo-Ew) = (+) = (6) = $\{Chl_a-Chl_b$ and Carotene%\} = $\{Chl_b$ -Ca, Chl_a+Chl_b and $Chl_a\%$ \}. (Me-Ew) = (Chl_a-Chl_b) = (1) and mirror with (M-Ew) = (-1) = $Chl_b\%$. (Me-Ew) = (-3) mirror (Ma-Ew). One point more higher than the all in (Mo-Ew) = (-12). In (Mo-Ew) (Chl_a -Ca) = redouble $\{Chl_b$ -Ca, Chl_a+Chl_b and $Chl_a\%$ \}. Series records number inside the group start from (-1 to -9) see the scale. Noted that, in the scale for the signals of Carotene%, $Chl_a\%$ and $Chl_b\%$ some points as symmetrically points between $G>R$ and $R>G$. In the summarize scale which equal summation for

subtractive processes for two group found that, autonomous fixity for the cells of the ($G>R$) and ($R>G$) in the two directions. As the general, the pigments items values of ($R>G$) higher than items in the cells ($G>R$) remarkable $Chl_b\%$ which the direction in ($G>R$) is positive while in ($R>G$) is negative and lower one degree. On the other hand, (Chl_b -Ca) pigment index is positive in ($G>R$) and higher negative in the ($R>G$). According to, (Table 5. Conclusion Summation) the attached with the (Report Conclusion) in the tail (Table 5.) see too (Flowchart 4.). Ewais cultivar peel total pigments are \in to group $\{Ta$ ' La\} and in the other side \notin to group $\{Me$ ' Ma\} as the reason to the smaller differences in group $G>R$ higher than group $R>G$. unauthorized the pigments concentrations% to identification and discernment the fruit peel. The structure and concentrations% of pigments are effect (+)\(-) in the color space. The peel greenness tone is lower values degrees tone than the coloring values degrees tone see (Table 5. Conclusion of Summation) of the tail (Table 5.) and (Flowchart 5. a. & 5. b.). In the color space regions the characters pigments of the structures and concentrations% effect and interaction in the pixels tones opposite reactions the visual color basic colors component RGB\subtractive colors CMY components sensing these(those pigments signals for color space parameters (R, G and B)\C, M and Y and color space index) digits which the responding color space items for pigments factors as in the (Table 5.) and (Flowchart 6. a. & 6. b.). In this regard, the reading for data were the item R for ($G>R$) group trends directions all the values were (-) negative opponent ($R>G$) group where two numeric (+) positives directions and one (-) direction in subtractive (Me-Ew) cell. Moreover, the values for R band in pointer ($G>R$) were larger degrees than in pointer ($R>G$) director, distinct the factor (Al-Ew) in ($G>R$) was lower degree than (Me-Ew) in ($R>G$). In the G band for ($G>R$) all the cells were (-) directions and higher properties than G band in ($R>G$). Addition, the subtractive formulas (Al-Ew) in the ($G>R$) and (Mo-Ew) in the ($R>G$) were vice-verser directional around the same degree. The subtractive points between ($R>G$) (Me-Ew) & ($G>R$) (La-Ew), on the other line between ($R>G$) (Ma-Ew) & ($G>R$) (Al-Ew) which the differences between them in as (-2) and (-1) order arrangement, when the (Me-Ew) and (Ma-



Ew) (R>G) are near degree from the lowest subtractive process in (G>R) as (Al- Ew) and (La-Ew). Noted that, in the (G>R) group within the all symbols rows for R and G bars the data were correlative reciprocity which G>R numerically inside all {Ta' La} trends while in (Ew) the direct trend signature is R>G, (Presentation Table 1.) for the reconsideration, nevertheless the digits scale of Ew cells in R\G icons is higher than digits scale for all {Ta' La} while by the compare in the pigments structures concentrations% found that harmony trends in the all rows between {Ta ' La} trends and Ew trends which (Ch_b>Ch_a>Carotene)% while the Ew values in {Ta ' La} were (=)>in the Ch_b%, (><|=) in the Ch_a% and ((><|=) in the Caroten %. These results were reversed in

