

# EPSON

## EXCEED YOUR VISION

The Epson RGB Printing Guide  
Adobe Photoshop CS4  
Lightroom 2  
NX Capture 2

Version 1.2

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# Introduction

# Introduction

Thank you for downloading this document; we hope this gives you some insight into the world of printing with Epson

You no doubt own an Epson Photo or Prographics printer and are looking for the best way to reproduce your work on the world's best inkjet printers

The following document has been produced for owners of Epson printers to be able to gain an entry level understanding of the colour managed workflow. Professional operators have been using this technique for years

This document will guide you through the basic steps required for using the Epson printer driver correctly, covering a number of Epson printers

There is an incredible amount of information available these days on colour management that can be researched if you wish to further your knowledge

Thank you again for using Epson printers and we hope you enjoy your time printing

The Epson Australia Technical Team

# Colour Management

# Colour Management

As mentioned in the introduction, there is a lot of information available these days on colour management. There is also a lot of misinformation, therefore research and guidance is the best way to wade through all of the data

The most important thing to remember is, if you are happy with the results your Epson printer is producing then you are doing the right thing and there is no need to change anything

If you are not happy with the results you are achieving then there may be some simple steps you are missing and this guide aims to help

Colour management is a complex subject that can take years to understand fully. This guide is not designed to answer all the questions, but rather provide a starting point of understanding

Colour managed printing is defined and executed well, *only* if a strict workflow is adhered too. If there is any deviation from the workflow then the results are unpredictable, therefore the workflow has some hard and fast rules

# Resolution

# Resolution

Correct resolution for printing can depend on a number of factors. Firstly do you have a Hi-Res file. Can your digital camera produce high enough resolution for printing Has the file just been email to you for printing? In these cases there may not be enough resolution to achieve acceptable results.

The optimum resolution for Epson Photo printers is 360ppi (\*Pixel Per Inch). This will yield the absolute best result. Remember this is optimum. In some cases, with larger files the processing power to reproduce an image of this resolution could significantly slow down your computer.

Epson's half-toning technology is designed to produce excellent quality at significantly lower resolution, in most cases indistinguishable from higher resolution files. Below is a list of recommended resolutions that will produce quality results.

360ppi (Optimum, for images with Text or very fine lines i.e. photo of a bridge with cables)

240ppi

180ppi

120ppi

Below these resolutions, results may become unpredictable.

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\*The PPI pixels per inch, of a computer display is related to the size of the display in inches and the total number of pixels in the horizontal and vertical directions. This measurement is often referred to as DPI dots per inch, though that measurement more accurately refers to the resolution of a computer printer.

# Workflow Setup

# Workflow Steps

1. Monitor Setup
2. Viewing Conditions
3. Epson Printer
4. Epson Genuine Ink
5. Epson Media
6. ICC Profile\*

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\*ICC profiles are supplied by Epson for all Epson Papers on all Epson Photo Printers using Epson Genuine Ink. The ICC profile determines how the ink/paper combination achieves the correct printed result.

Other quality paper manufacturers produce ICC profiles for their media

Third Party ink producers do not supply ICC profiles for their ink therefore the results are unknown and this guide will not be of use

# Monitor Setup

The most frequently asked question is “Why don’t my prints match what I see on screen?”

This is not the fault of the printer, as the printer can only do what it is told. If you adjust your image to suit your monitor and your monitor is displaying the incorrect colour then the printer can only reproduce the data that is sent to it

The most important step in the colour management workflow is the first one: a calibrated and profiled monitor. Consider your monitor as your window to the colour world. If the window is dirty or obscured then the results from the printer will be dirty or obscured

Now, most importantly your monitor cannot be correctly adjusted by eye. A correct result can only be achieved by using hardware calibration. There are a number of excellent affordable devices available on the market, some better than others, usually defined by price. Having said that any device is better than no device

If a calibration device is not available for any reason, there are also a number of Epson Professional Graphics Dealers that can calibrate your monitor. Please check the Epson website for a list of Pro Dealers. You do not have to be a Pro User to utilise their services

[Prographics Dealers](http://www.epson.com.au/prographics/wheretobuy)

<http://www.epson.com.au/prographics/wheretobuy>

# Monitor Setup

Now that your monitor is calibrated and profiled correctly there is significantly more chance to produce the best results

The monitor should be checked at least every two to four weeks ensuring that viewing consistency is at an optimum. This again is a very important step

The type of monitor is also a question in point. It's unreasonable to expect a 10 year old CRT (Cathode Ray Tube) monitor to be able to produce correct results even when a hardware profiling device is used. This type of monitor would just be too old and have deteriorated too much for any usable quality

Most modern LCD (Liquid Crystal Display) monitors have a much better chance of displaying correct results, as with anything, quality is dictated by price and manufacturer

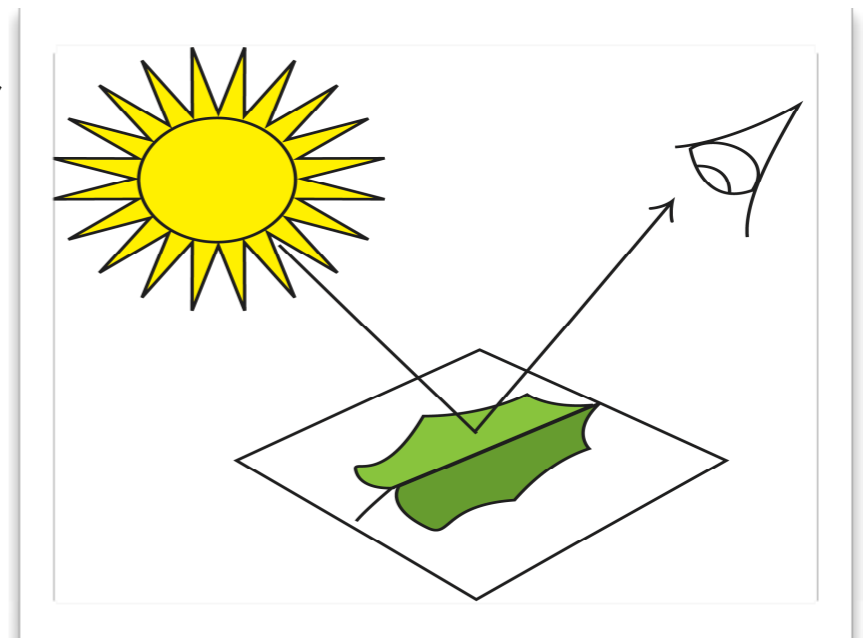
# Viewing Conditions

The next step in the path to a colour managed workflow is the viewing conditions and this is probably the hardest aspect to control

In reality it is impossible to control our viewing conditions. The moment any light-source or environment changes, even in the slightest, the viewing conditions are changed, therefore you must have a realistic expectation of what your images will look like in your viewing environment

There are viewing light boxes available that have controlled lighting although this is not always a practical solution for viewing images in the real world

The colour event is dependent on three things: the Observer the light-source, the object. If one of these changes the whole colour event changes, therefore you can see that certain expectations need to be catered for



# The Epson Printer

Epson have worked very hard over the years to produce devices that cater for the needs of Professionals, Enthusiasts and Amateurs alike. By listening to the needs of the rapidly expanding number of digital consumers, we research and develop the best possible solutions that produce the best results

Epson printers cover a large range of these requirements and we here at Epson Australia feel that our product has the ability to exceed the expectations that our users demand

There is minimal effort required for the user to set the printer up and obtain results straight away. Getting the best result just needs some forethought and adherence to the workflow laid out in this document

This RGB Printing Guide is for the current range of Epson Photo printer as of April 2009, in conjunction with Adobe's Photoshop CS4 for Windows XP and Macintosh 10.5.x. Many users are running Windows Vista and if there are any significant differences we will update this document

The guide is also only relevant with printers using Epson Genuine Ink, Epson Genuine Media and supplied or custom Epson ICC profiles

# The Epson Printer

When installing the Epson printer, be sure to read all the relevant material and follow any installation instructions

When installing the drivers from the supplied disc the required ICC profiles for your Epson Photo Printer will install automatically on both the Windows OS and Mac OS. If for any reason the ICC profiles do not install, they are available on the Epson Australia website Support section. Visit [www.epson.com.au](http://www.epson.com.au)

As you progress through this guide the understanding for what the ICC profile does and how you use it will become clear. We suggest you read this guide first then follow along with the instructions when you are ready to print

# Epson Genuine Ink

Epson Genuine Ink has been formulated to produce not only the best result from your printer, it also protects your investment. Epson ink is the only ink designed to work correctly with the Epson print head technology and the very fine filtering and components that are needed to produce the best possible prints. The ink also sustains the life of the printer and feeds the print head the correct amount needed to accurately produce the right amount of prints per cartridge

When using substitute inks not only is there an exponential risk of damage to the printer's mechanical technology and operation, but the amount of prints can also diminish due to excessive wear caused by the substandard quality of cheap manufacturing techniques to produce cheap inks. The other factor is, most, if not all substitute ink manufacturers do not support their product and in most cases do not supply ICC profiles which are a major requirement of any workflow and will not quote susceptibility to contaminants or fading

Much of the Epson range of ink and media has been developed to resist contaminants and fading. There is an exceptional source of information on print permanence at [www.wilhelm-research.com](http://www.wilhelm-research.com)

# Epson Media

Epson media works in conjunction with Epson Genuine Ink and Epson ICC profiles to deliver the optimum results

There is a large range of media available from Epson to suit everyone's needs. Certain printers in the Epson range have the ability to not only print on photo quality paper, but also fine art papers, canvas, matte media, adhesives, transfer paper and more

With the exception of a few media, Epson supplies ICC profiles to accommodate the way colour is represented on the media, producing amazing results. Epson media is also specifically developed to function correctly with the paper handling of the designated printer, to ensure no damage any moving parts and correct feed through the device

# Epson ICC Profiles

In colour management, an ICC profile is a set of data that characterises a colour input or output device, or a colour space, according to standards as formulated by the International Colour Consortium (ICC).

Profiles describe the colour attributes of a particular device or viewing requirement by defining a mapping between the device source or target colour space and a *profile connection space* (PCS). This PCS is either CIELAB (L\*a\*b\*) or CIEXYZ Mappings may be specified using tables, to which interpolation is applied, or through a series of parameters for transformations.

Epson's printer drivers are ICC compliant so that the optimum result is achievable. Using Adobe Photoshop, Lightroom, Elements, Aperture or other ICC compatible applications, along with a correctly profiled monitor and Epson's printer technology you can achieve top quality prints

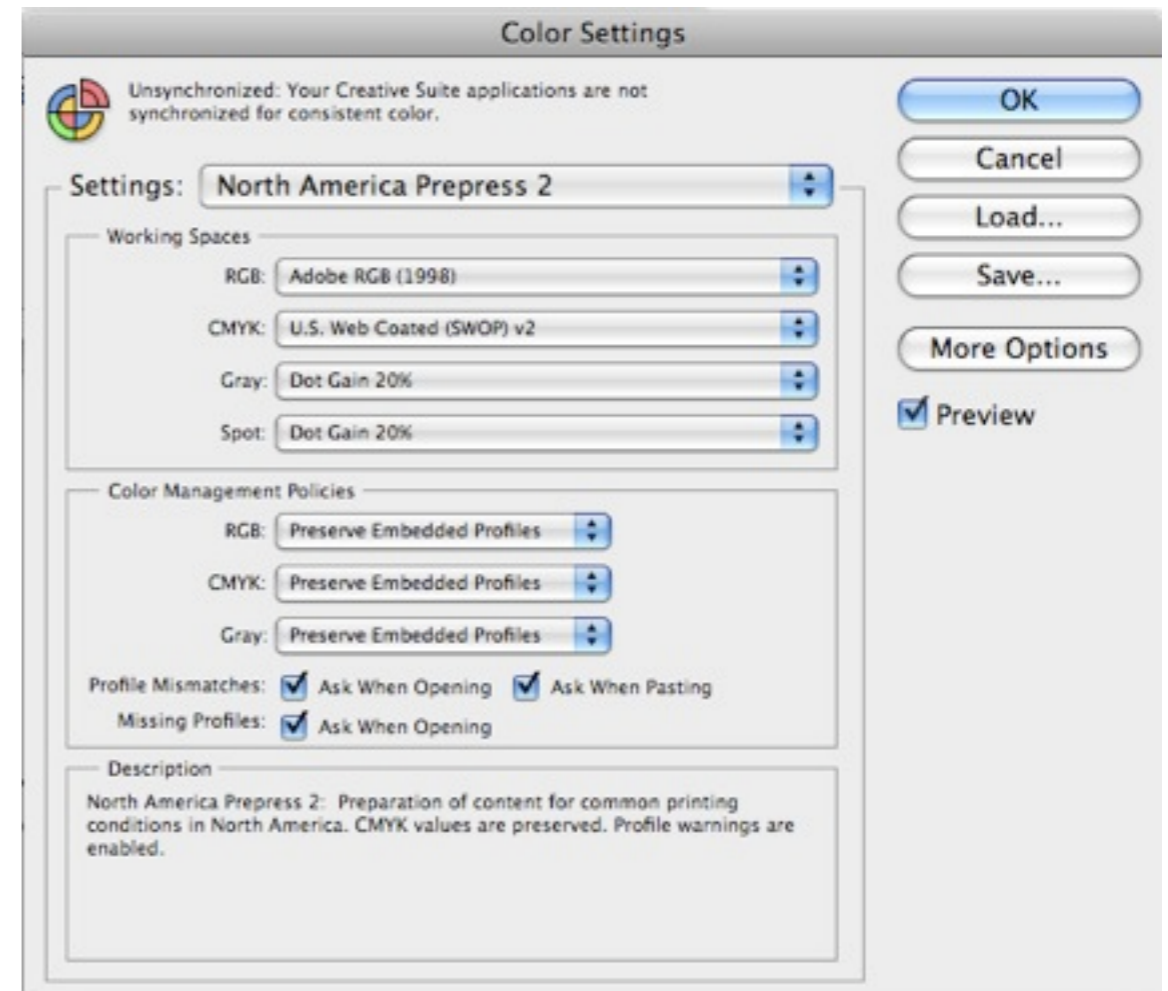
This guide will show how to select the profiles to attach them to the file for printing and also use them for displaying a representation of how the final printed image will look using the soft proofing facility in Photoshop.

Adobe Photoshop's soft proofing function is the main reason that a correctly profiled monitor is required.

# Photoshop Setup

# Photoshop Setup

- Setting up Photoshop correctly is the first step in the workflow
- Go to Edit>Color Settings
- Select either Adobe RGB or sRGB for the RGB working space\*
- Do not select the monitor profile in the RGB space as that is incorrect



\*The only setting of concern is the RGB Work Space. Epson printers produce the best results through the Epson Driver when RGB data is used. If CMYK data is required then a postscript RIP would produce better results. This Guide is based on the Epson Driver and RGB data only

# Printing

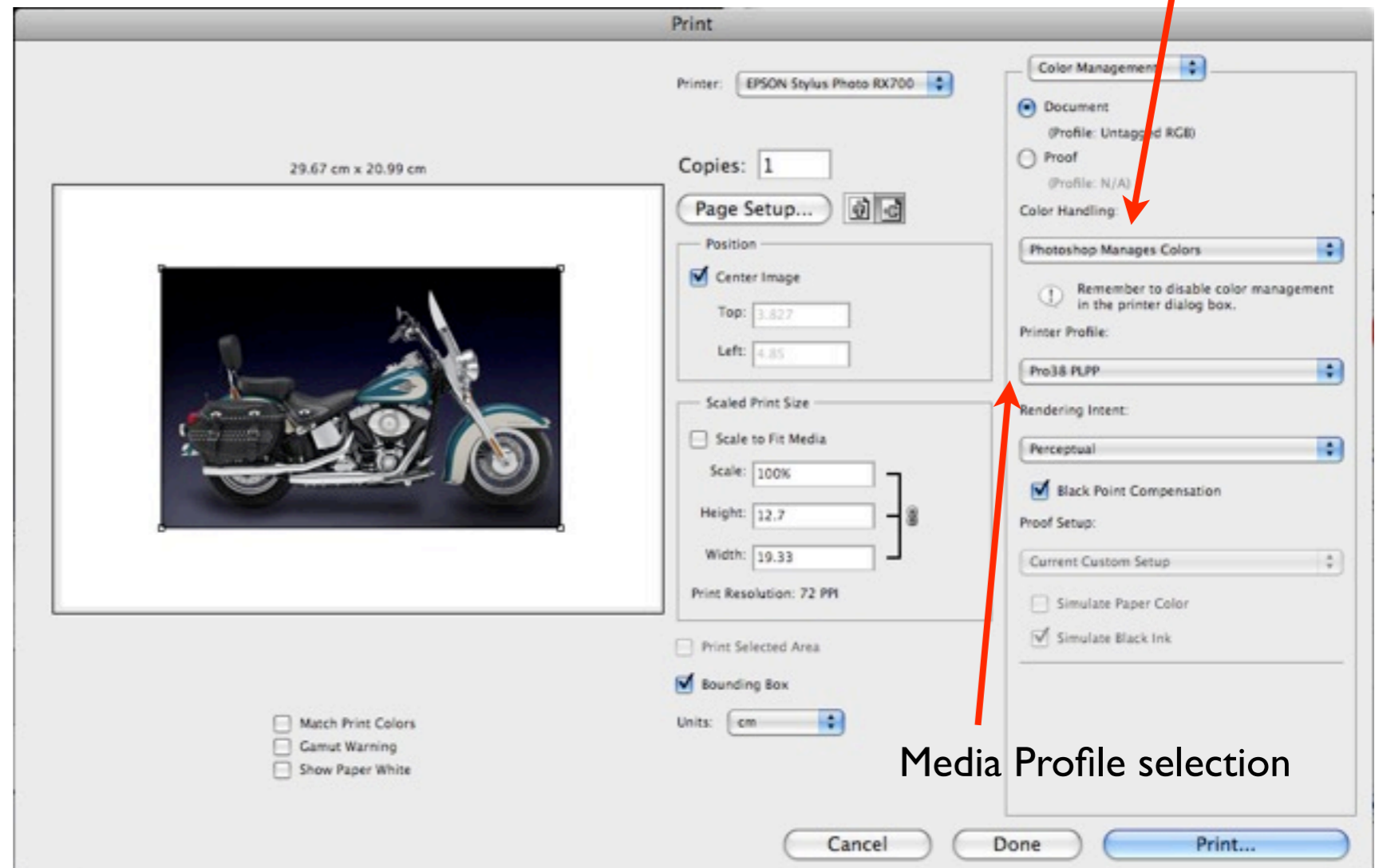
# Prographics Printers OSX

# Printing

Mac OS X 10.5

Select Photoshop Manages Color

- Selecting Photoshop Manages Colors allows access to the paper profiles
- Select the correct profile that matches the printer and paper being used
- Select the required Rendering Intent\* and keep Black Point Compensation checked
- Select Print



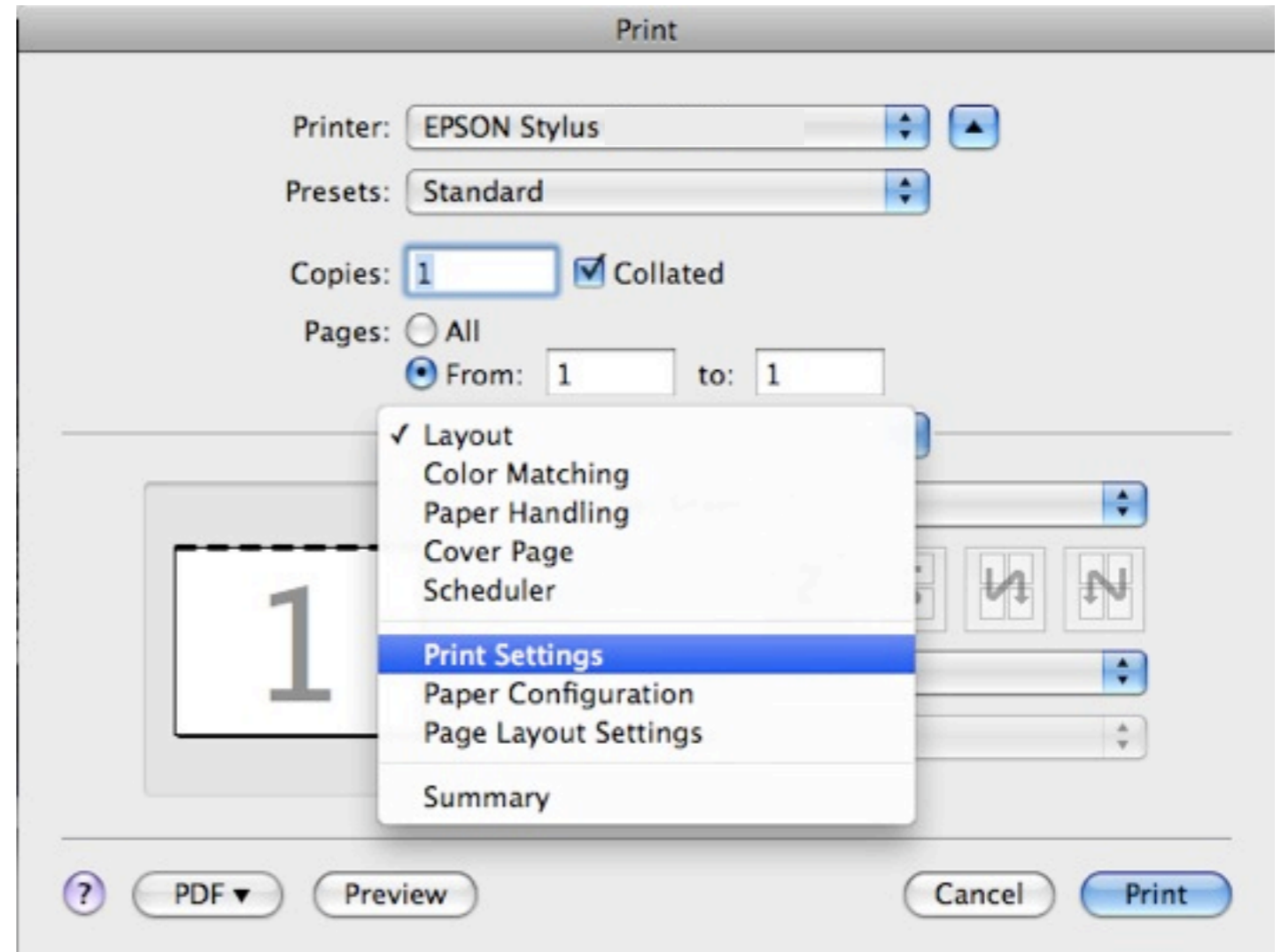
Media Profile selection

\*The easiest way to choose a rendering intent is, (bright colourful pictures) select Perceptual.  
For subtle muted tones choose Relative colorimetric.  
Checking results with soft proofing will be discussed later

# Printing

Mac OS X 10.5

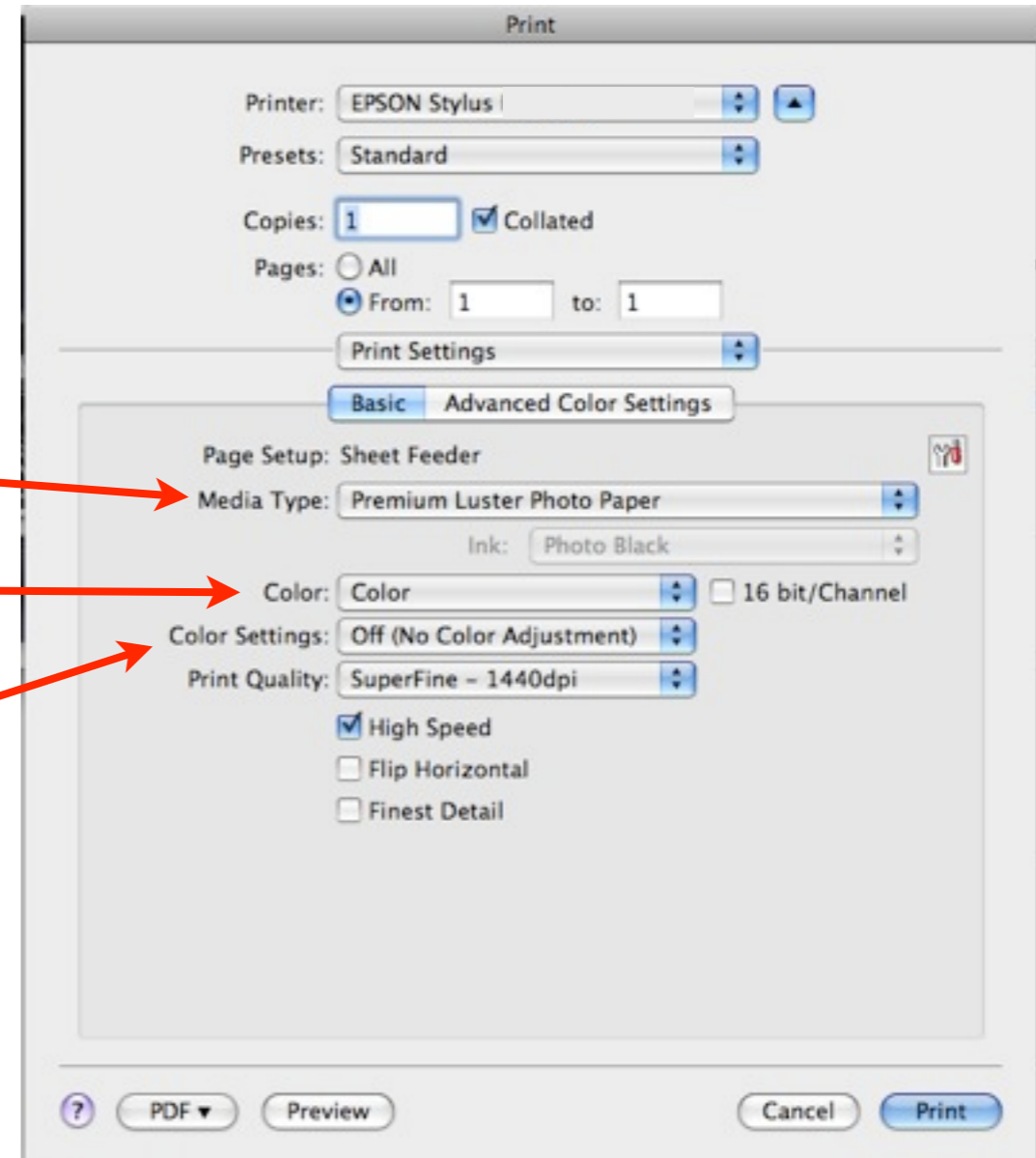
- Select the Print Setting



# Printing

Mac OS X 10.5

- Select the Media Type to match what is in the printer
- Select Color
- Select \*Off (No Color Adjustment)
- Print



\*By selecting Off (No Color Adjustment) the profile describes the colour to the driver  
When not using a profile, colour has no meaning to the driver

# Consumer Printers

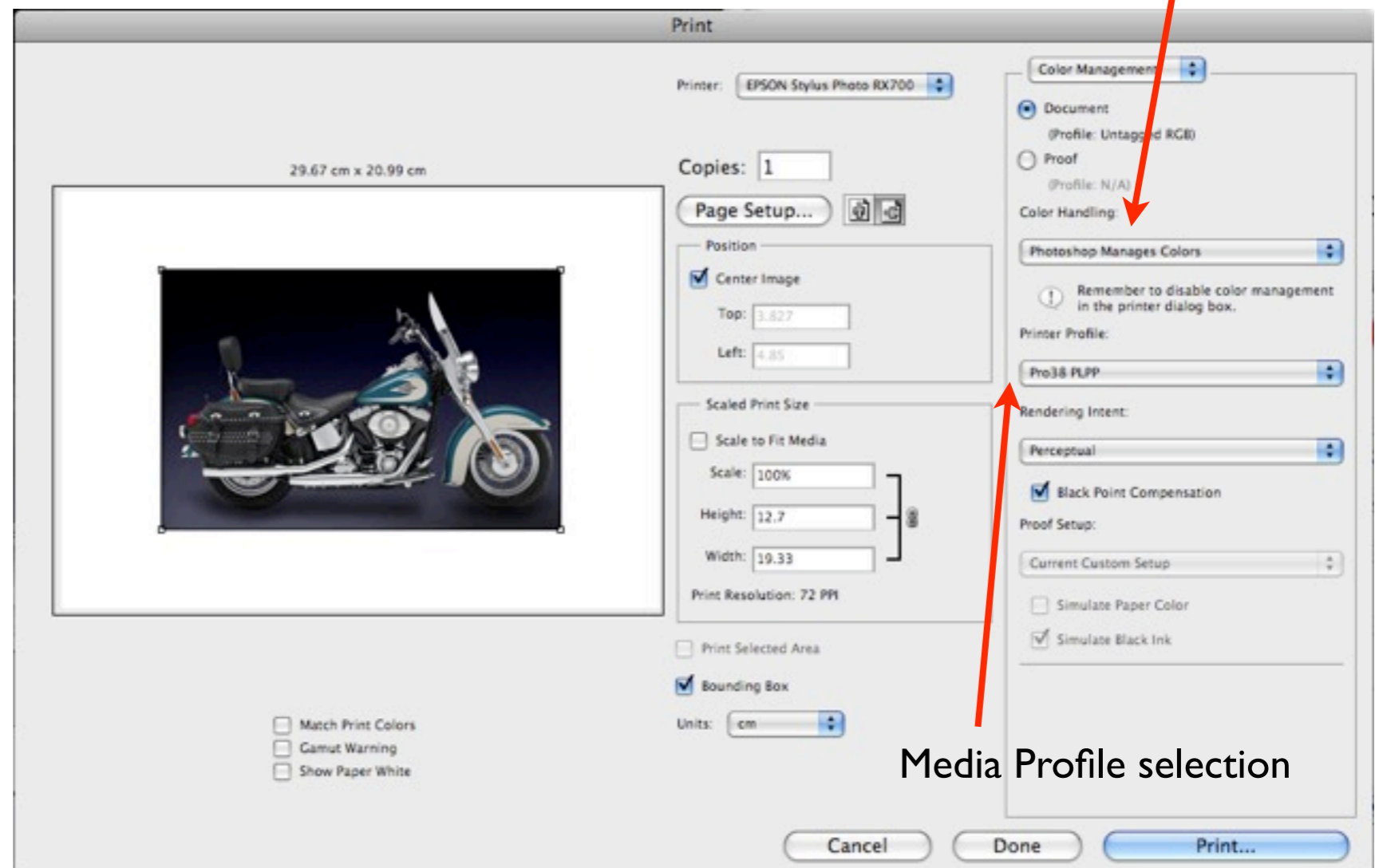
## OSX

# Printing

Mac OS X 10.5

Select Photoshop Manages Color

- Selecting Photoshop Manages Colors allows access to the paper profiles
- Select the correct profile that matches the printer and paper being used
- Select the required Rendering Intent\* and keep Black Point Compensation checked
- Select Print



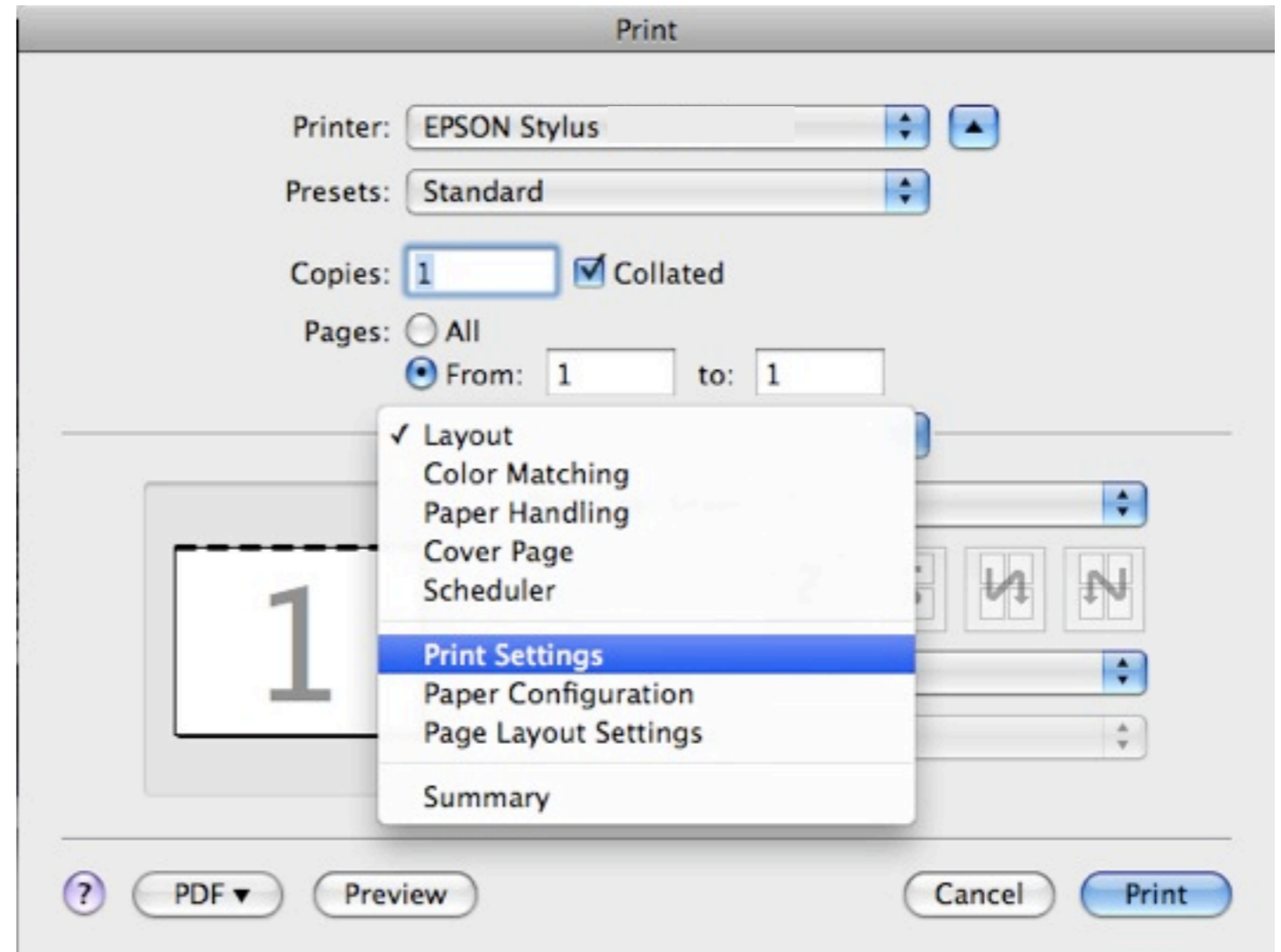
Media Profile selection

\*The easiest way to choose a rendering intent is, (bright colourful pictures) select Perceptual.  
For subtle muted tones choose Relative colorimetric.  
Checking results with soft proofing will be discussed later