(R>G) which the Ew is harmony trends R>G with all {Me ' Ma}. While by the compare in the pigments structures concentrations% were showed that harmony trends in the all rows between {Me ' Ma} trends and Ew trends in Ch_b% while the crosses cells pigments in (Ch_l and Carotene)% which Ew(>){Me ' Ma} in Cl_a% and mirror Ew(<){Me ' Ma} Carotene%, vide (Table 1.) when the general chart of Ew for pigments structures concentrations% followed format (Cl_b>Chl_a>Carotene) % and {Me ' Ma} followed (Cl_b> Carotene>Chl_a) %, specified the Ew value in (R>G) is (>|=) {Me' Ma} in Carotene%. Notable, in the color space examiner, which the heads (G>R)\(R>G) for the defining (R and G) bars were unspotted Siamese's degrees between the group\rows.



Nonetheless, pointer B fixed a decree incontestable that, symmetric points (-) direction within the comparison group (G>R) and (R>G) in (Ta-Ew) and (Me-Ew) successively=(-1), addition found symmetric point within the rows (G>R) that in (Fa-Ew) and (Al-Ew)=(-3) in the subtractive process rows. Noted that, in the windows (G>R) and (R>G) for bars R and G the subtractive compression rows were directed to enhancement (-) R>G while the processor (Ma-Ew) in (R>G) team the coloring signature was R=(28) direction to (+) and G=(5) direction to (-). In the pursuance of non-destructive analyses and focused for C and M, which all the subtractive processes data were exactly vice-versa of properties for R and G that in the mirror of signals directions of the cells with

still the electronic digital remark as isotropic, where C digital signals mirror R and M digital signals mirror G. Moreover, Y digital signals mirror B and specific color index {(C+M+Y) and (C+M)} digital signals mirror {(R+G+B) and (R+G)}. Meanwhile, all C, M and Y cells were higher than R, G, B cells of the comparisons staff inside the rows.

Conclusions of directions data analyses, According to, in the previous sequence from the lineation of these results and discussions presented brilliant vision, earnest and conclusive in the adjudication that, (Ew) element in the color space analyses \in to {Me' Ma} and \notin to {Ta' La} as normalcy in the vision group (G>R)\(R>G) analyses and these the exegesis

Table 6. Subtractive processes for data of Bulbek heart cultivars with group rows of {Da ‘ Ze} and {Ew ‘ Ma} comparison between two general trends for the (G>R) and (R>G)

		Chl a %	Chl b %	Ca %		Chl a -Chl b	Cl a +Chl b	Chl a-Ca	Chl b-Ca		
Bu	G>R	Da	31	33	36	100	2	64	-5	-3	158
		Bu	34	31	35	100	-3	65	-1	-4	157
		Subtrac	-3	2	1	0	5	-1	-4	1	1
		Hi	29	31	40	100	2	60	-11	-9	142
		Bu	34	31	35	100	-3	65	-1	-4	157
		Subtrac	-5	0	5	0	5	-5	-10	-5	-15
		Ze	33	31	36	100	-2	64	-3	-5	154
		Bu	34	31	35	100	-3	65	-1	-4	157
		Subtrac	-1	0	1	0	1	-1	-2	-1	-3
		Sum.	-9	2	7	0	11	-7	-16	-5	-17
	R>G	Ew	35	37	28	100	2	72	7	9	190
		Bu	34	31	35	100	-3	65	-1	-4	157
		Subtrac	1	6	-7	0	5	7	8	13	33
		Me	32	35	33	100	3	67	-1	2	171
		Bu	34	31	35	100	-3	65	-1	-4	157
		Subtrac	-2	4	-2	0	6	2	0	6	14
		Mo	29	37	34	100	8	66	-5	3	172
		Bu	34	31	35	100	-3	65	-1	-4	157
		Subtrac	-5	6	-1	0	11	1	-4	7	15
		Ma	31	36	33	100	5	67	-2	3	173
		Bu	34	31	35	100	-3	65	-1	-4	157
		Subtrac	-3	5	-2	0	8	2	-1	7	16
		Sum.	-9	21	-12	0	30	12	3	33	78