# Printing

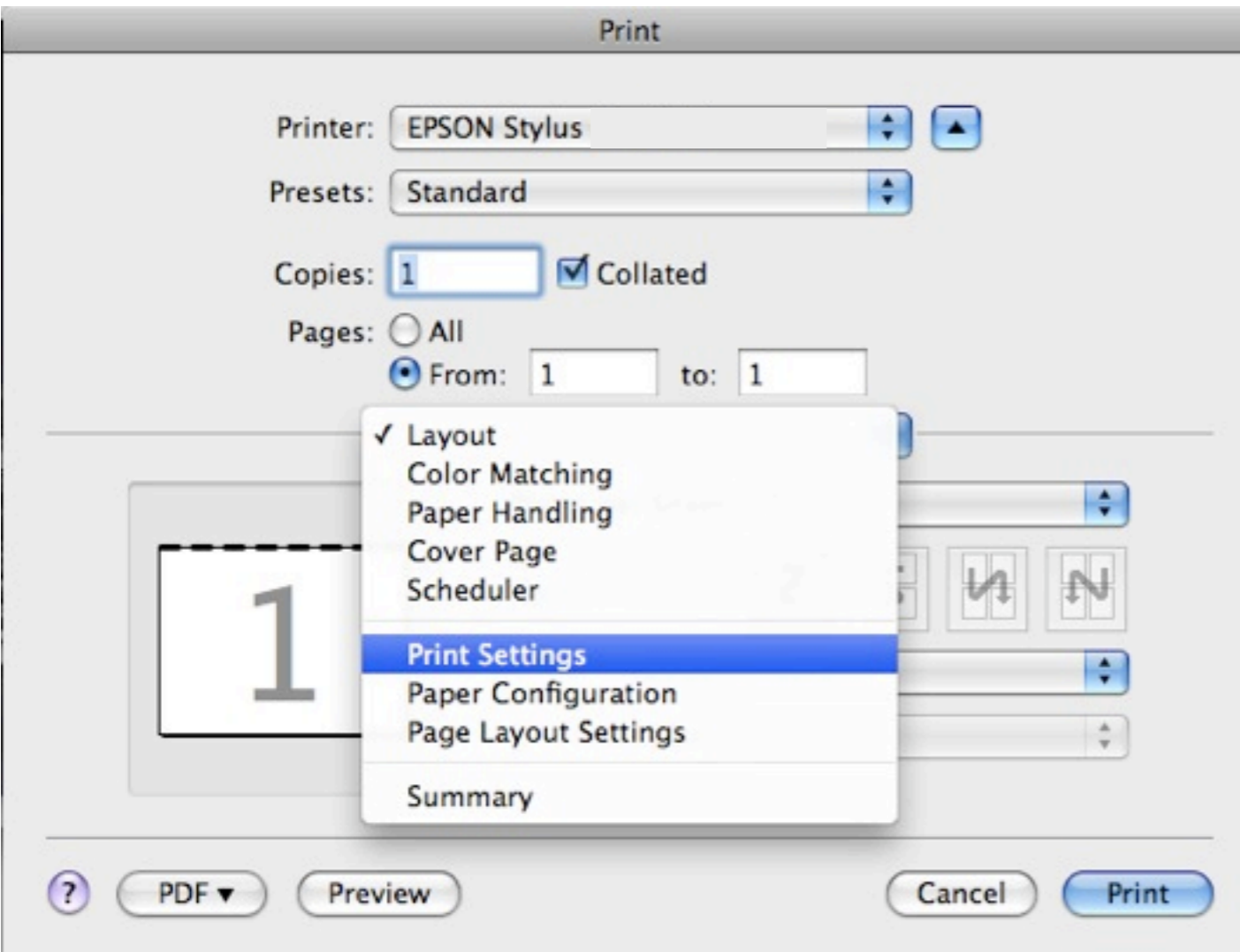
Mac OS X 10.5

- Select the Print Setting

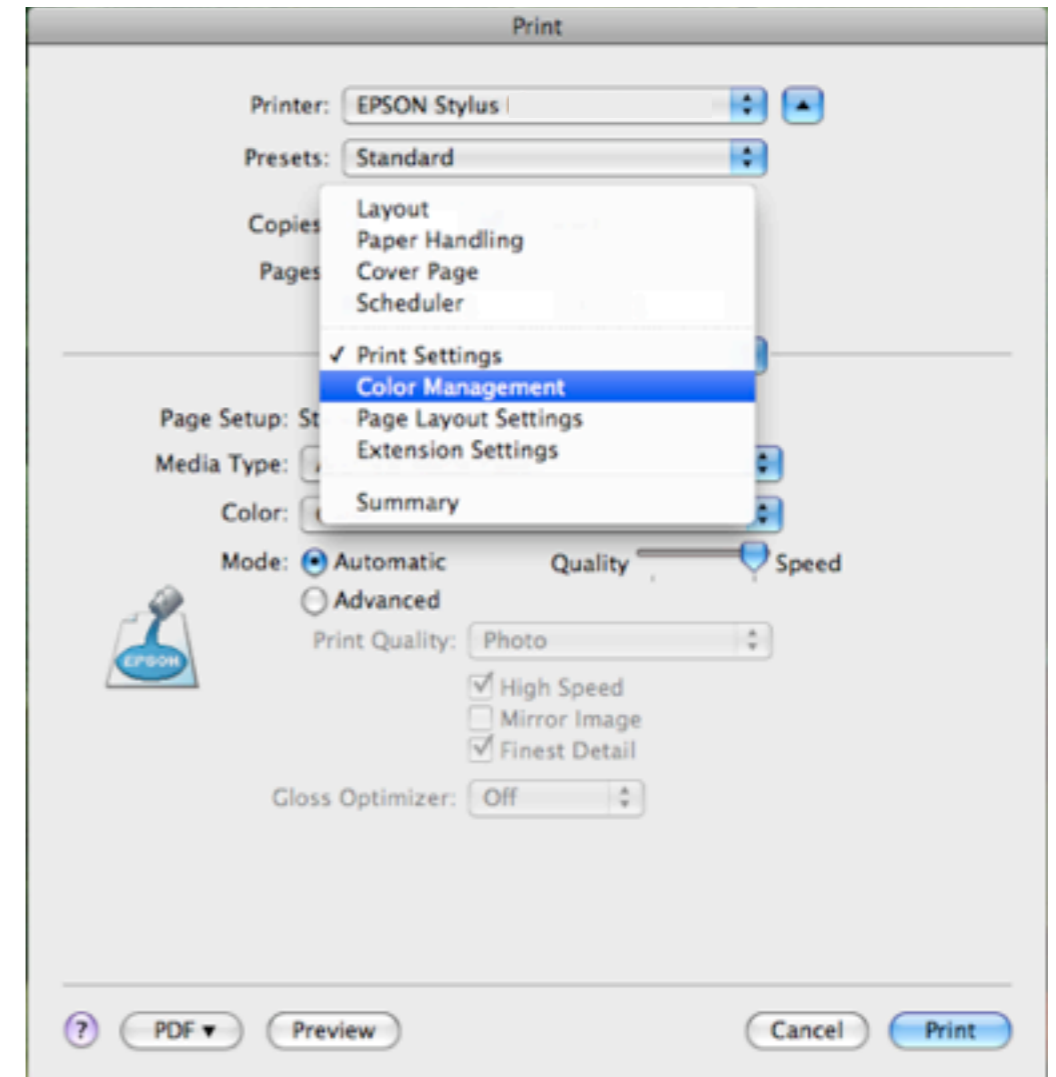


# Printing

Mac OS X 10.5



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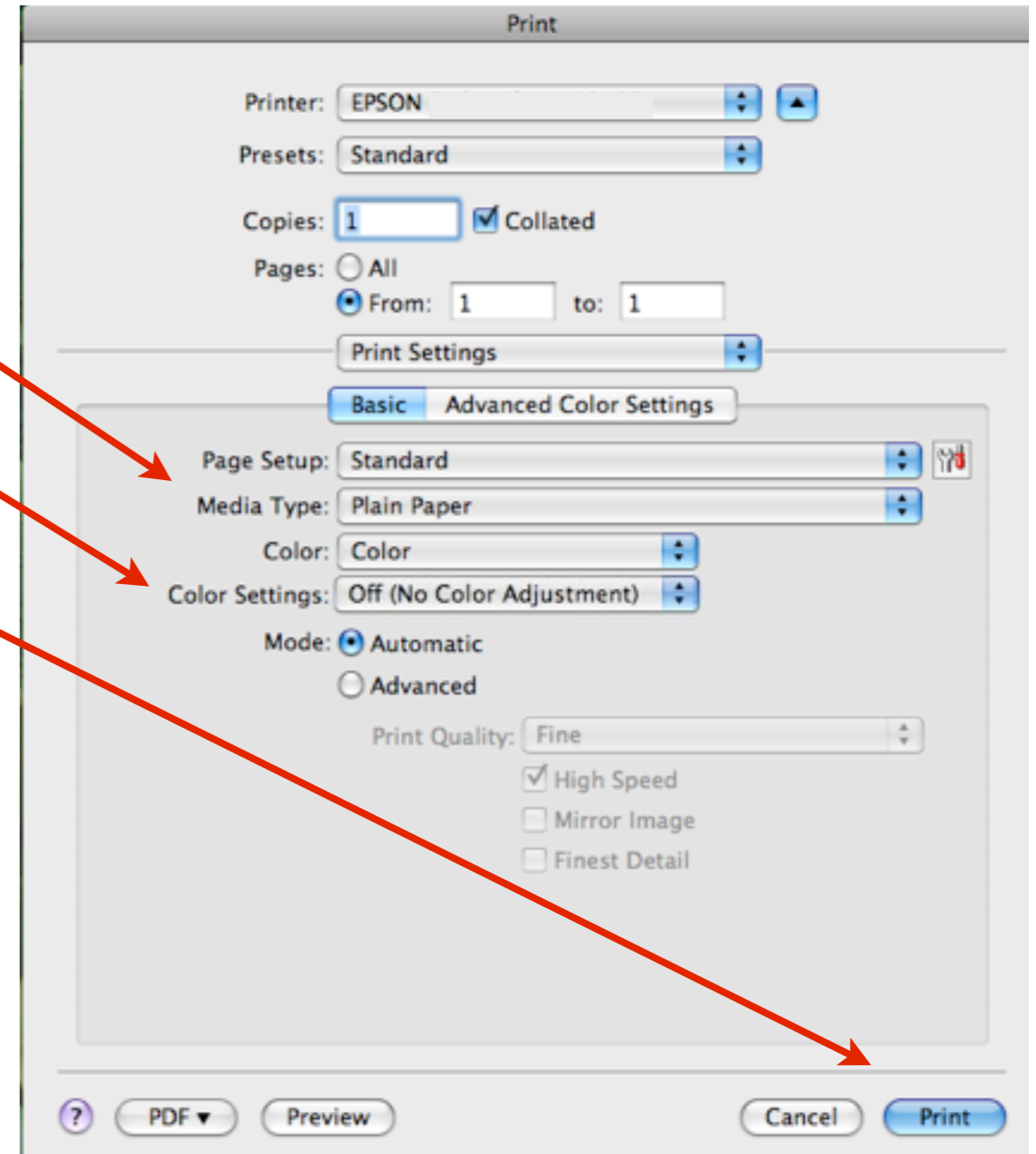
# Printing

Mac OS X 10.5

Select the appropriate print quality settings.

Select Color Settings to Off

Select Print

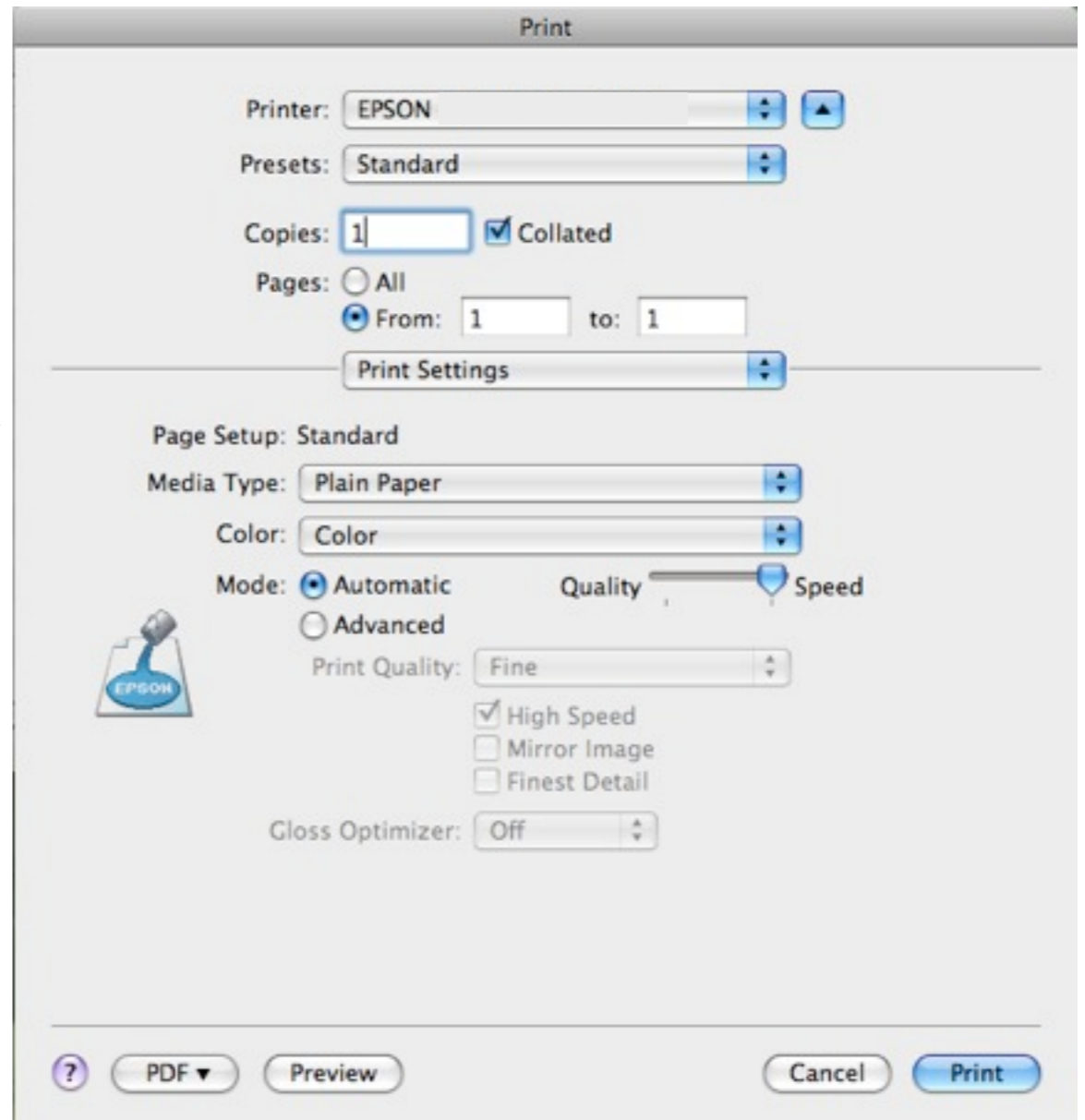


\*By selecting Off (No Color Adjustment) the profile describes the colour to the driver  
When not using a profile, colour has no meaning to the driver

# Printing

Mac OS X 10.5

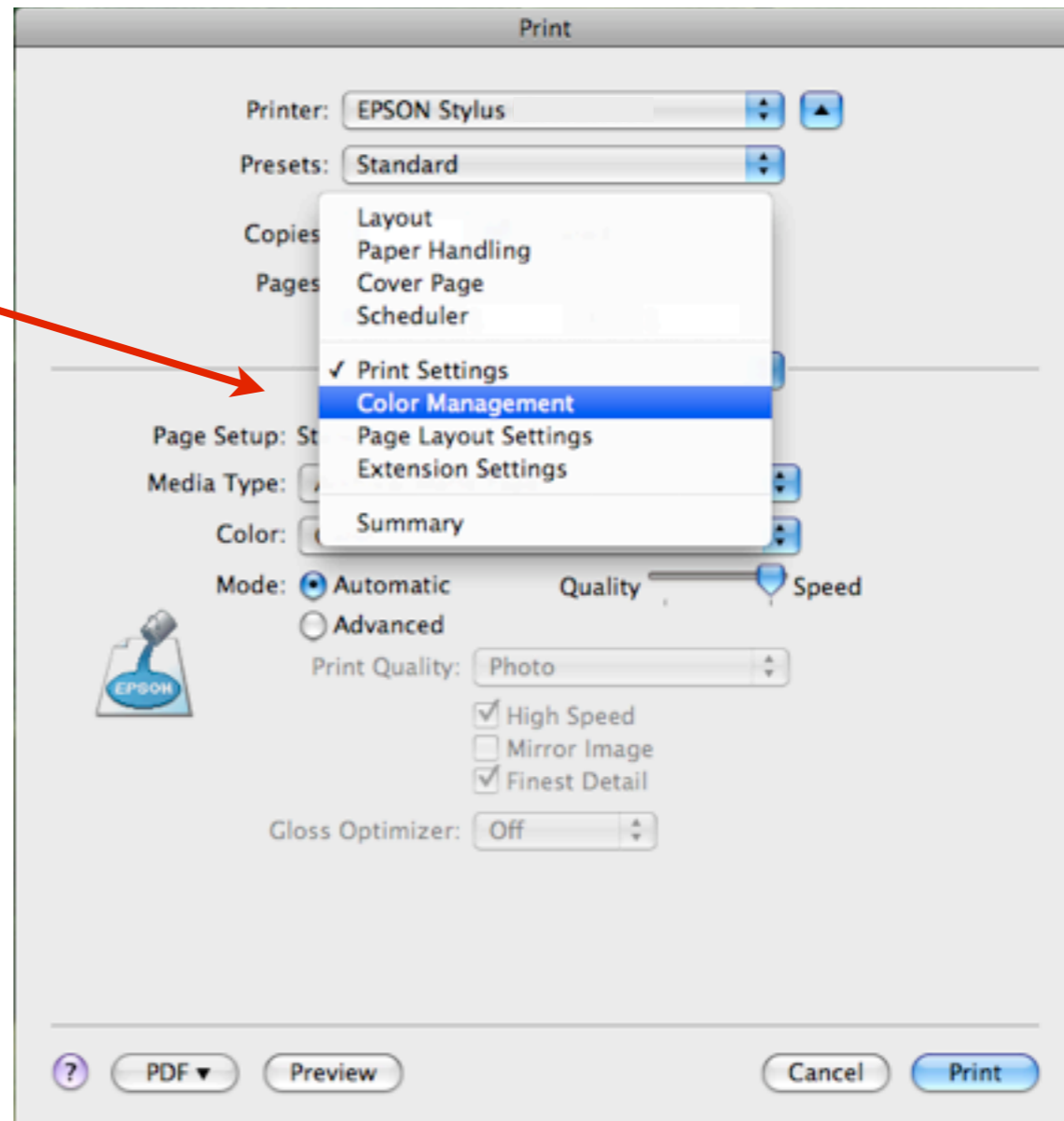
Select the appropriate print quality settings.



# Printing

Mac OS X 10.5

Select Color Management

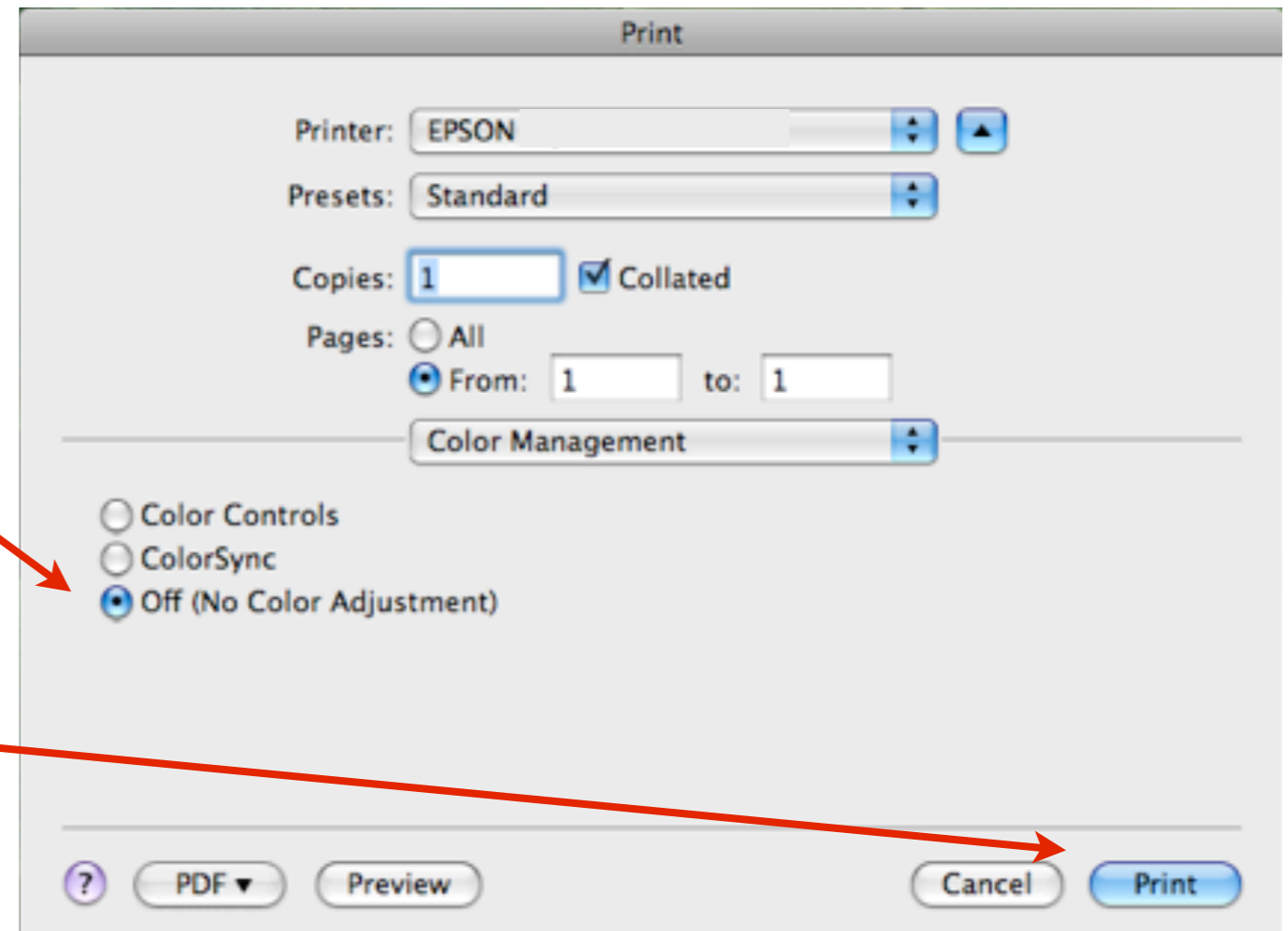


# Printing

Mac OS X 10.5

Select Off

Select Print



\*By selecting Off (No Color Adjustment) the profile describes the colour to the driver  
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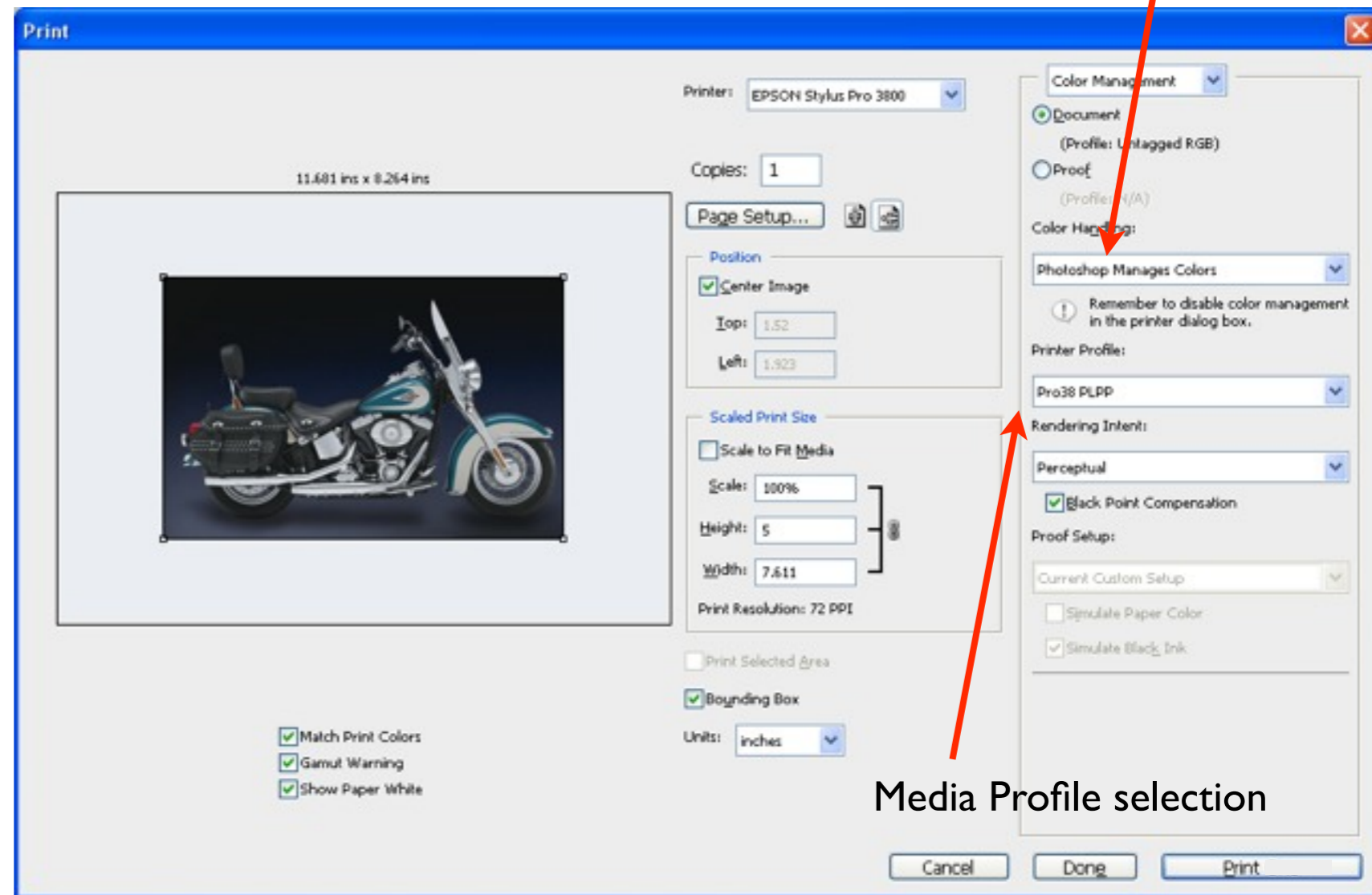
# Pro Graphics Printers Windows