Report of Total Pigments Conclusion

			%
G>R	No. Symmetrically between the groups	5	24
	No. Symmetrically between the rows	6	29
	No. (0) without Symmetrically	0	100
R>G	No. Symmetrically between the groups	4	14
	No. Symmetrically between the rows	8	29
	No. (0) without Symmetrically	1	4

Conclusion Summations

		{Da ‘ Ma}-Ew						
		Chl a %	Chl b %	chl a-Chl b	Cl a+Chl b	Ca %	Cl a-Ca	Cl b-Ca
G>R		-9	2	11	-7	7	-16	-5
R>G		-9	21	30	12	-12	3	33

gave reasons to defeasances\transference direction for (Ew) peel between total pigments structure of concentrations% and color space appearance within the {Ta ‘ Ma} which manifested in (Table 1.).

In the summations of the subtractive process in (Table 5. and Flowchart 6. a & b.) the G>R in the greenish degree tone for the peel fruits than R>G for the peel which start coloring. The lower digital cells in the Blue band, higher the digital cells in the Yellow band and exchange the trends between R and G are signatures characters for the neutral pixels tone as the result to interactions the total pigments structures and concentrations % with the visible light.

Second issue:

The investigation selected another statues to study transfer the trends of the symbol (Bu) which in the (Table 1.) showed the Bu trends in the pigments structures and concentrations% of the Table followed format Carotene%>Chl %>< Chl_b% within the groups (Da, Hi and Ze) when the shafting of the symbol (Bu) only was occurred in the color space side directions of the R and G trends for the natural symbols groups

Table 6.

		R	G	R-G	B	R+G+B	R+G	C	M	C-M	Y	C+M+Y	C+M		
Bu	G>R	Da	18	90	-2	26	204	178	167	163	2	229	861	332	2040
		Bu	77	76	1	30	183	183	178	179	-1	225	882	387	2040
		Subtract.	11	14	-3	-4	21	25	-11	-14	3	4	-21	-25	0
		Hi	75	87	-12	33	195	162	180	168	12	222	570	348	2040
		Bu	77	76	1	30	183	183	178	179	-1	225	882	387	2040
		Subtract.	-2	11	-13	3	12	9	2	-11	13	-3	-12	-9	0
		Ze	74	77	-3	26	177	151	181	178	3	229	588	359	2040
		Bu	77	76	1	30	183	183	178	179	-1	225	882	387	2040
		Subtract.	-3	1	-4	-4	-6	-2	3	-1	4	4	6	2	0
		Sum.	6	26	-20	-8	27	37	-6	-26	20	5	-27	-37	0
	R>G	Ew	130	113	17	29	272	243	125	142	-17	226	493	267	2040
		Bu	77	76	1	30	183	183	178	179	-1	225	882	387	2040
		Subtract.	53	37	16	-1	89	99	-53	-37	-16	1	-89	-99	0
		Me	102	94	8	28	224	196	153	161	-8	227	541	314	2040
		Bu	77	76	1	30	183	183	178	179	-1	225	882	387	2040
		Subtract.	25	18	7	-2	41	43	-25	-18	-7	2	-41	-43	0
		Ma	150	117	33	47	314	267	105	138	-33	208	451	243	2040
		Bu	77	76	1	30	183	183	178	179	-1	225	882	387	2040
		Subtract.	73	41	32	17	131	114	-73	-41	-32	-17	-131	-114	0
		Ma	158	101	50	24	290	266	97	147	-50	221	473	244	2040
Bu	77	76	1	30	183	183	178	179	-1	225	882	387	2040		
Subtract.	81	32	49	-6	107	113	-81	-32	-49	6	-107	-113	0		
Sum.	232	128	104	8	368	352	-232	-128	-104	-8	-368	-352	0		

Report of Color Space Conclusion

		%
G>R	No. Symmetrically between the groups	0
	No. Symmetrically between the revs	4
	No. (0) without Symmetrically	0
		%
R>G	No. Symmetrically between the groups	0
	No. Symmetrically between the revs	0
	No. (0) without Symmetrically	0