# Printing

## Windows

Select Photoshop Manages Color

- Selecting Photoshop Manages Colors allows access to the paper profiles
- Select the correct profile that matches the printer and paper being used
- Select the required Rendering Intent\* and keep Black Point Compensation checked
- Select Print



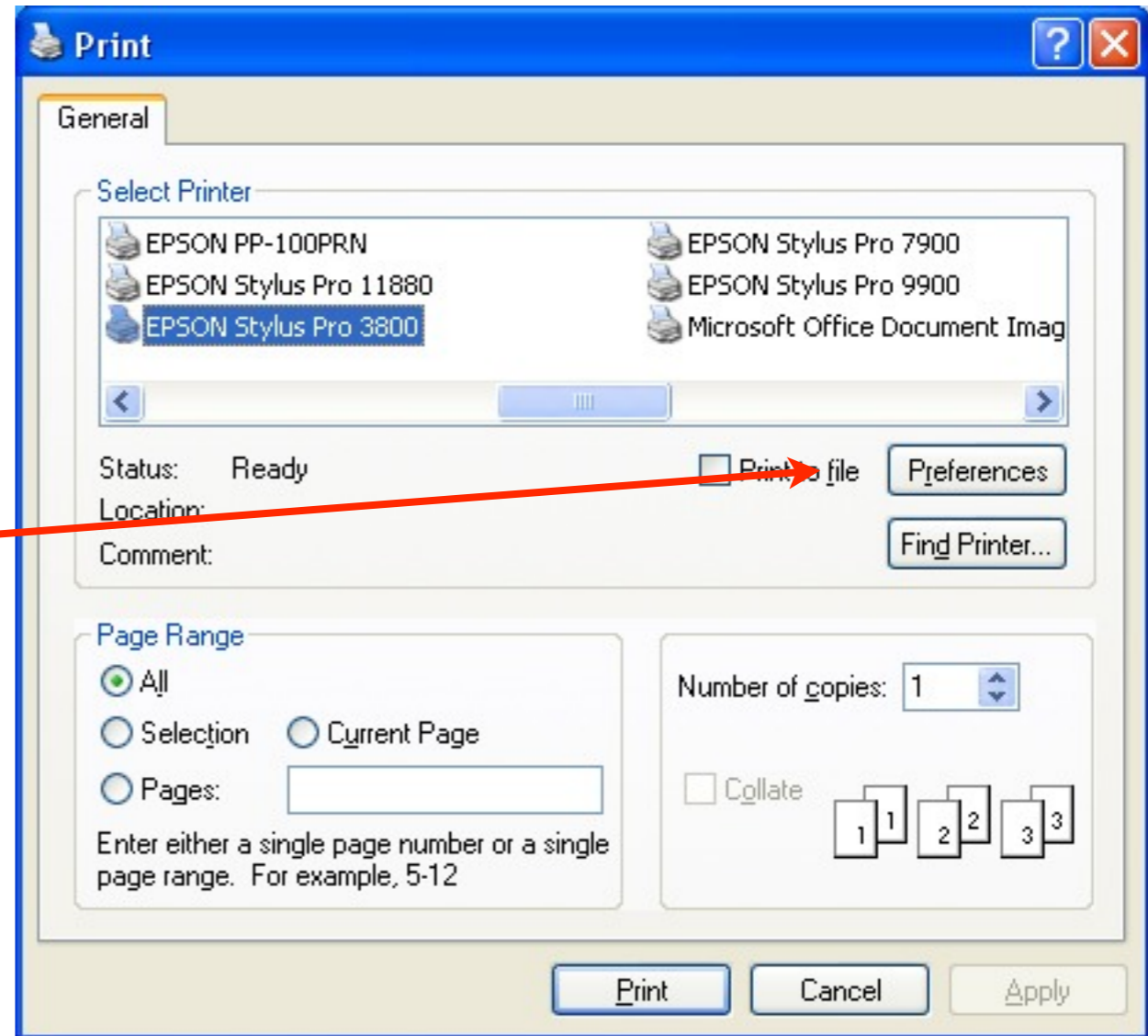
Media Profile selection

\*The easiest way to choose a rendering intent is, (bright colourful pictures) select Perceptual.  
For subtle muted tones choose Relative colorimetric.  
Checking results with soft proofing will be discussed later

# Printing

## Windows

- Select the Preferences button

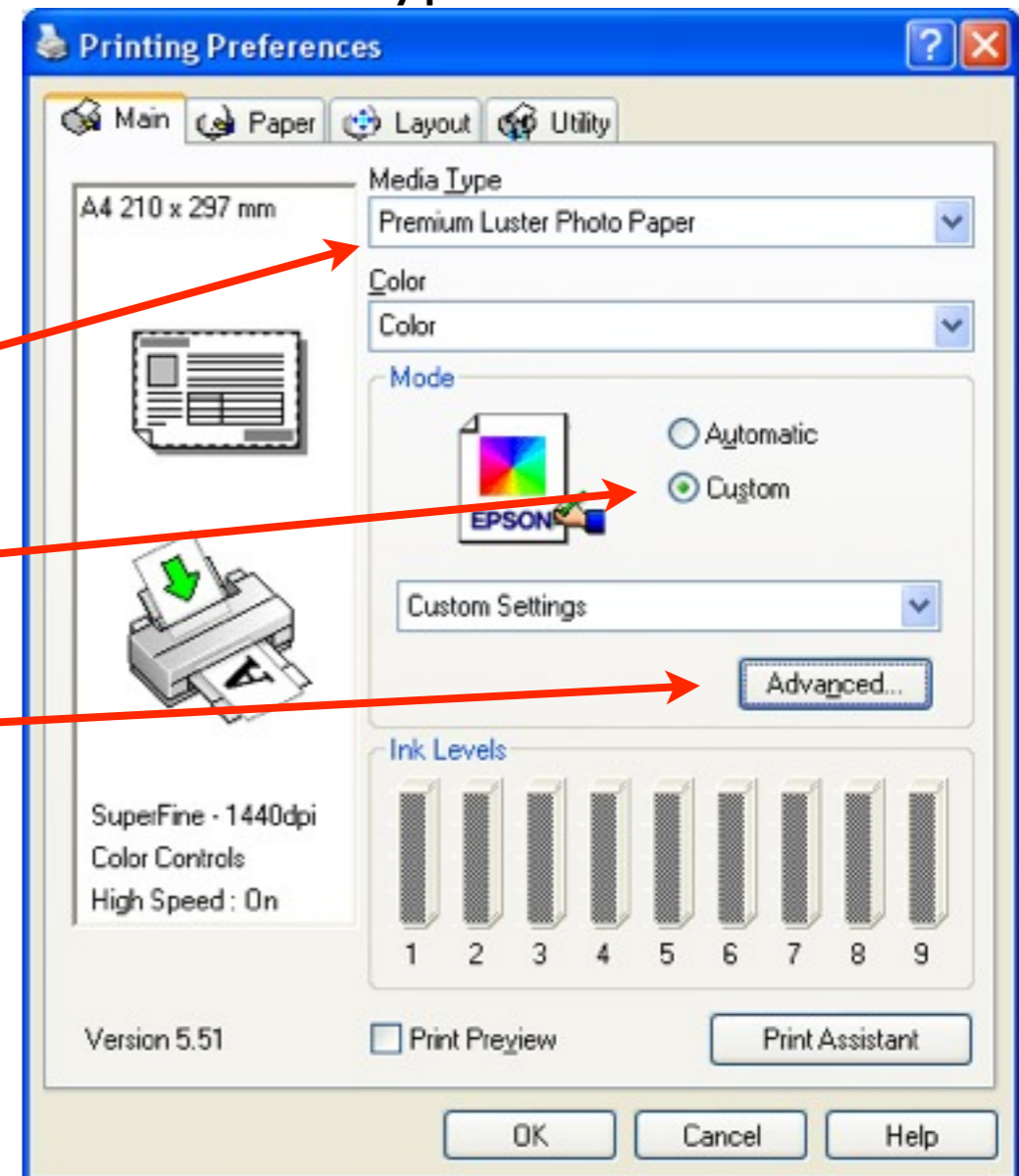


# Printing

Windows

Type I Driver

- Select the Media Type to match what is in the printer
- Select Custom
- Select Advanced

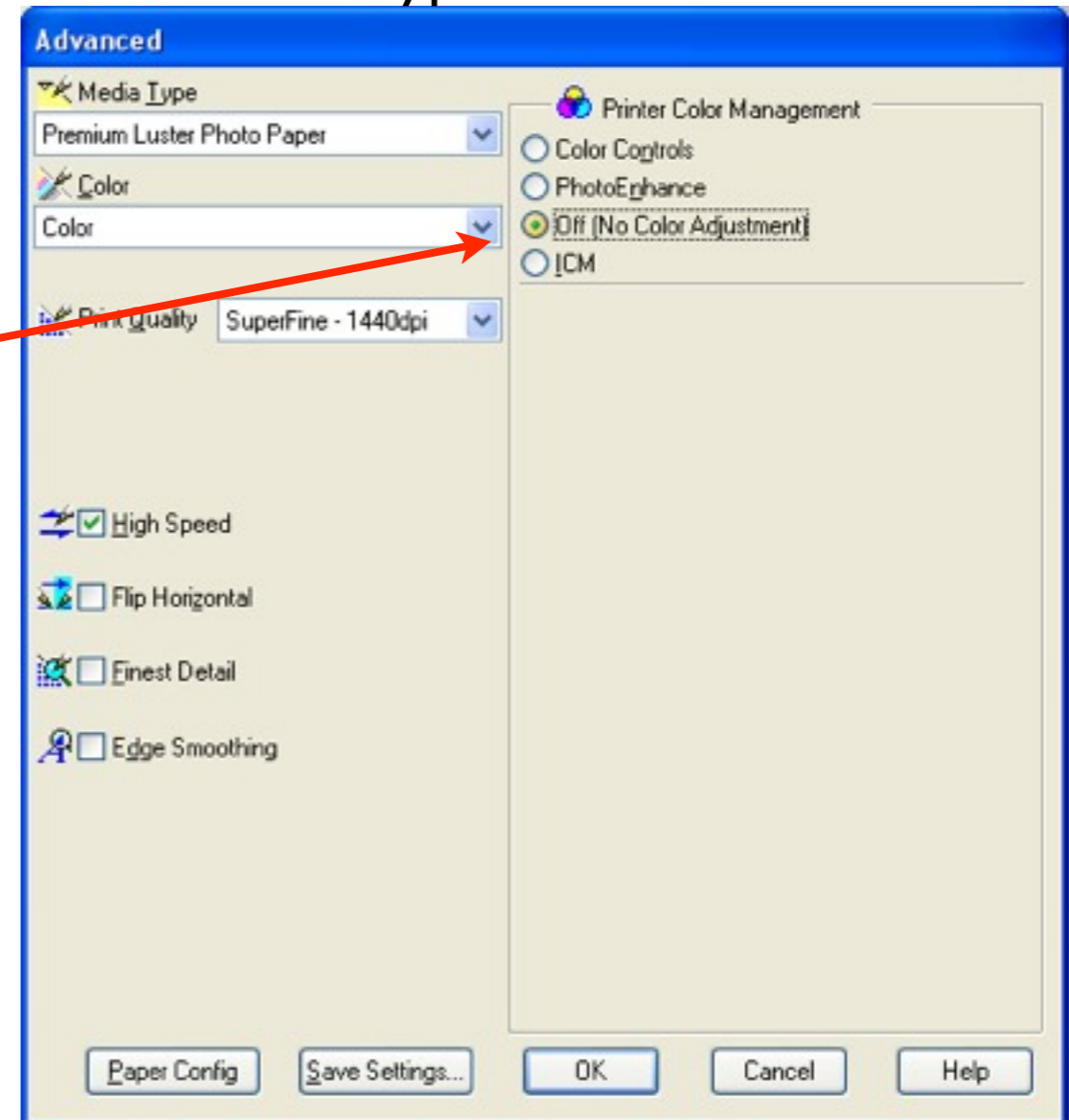


# Printing

Windows

Type I Driver

- Select \*Off (No Color Adjustment)
- Select OK
- Then Select OK in the next screen
- Print



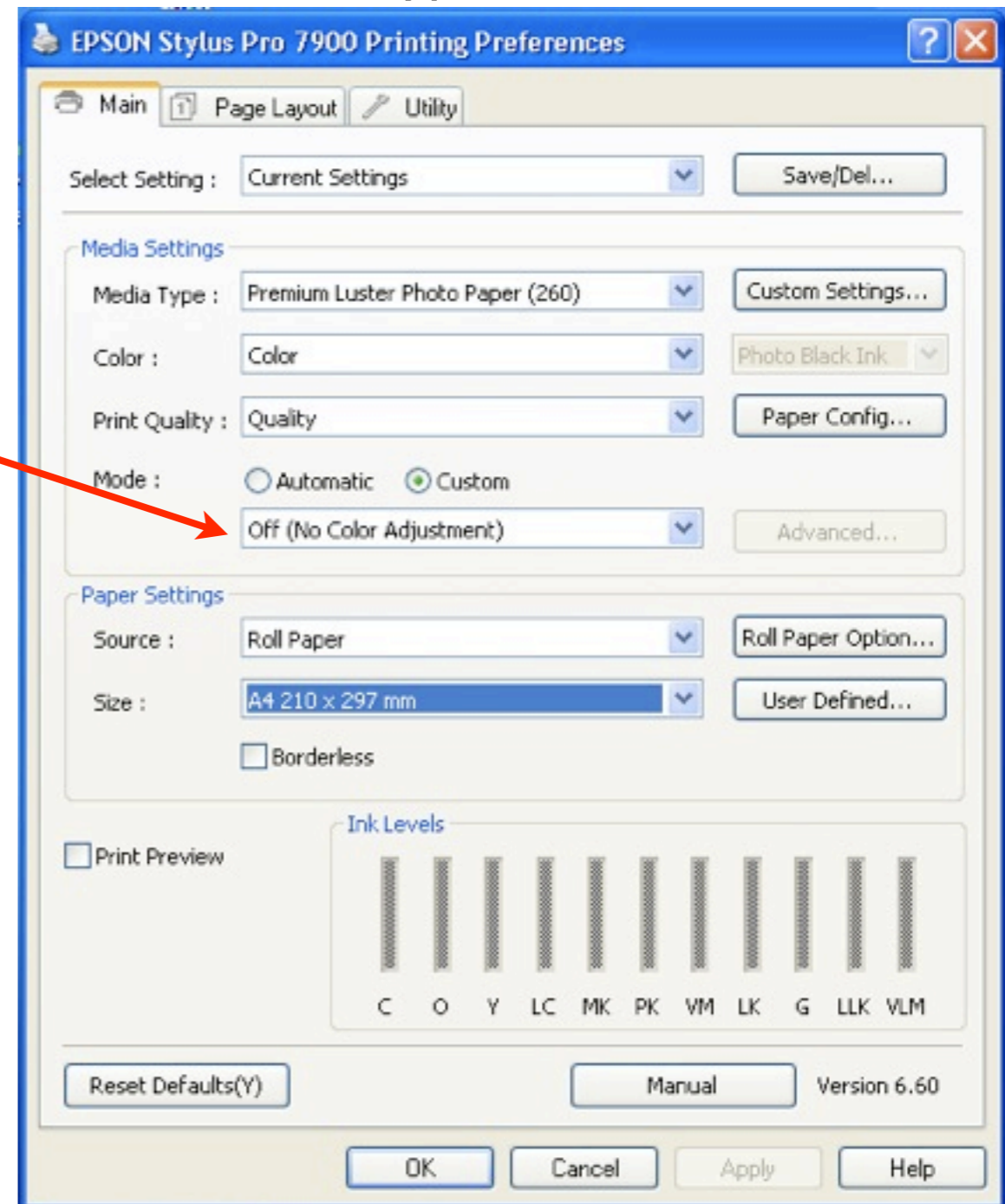
\*By selecting Off (No Color Adjustment) the profile describes the colour to the driver  
When not using a profile, colour has no meaning to the driver

# Printing

Windows

Type 2 Driver

- Select \*Off (No Color Adjustment)
- Select OK
- Then Select OK in the next screen
- Print



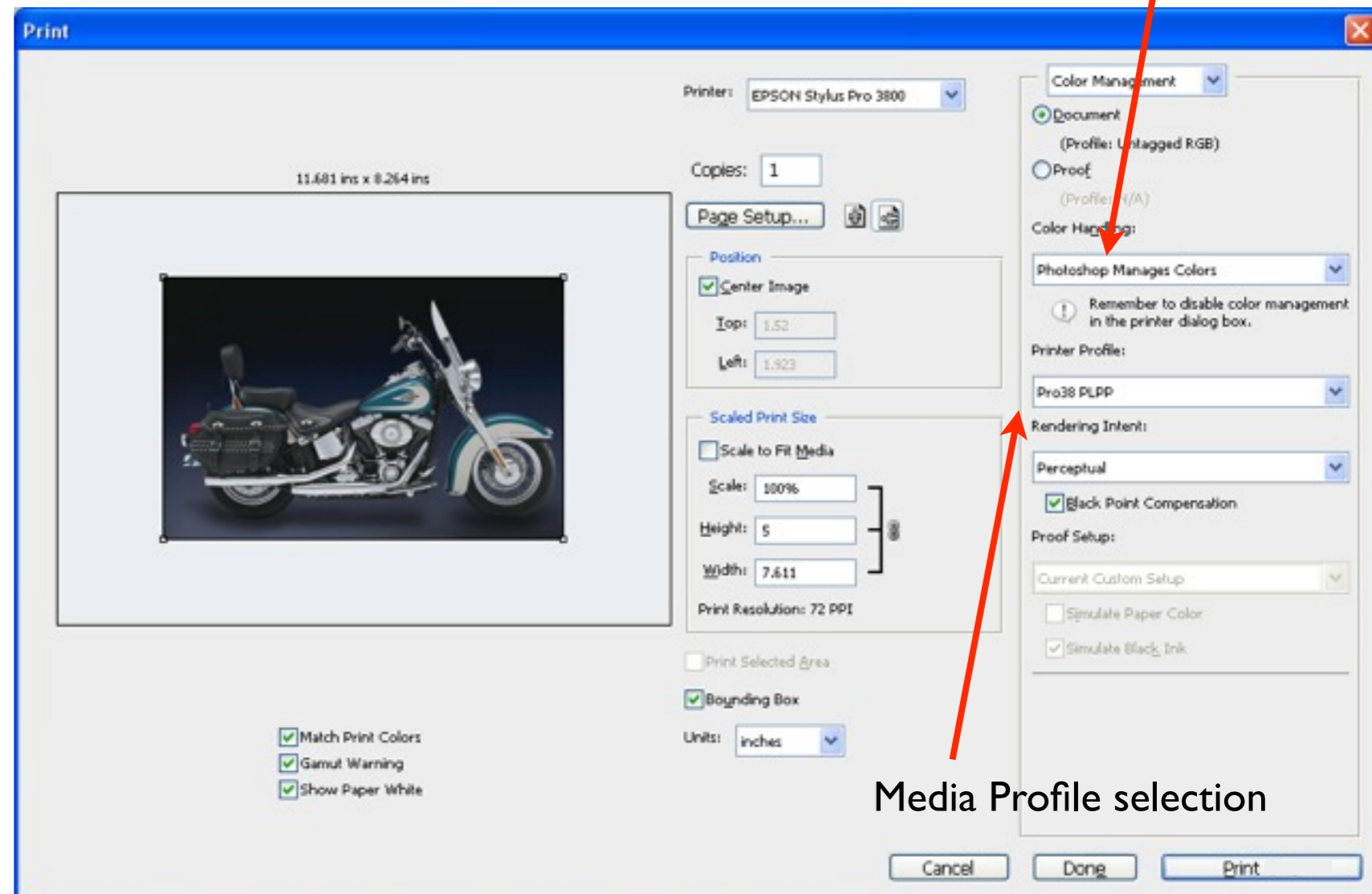
# Consumer Printers Windows

# Printing

## Windows

Select Photoshop Manages Color

- Selecting Photoshop Manages Colors allows access to the paper profiles
- Select the correct profile that matches the printer and paper being used
- Select the required Rendering Intent\* and keep Black Point Compensation checked
- Select Print



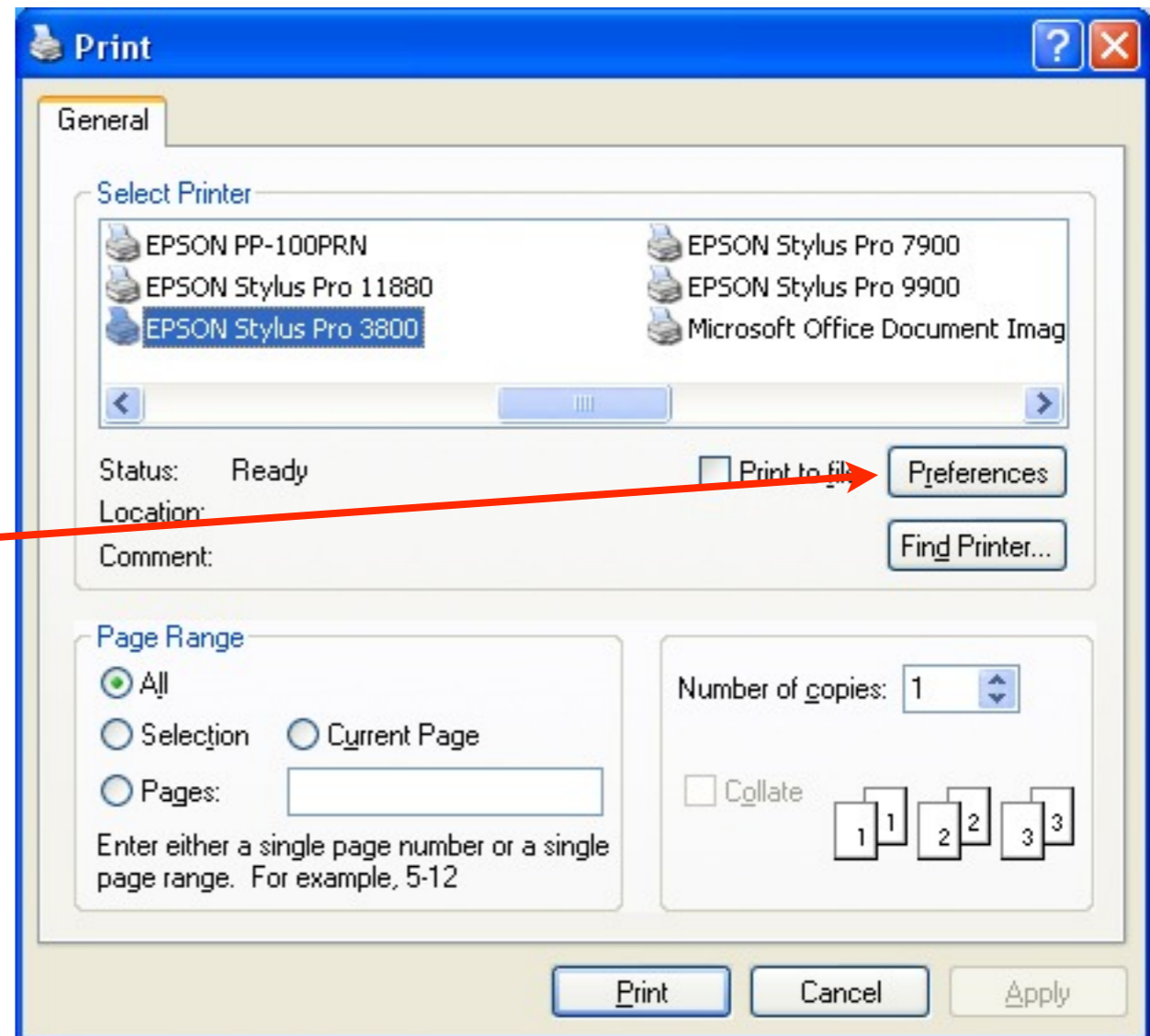
Media Profile selection

\*The easiest way to choose a rendering intent is, (bright colourful pictures) select Perceptual.  
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# Printing

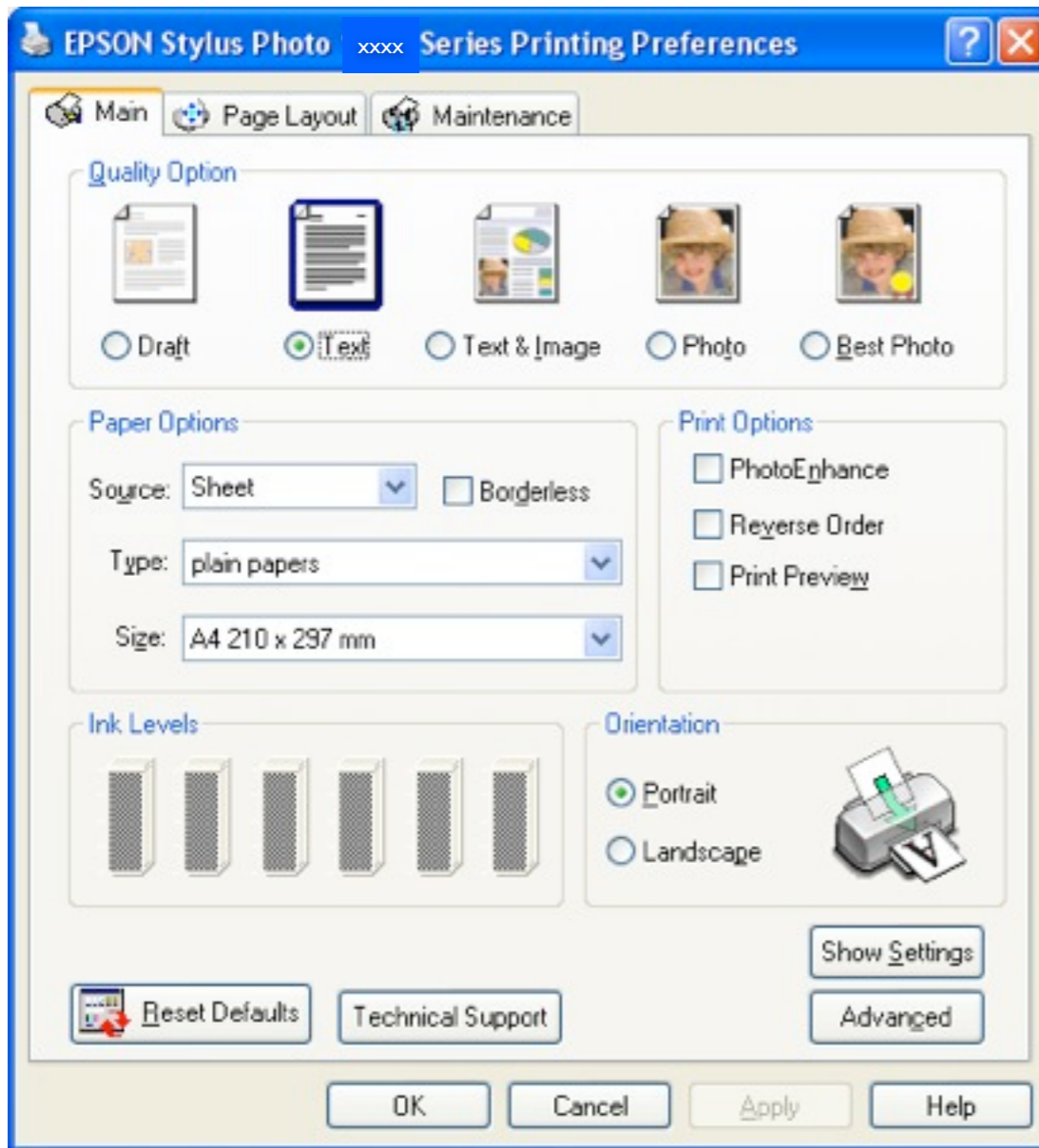
## Windows

- Select the Preferences button

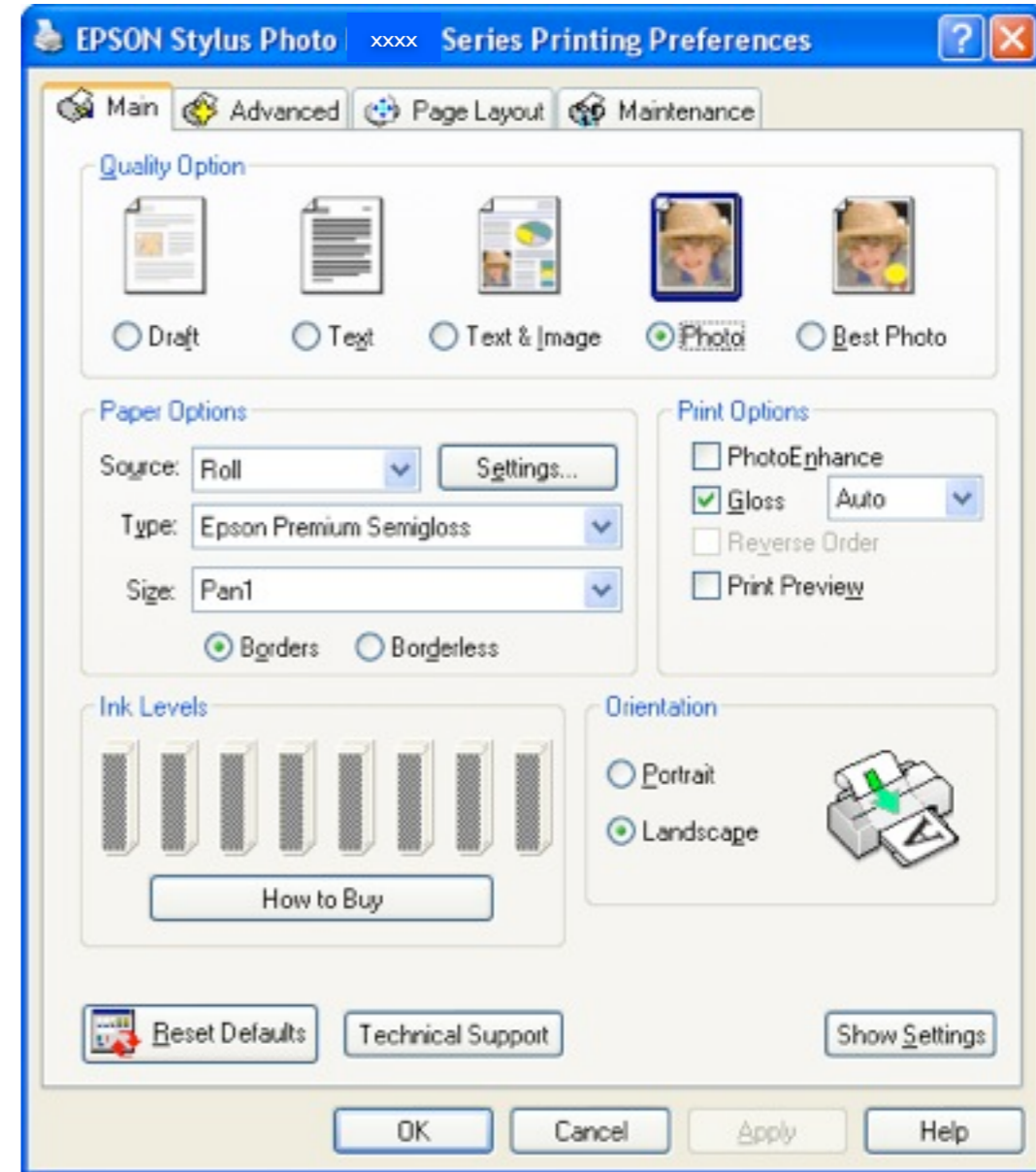


# Printing

## Windows



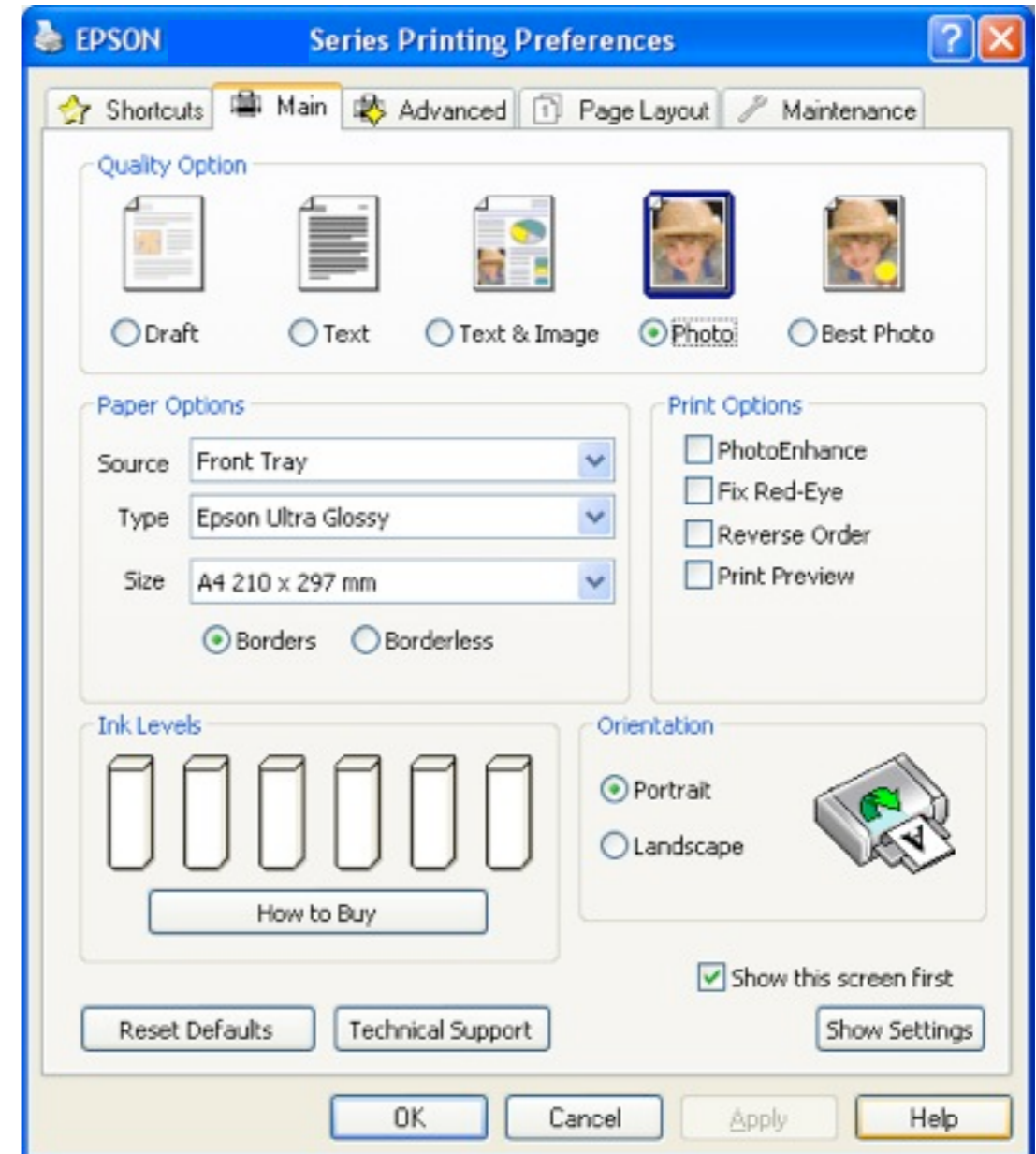
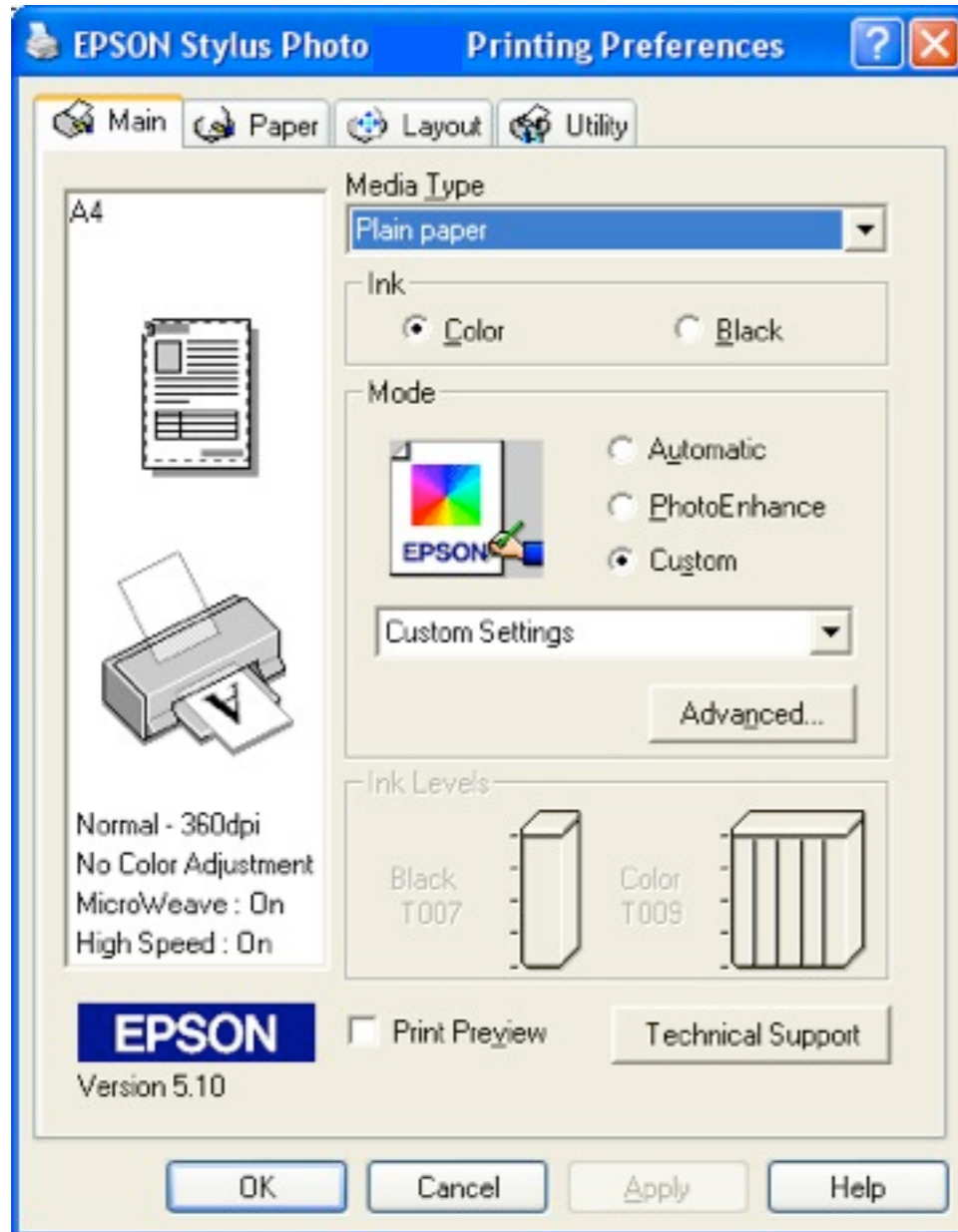
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# Printing