Conclusion Summations

		(Da' Ma) Ew											
		R	G	B	C	M	Y	R-G	R+G	R+G+B	C-M	C+M+Y	C+M
G>R		6	26	-5	-6	-26	5	-20	37	27	20	-27	-37
R>G		232	128	8	-232	-128	-8	104	352	368	-104	-368	-352

(Ew, Me, Mo and Ma). Consequently, the study suggested (Table 6.) to study these relations directions as the results to affect the pigments structures and concentrations% on the digital pixels of the color spaces directions. In fact, as the same previously desiccation with symbol Ew, which the symbols for the trends of interference regions were divided to the group followed format G>R including {Da' Ze} opposite R>G including {Ew' Ma} team. As the same in the text of symbol Eu, found as general looking the cells in G>R lower than the

cells in R>G. Meanwhile, in the (Conception 3. & 4.). The effects of the pigments in the behaviors on the color spaces component are available to sense it. Addition, from the (Table 6.) is approved to an element (Bu) ∈ to {Da' Ze} in the pigments and as the same time ∈ to (Ew, Me, Mo and Ma) in the color spaces component.

IV. CONCLUSION

Conception 3. Scale of the total pigments and pigments index behavior directions for {Da + Ma}-Bu inside the color space group G>R and R>G of subtractive process

		G>R					
Da	Chl a -Chl b	Chl b	Chl b -Ca Carotene	Cl a +Chl b	Chl a	Chl a -Ca	
	5	2	1	-1	-3	-4	
Hi	Chl a -Chl b			Chl b	Chl b -Ca Cl a +Chl b	Chl a Chl a -Ca	
	5			0	-5	-10	
			Chl a -Chl b Carotene	Chl b	Cl a +Chl b Chl b -Ca Chl a	Chl a -Ca	
			1	0	-1	-2	
		R>G					
Ew	Chl b -Ca	Chl a -Ca	Cl a +Chl b	Chl b	Chl a -Chl b	Chl a	Carotene
	13	8	7	6	5	1	-7
Me		Chl b	Chl a -Chl b	Cl a +Chl b	Chl a -Ca		Chl a Carotene
		4	6	2	0		-2
Mo	Chl b -Ca	Chl b	Chl a -Chl b	Cl a +Chl b		Carotene	Chl a -Ca Chl a
	7	6	11	1		-1	-4 -5
Ma	Chl a -Chl b	Chl b -Ca	Chl b	Cl a +Chl b		Chl a -Ca	Carotene Chl a
	8	7	5	2		-1	-2 -3

Conception 4. Scale of the total pigments and pigments index behavior directions for {Da + Ma}-Bu

R>G						
Chl a -Chl b	Carotene %	Chl b %	Cl b -Ca	Cl a +Chl b	Chl a %	Cl a -Ca
11	7	2	-5	-7	-9	-16
G>R						
Cl b -Ca	Chl a -Chl b	Chl b %	Cl a +Chl b	Cl a -Ca	Chl a %	Carotene %
33	30	21	12	3	-9	-12

RGB (basic colors) component is typical corresponding for total pigment structure and concentration. Concomitantly, physically CMY (subtractive colors) component is mirror/reflector for RGB. Ideal form (outspokenly) RGB is active voice and CMY is passive sound for total pigment movement/evolution. The properties of the pigments structures and concentrations of the plant are affecting in the digital inductions for color vision\specific color for appearance the tones degrees in the visible region. Opulent Intercommunities and digital\numeric relationships between pigments structures and concentrations% and (RGB & CMY) color spaces addition confirm that the Subtractive results between the rows of the destructive analyses and non-destructive analyses\ (chemicals estimation and physical measurements). The visual color basic colors component RGB\subtractive colors CMY components are highly to identifications and discernment for the digital of pixels degrees tones at the neutral picture then the elements of pigments in this respect. Basically, the visual color basic colors component RGB\subtractive colors CMY components and color space index are strongly sensitive to affect the total pigments structures and concentrations %. Basically, the visual color basic colors component RGB\subtractive colors CMY components and color space index consider as color signature for the pigments elements for each organic species\verities. The color spaces index as most importance assistant to appearances, explanations and confirmed the statues of

interactions the pigments structures and concentrations % with the visual color space.

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