## Windows

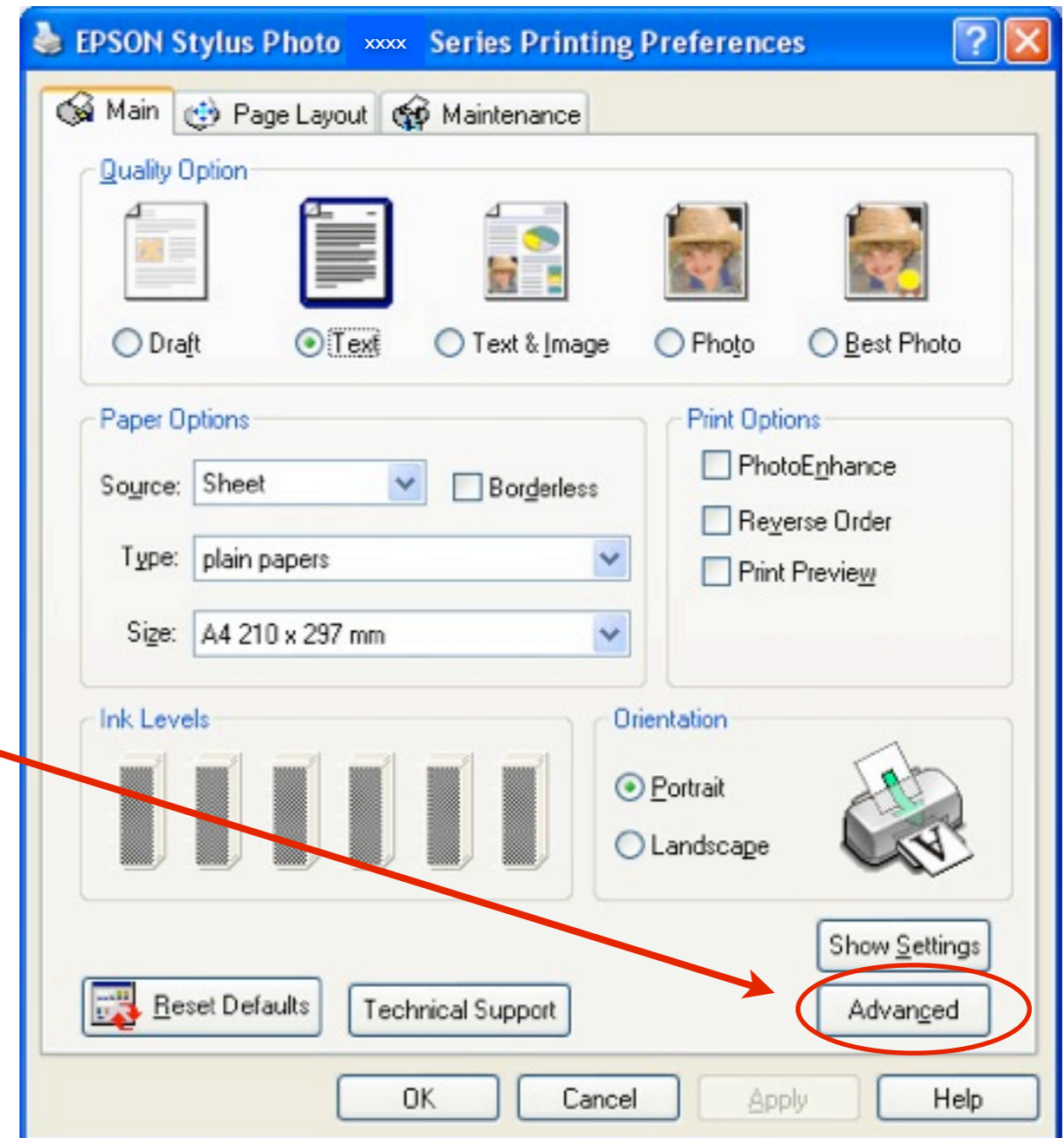


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# Printing

## Windows

Click Advanced



# Printing

## Windows

1. Select the Media Type

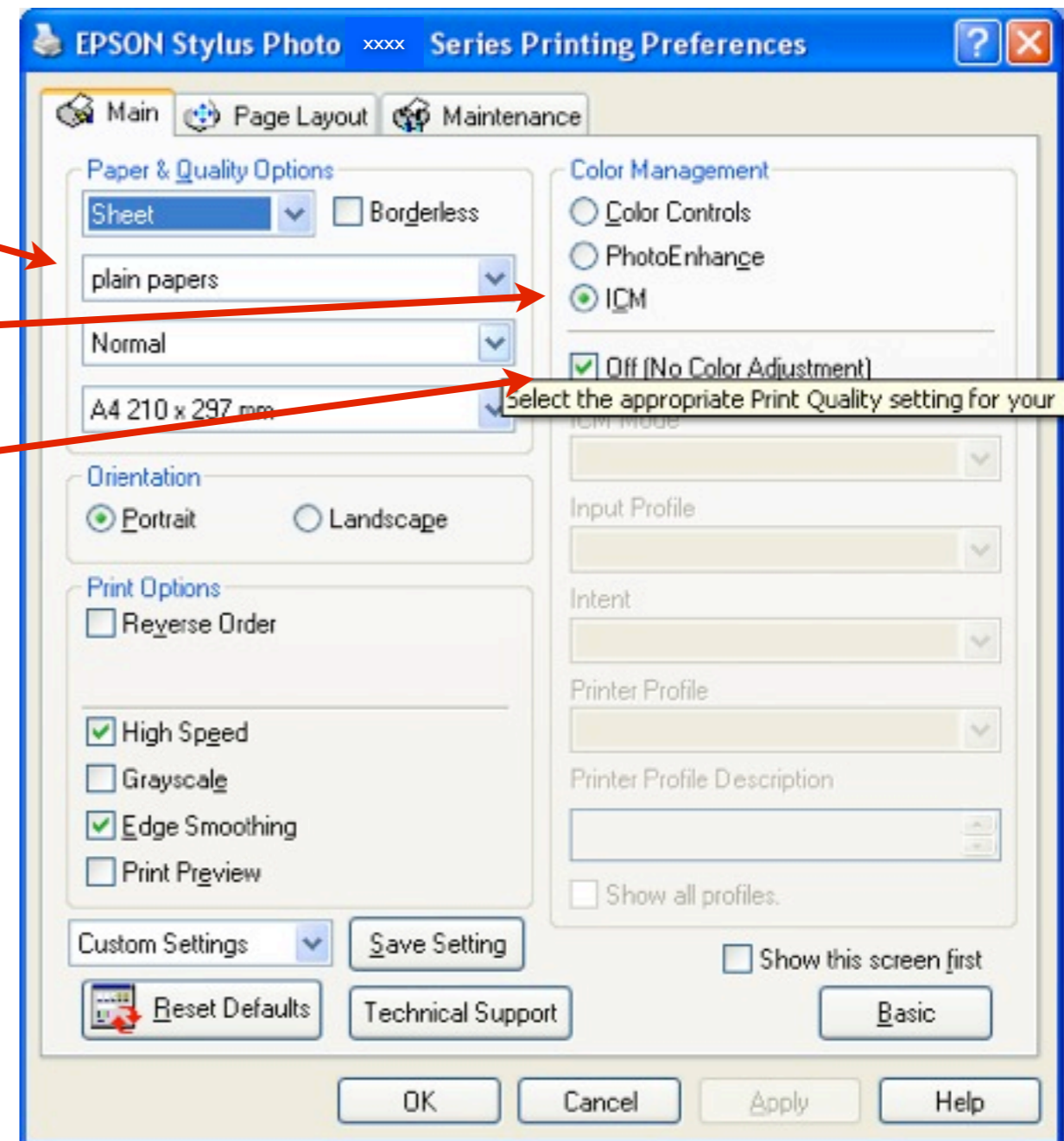
2. Select ICM

3. Select OFF

4. Select OK

6. Then Select OK in the next screen

6. Print

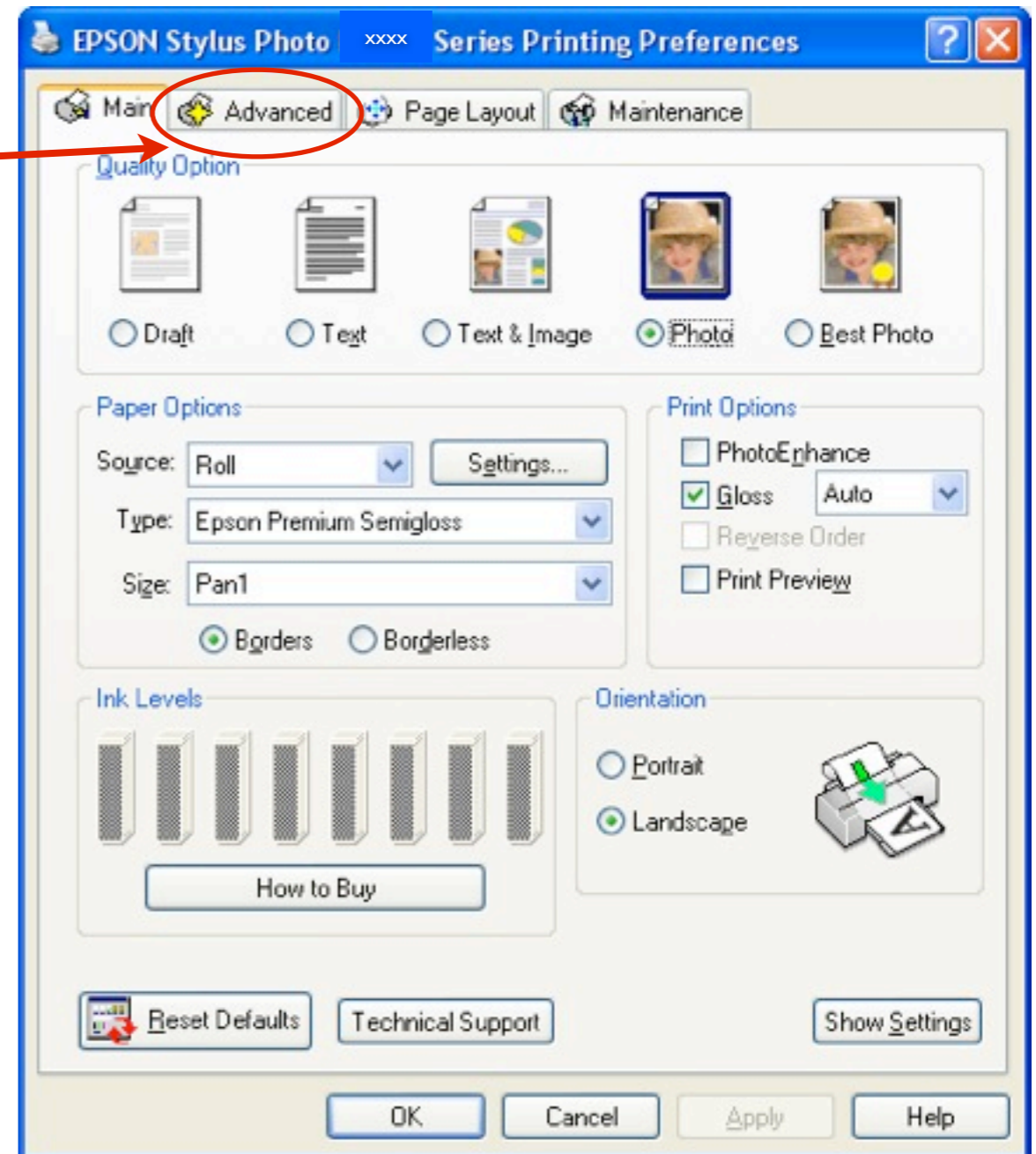


\*By selecting Off (No Color Adjustment) the profile describes the colour to the driver  
When not using a profile, colour has no meaning to the driver

# Printing

## Windows

Click Advanced



# Printing

## Windows

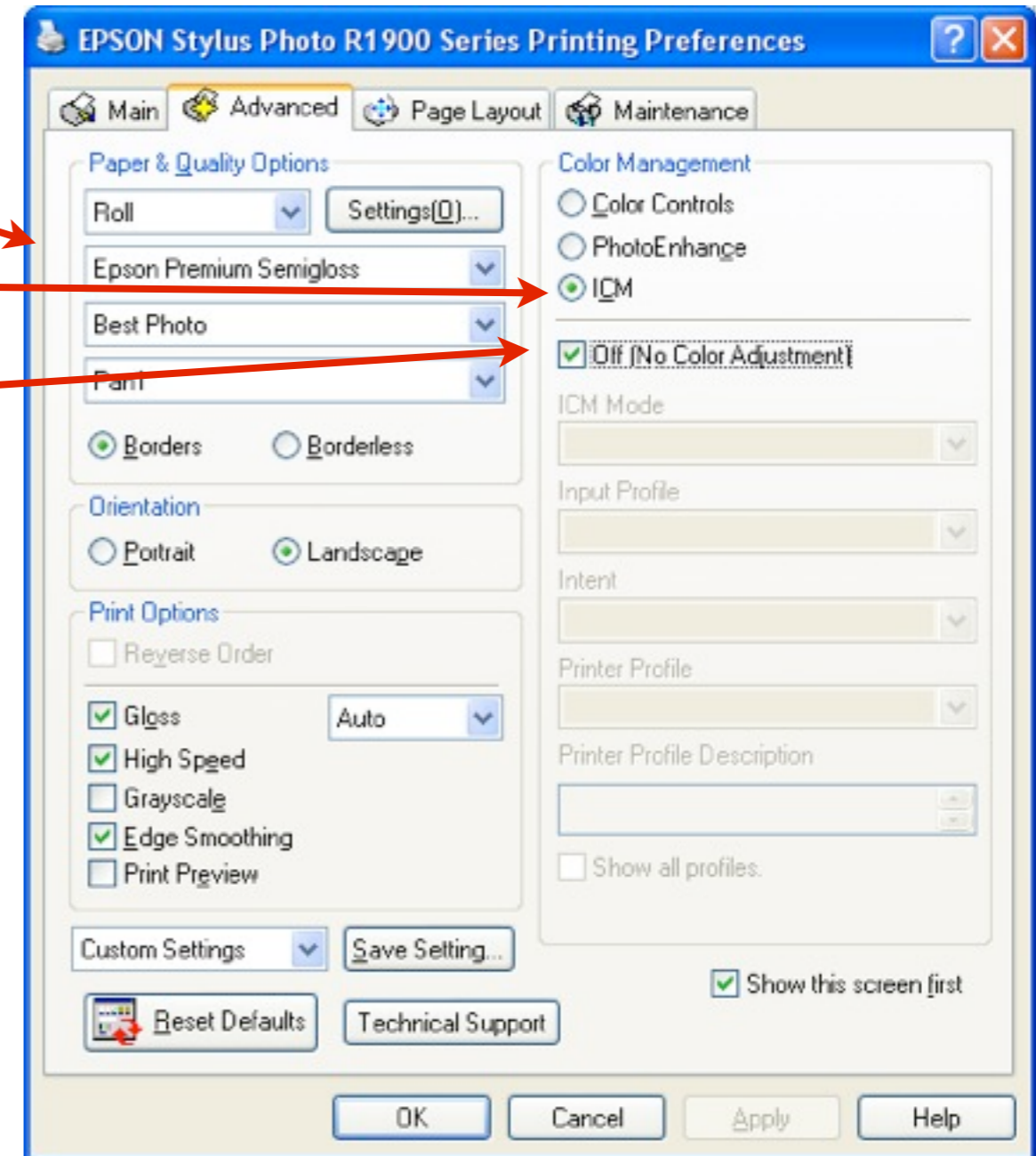
Select the appropriate print quality settings.

Select ICM

Select OFF

Select OK

Select Print in the next panel

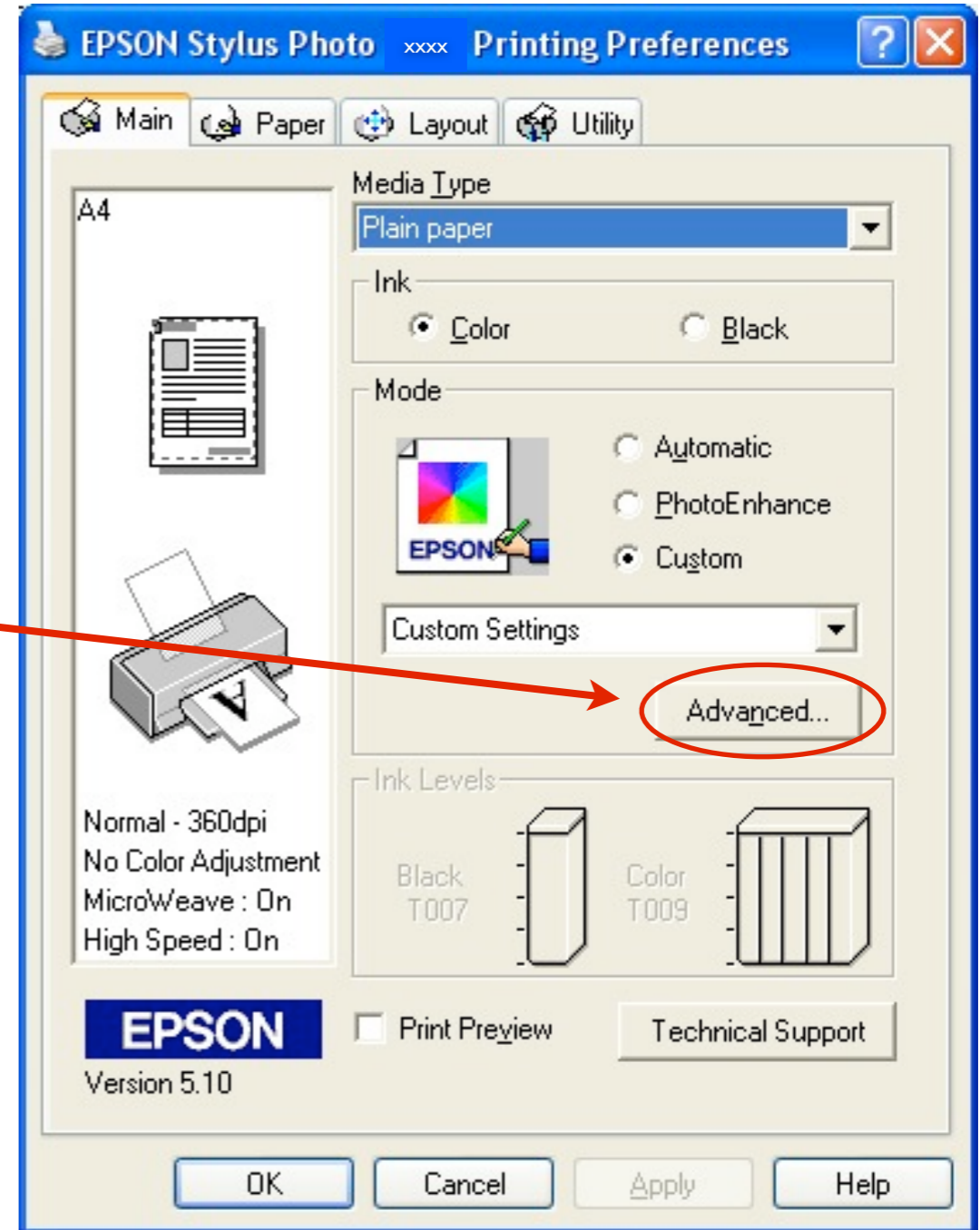


\*By selecting Off (No Color Adjustment) the profile describes the colour to the driver  
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# Printing

## Windows

Click Advanced



# Printing

## Windows

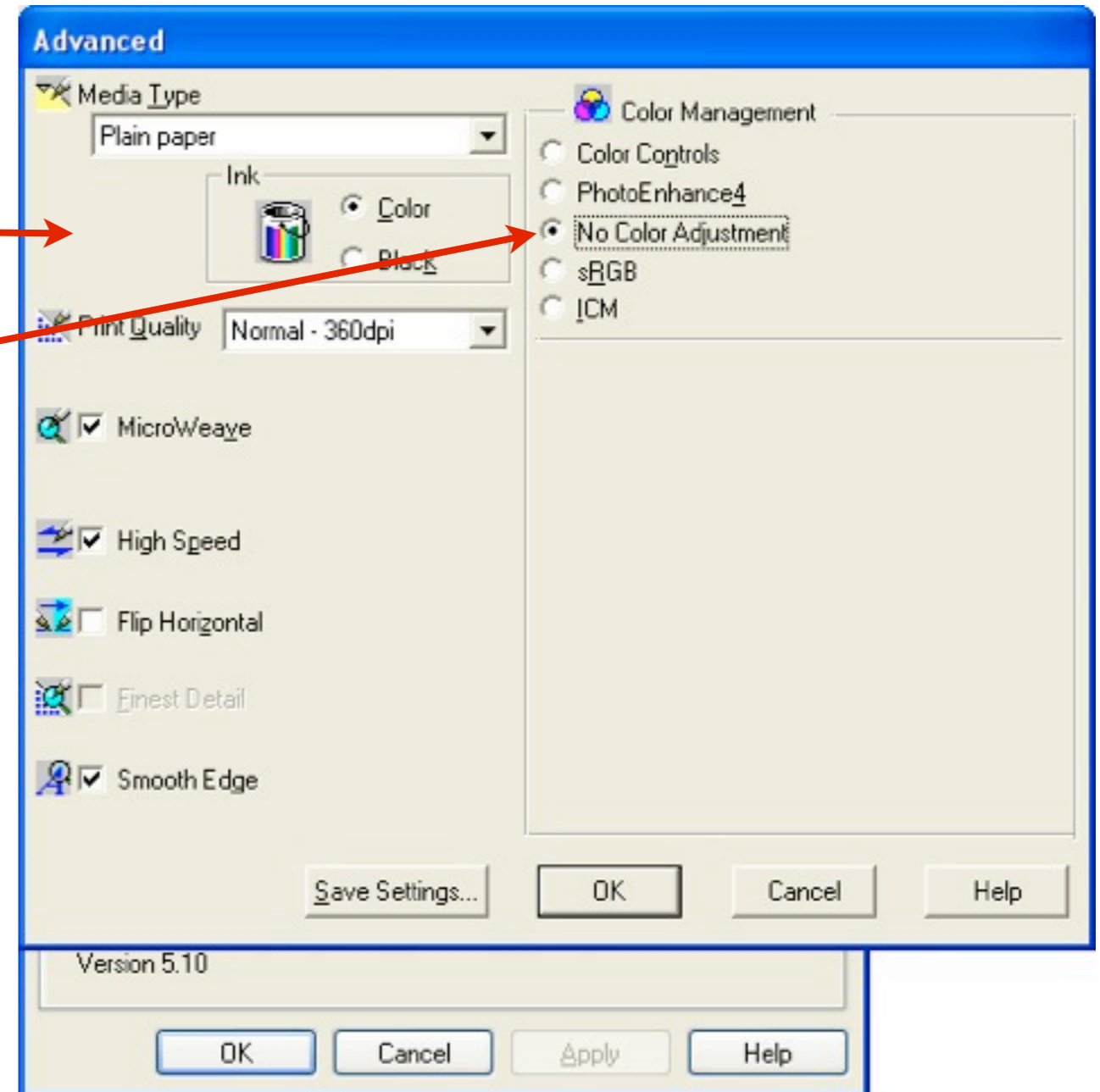
Select the appropriate print quality settings.

Select No Color Adjustment

Select OK

Then Select OK in the next screen

Select Print

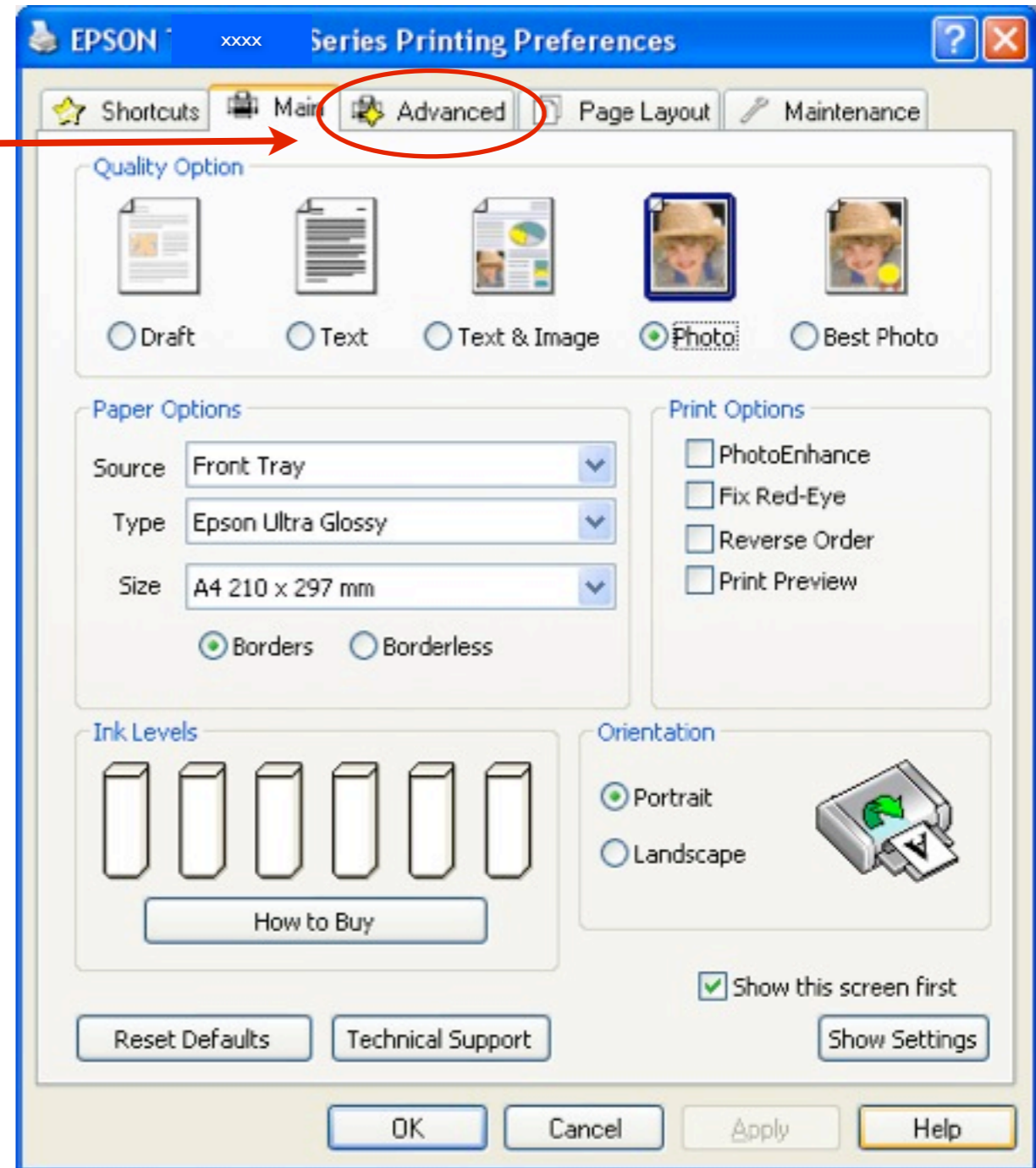


\*By selecting Off (No Color Adjustment) the profile describes the colour to the driver  
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# Printing

## Windows

Click Advanced



# Printing

## Windows

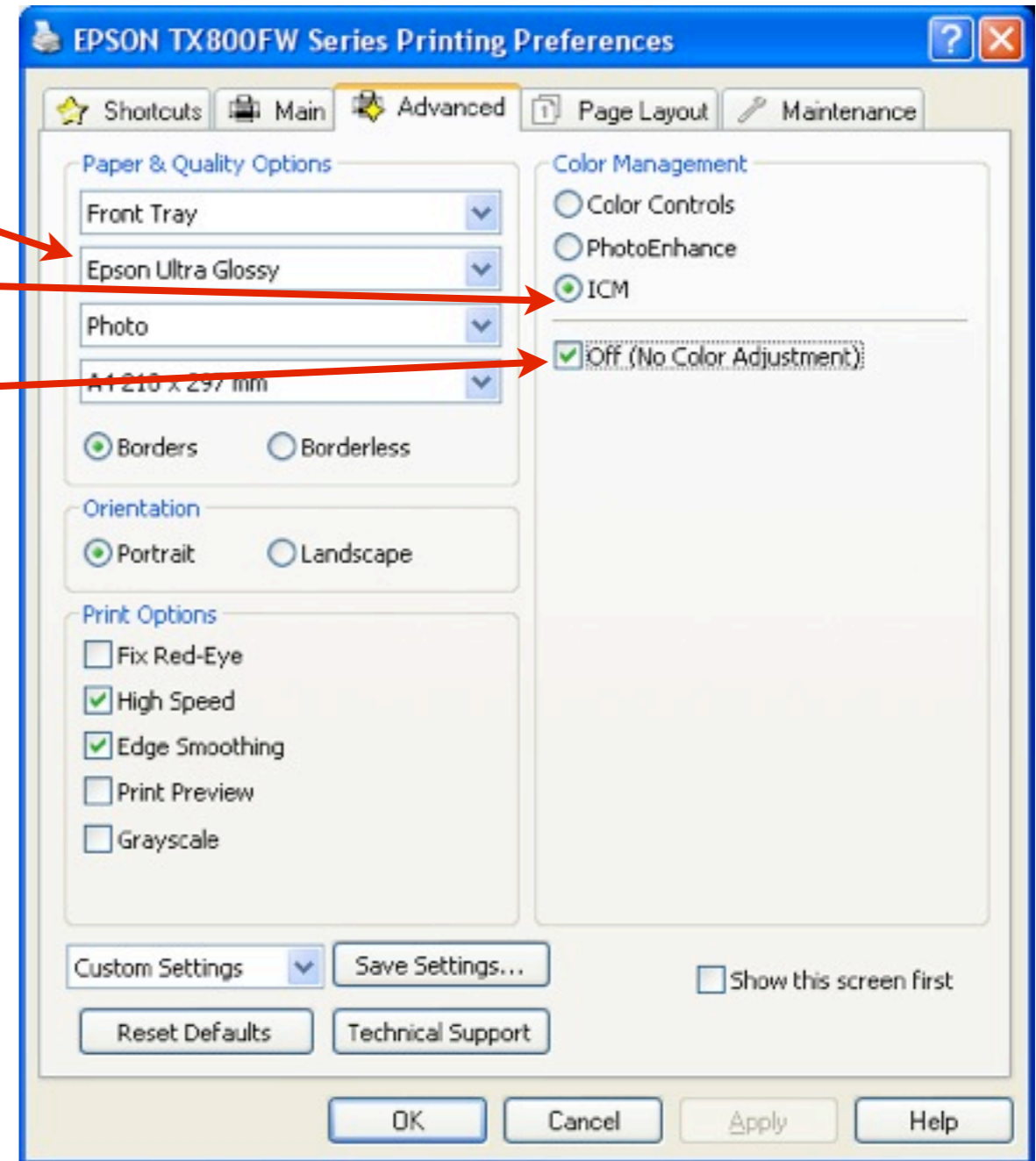
Select the Media Type

Select ICM

Select OFF

Select OK

Select Print in the next panel



\*By selecting Off (No Color Adjustment) the profile describes the colour to the driver  
When not using a profile, colour has no meaning to the driver

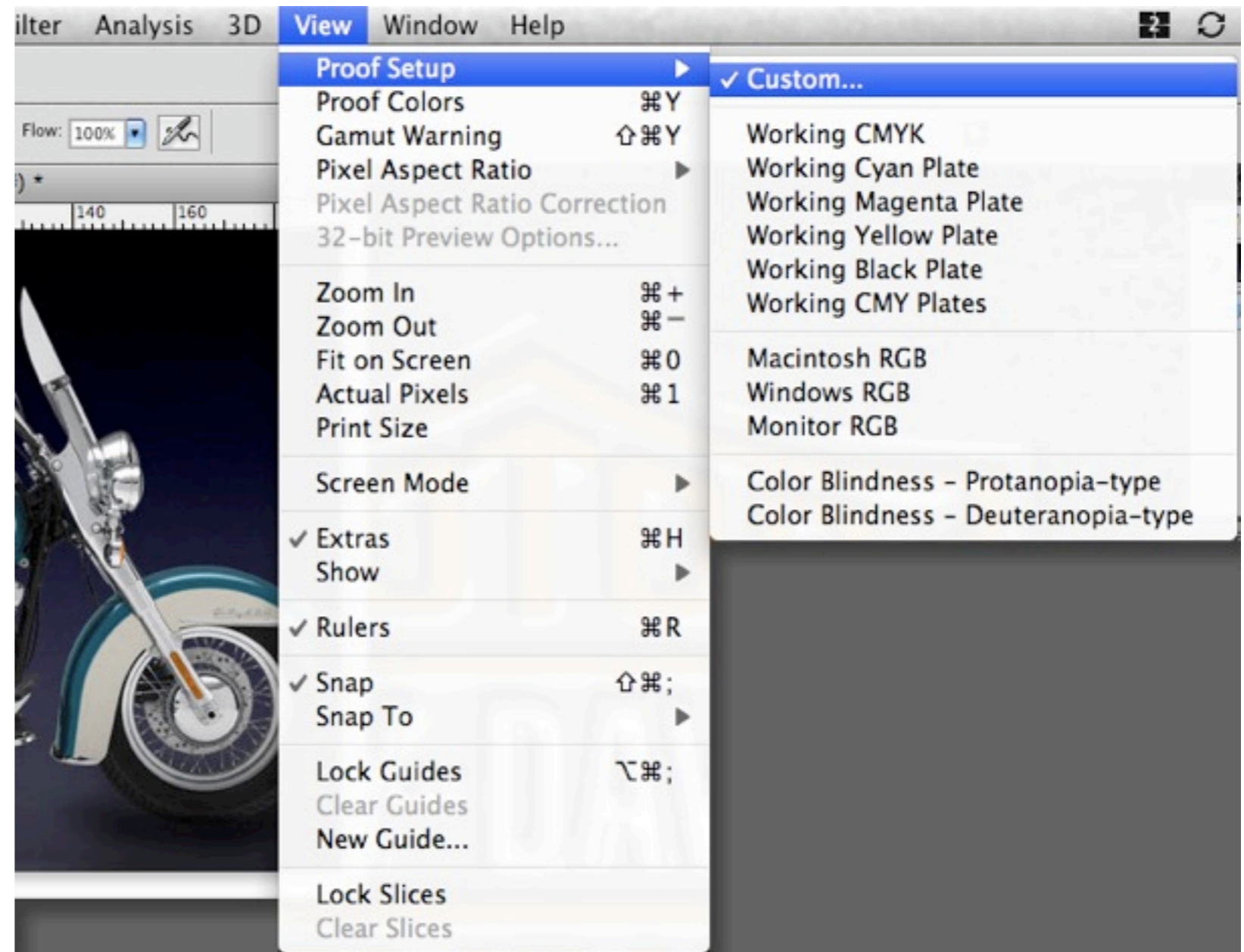
# Soft Proofing

# Soft Proofing

- One of the main reasons for having the monitor display the correct colour is Soft Proofing
- This is the ability to use the media ICC profile as a virtual overlay on the image and simulate the result from the printer
- Without calibrating and profiling the monitor this procedure is void
- Soft proofing will in the grand scheme save money on ink and paper due to the fact that your final image will be represented on screen
- Although the representation on screen will be very good, there needs to be a certain amount of subjectivity, allowing for things like ambient light to play a part in the representation
- Again monitor profiling and soft proofing is the best control for your images prior to printing

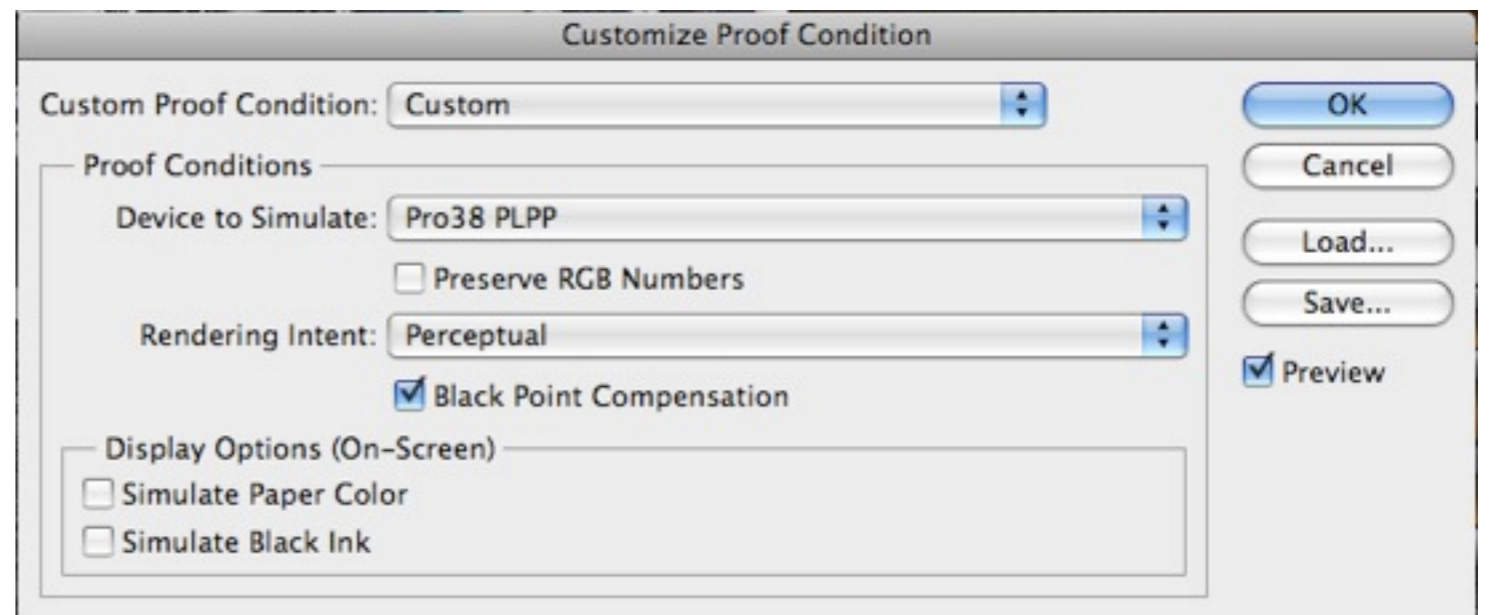
# Soft Proofing

- Soft Proofing is accessed via the View>Proof Setup menu
- Select Custom
- This is the same on all platforms



# Soft Proofing

- Select the correct media profile
- Select the required Rendering Intent
- Select the Preview and turn on and off to see what effect the profile has in the image in Photoshop



Preview OFF



Preview ON

Subtle differences may be seen in the Hue or Saturation of the image.  
This will be much more noticeable when soft proofing using a matte media as they have a smaller colour gamut

# Soft Proofing

- Once the Soft Proofing is checked the image may need some minor adjustments to suit your requirements
- The only thing to keep in mind is, if the colours are slightly muted due to the media type you are printing on, adding saturation to the image to boost the colour will not work
- The media has a defined colour gamut therefore over saturating the image will only produce unacceptable results
- If more saturation of colour is required, then trying a different media with a glossier surface allowing a wider colour gamut will work
- Custom profiles can also expand the colour gamut slightly but remember different media have defined limits of achievable colours

# Nikon Capture NX2

# Nikon Capture NX2

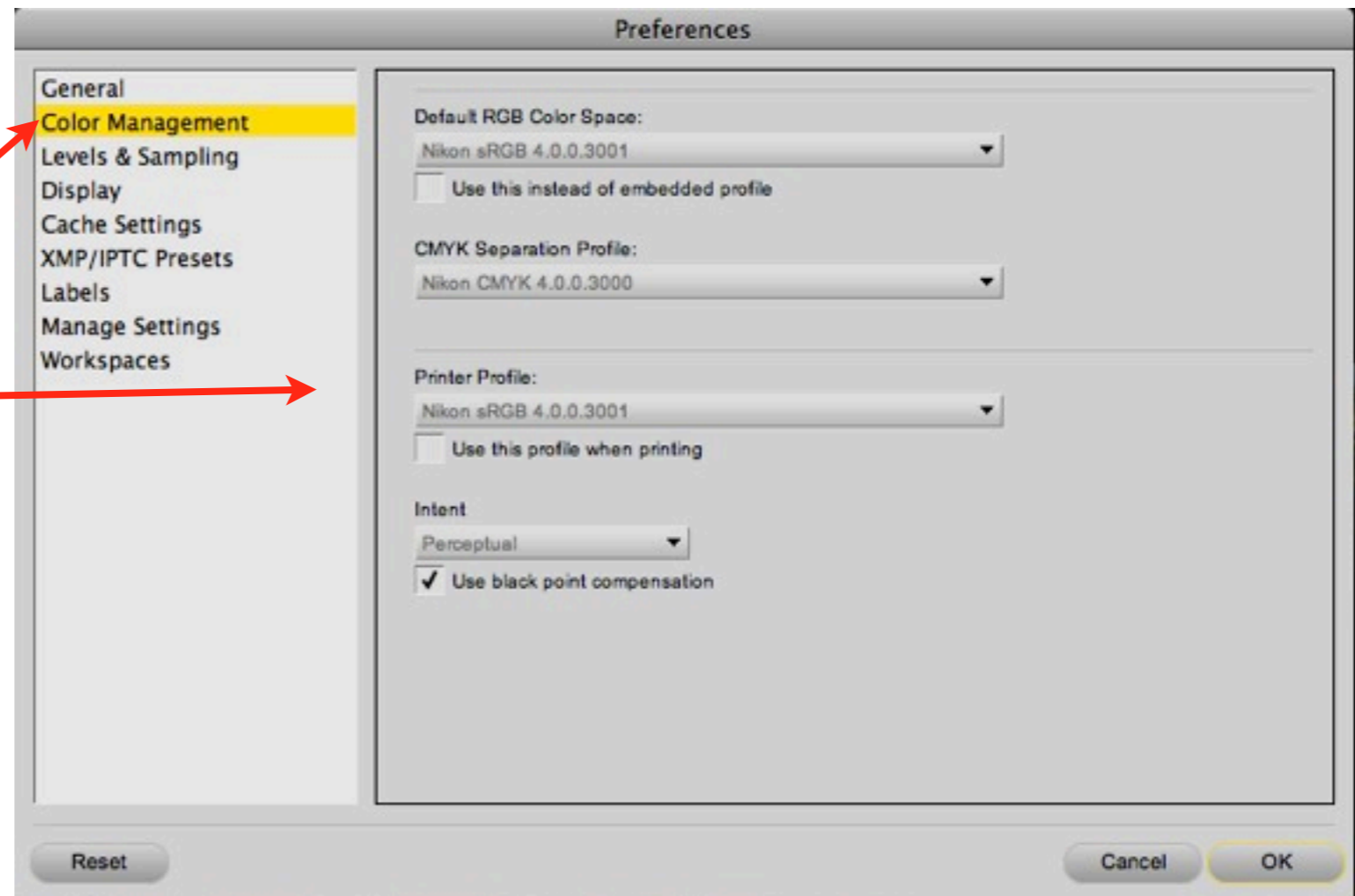
Nikon have created a great raw converter/image management software call Nikon Capture NX2.

Being a colour managed software the likes of Photoshop and Lightroom makes this package an attractive alternative

The features in Capture NX2 are also extensive for converting raw and processed data

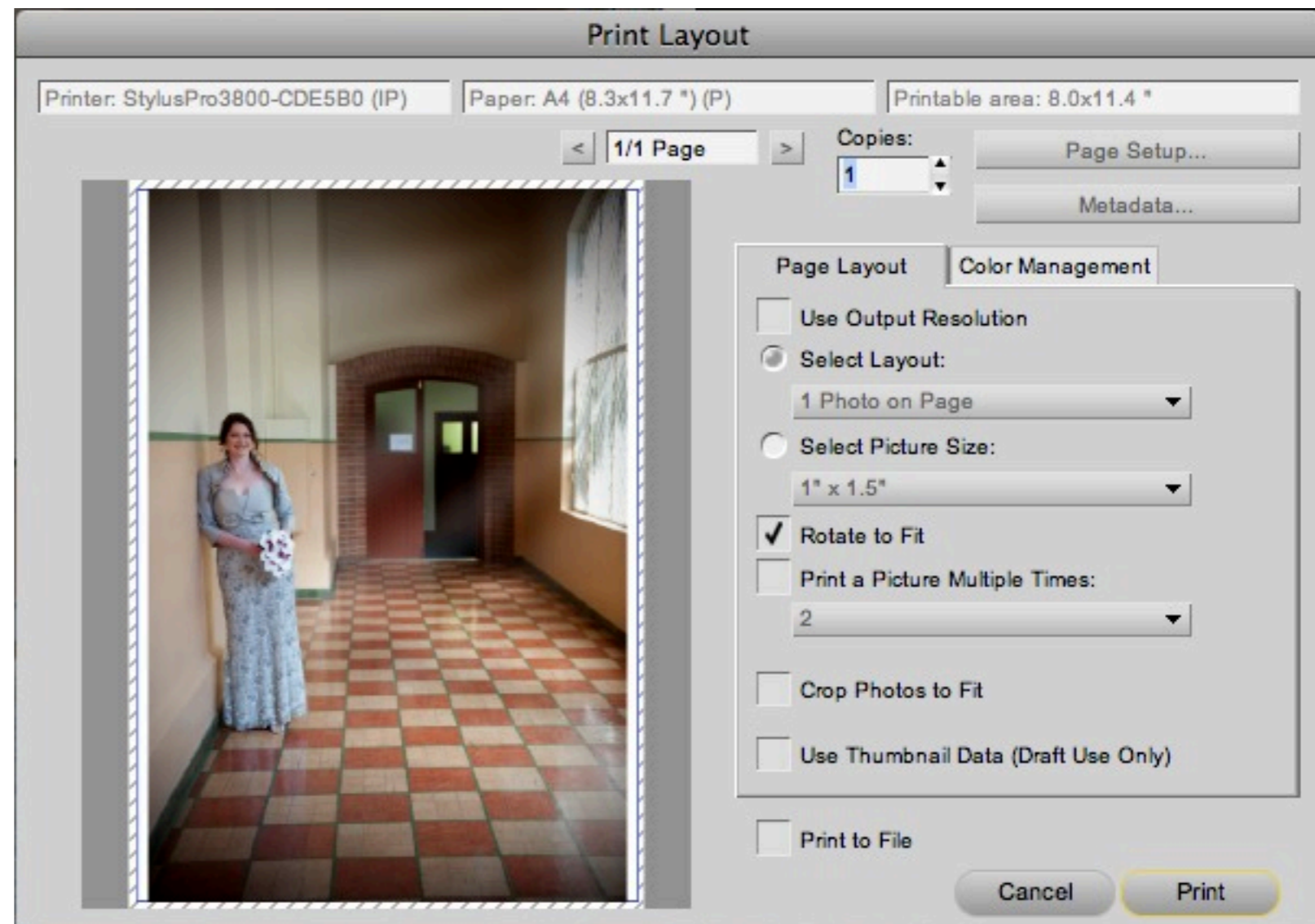
# Nikon Capture NX2

- NX Preferences
- Color Management
- These are the Default settings



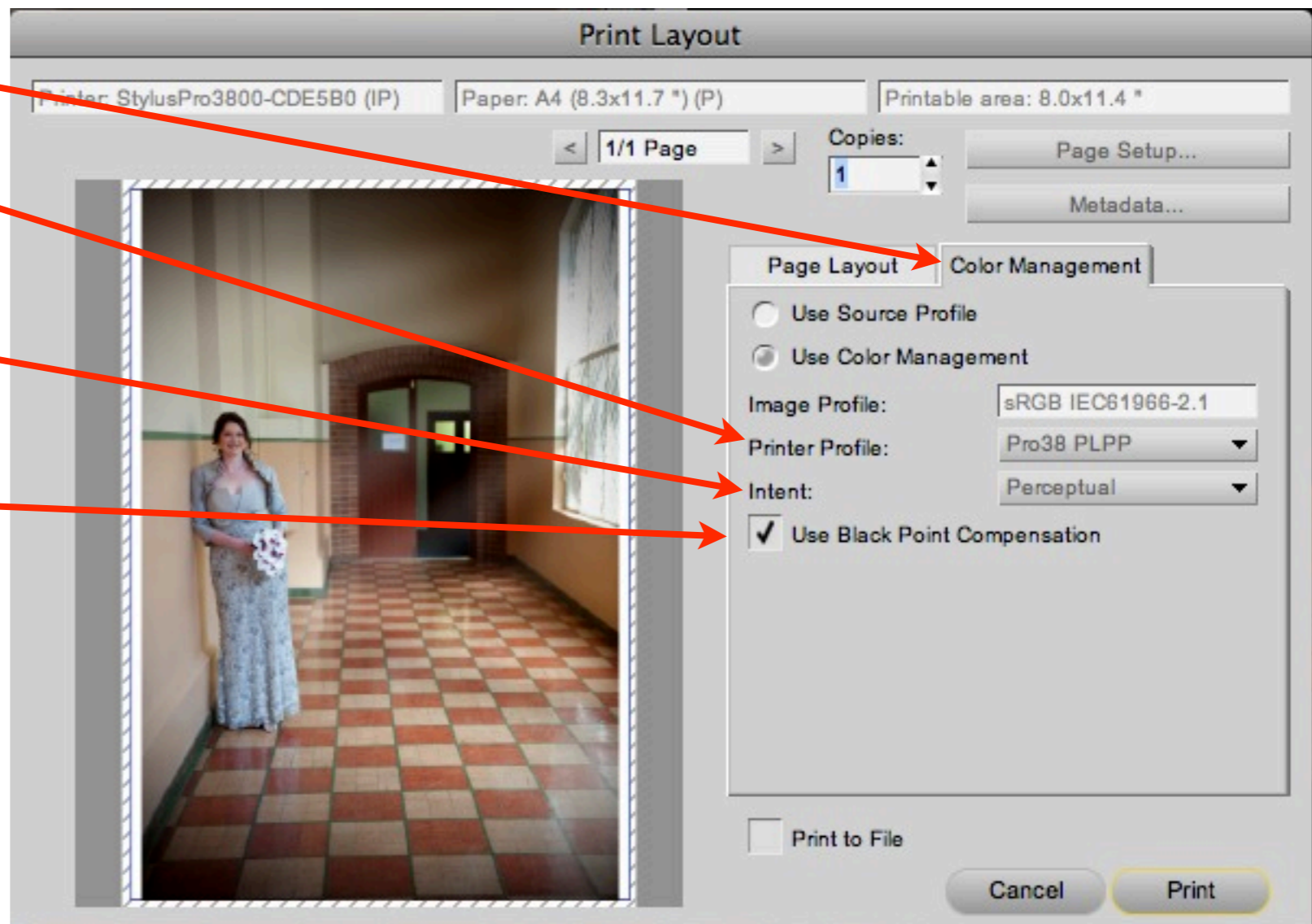
# Nikon Capture NX2

- Select Print
- Set desired Page Layout options



# Nikon Capture NX2

- Select Color Management Tab
- Select Printer Profile\*
- Select desired Rendering Intent
- Check Black Point Compensation
- Print



\*The easiest way to choose a rendering intent is, (bright colourful pictures) select Perceptual.  
For subtle muted tones choose Relative colorimetric.  
Checking results with soft proofing will be discussed later

# Adobe Lightroom 2

# Adobe Lightroom 2

- Adobe Lightroom 2 is another excellent software package for image management and editing
- Being a colour managed enabled package, makes it another alternative to Photoshop for printing to Epson Printers using a colour managed workflow
- As mentioned throughout this document, following a workflow is the best way to be predictable with your colour output

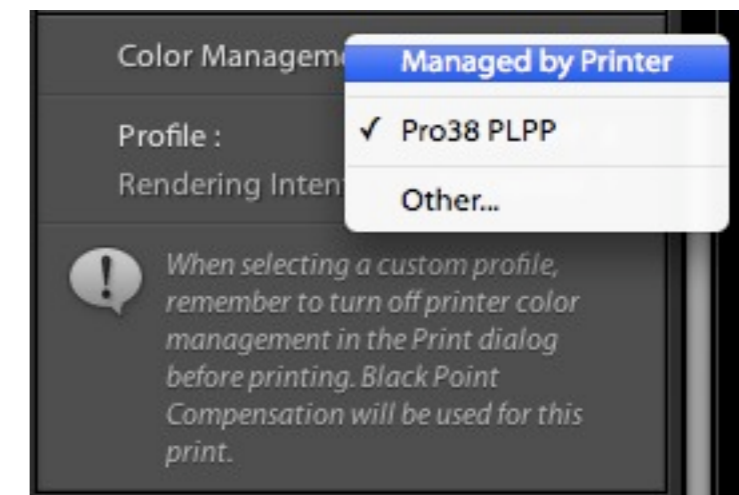
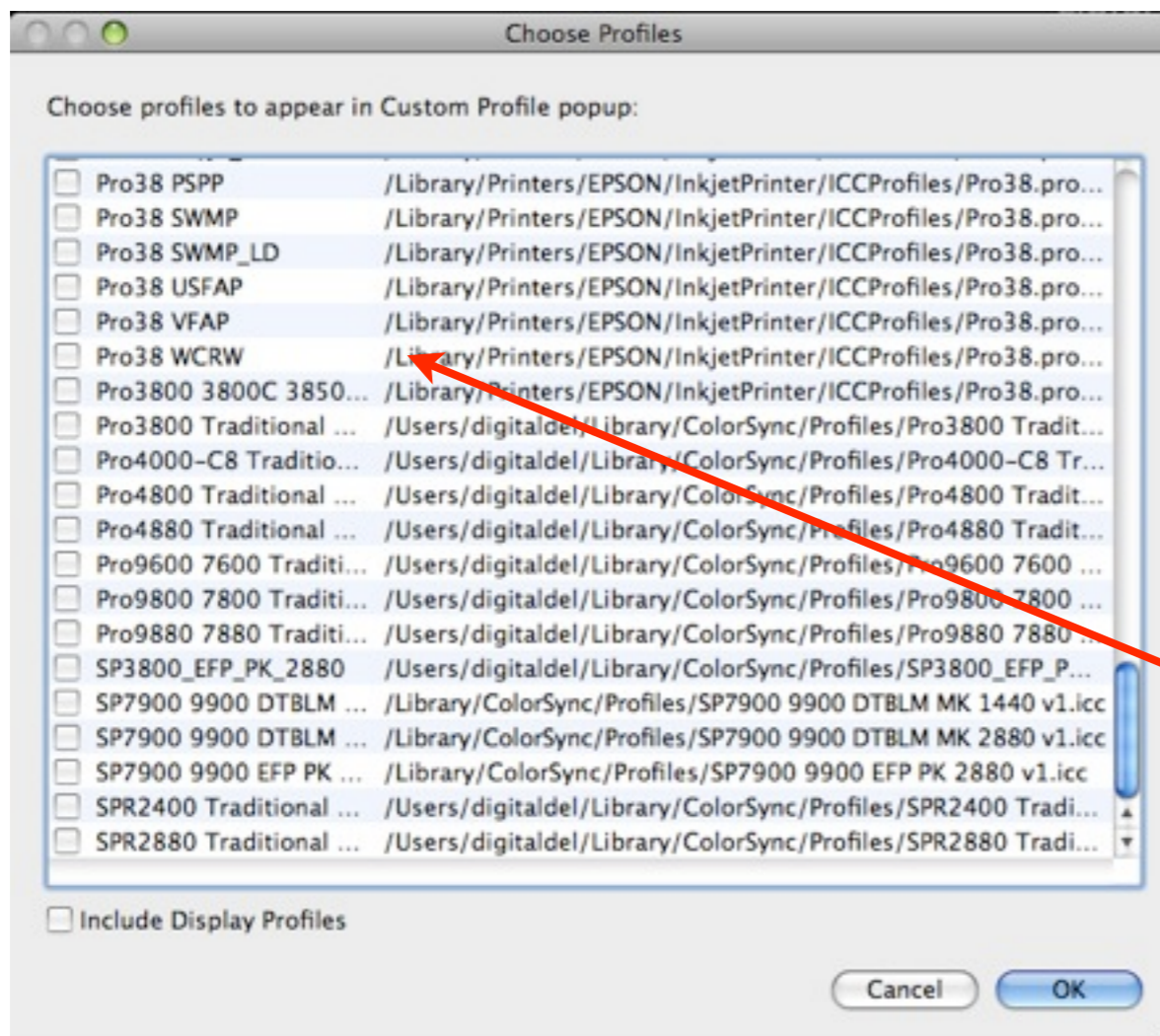
# Adobe Lightroom 2

- Select the Print Module in Lightroom



# Adobe Lightroom 2

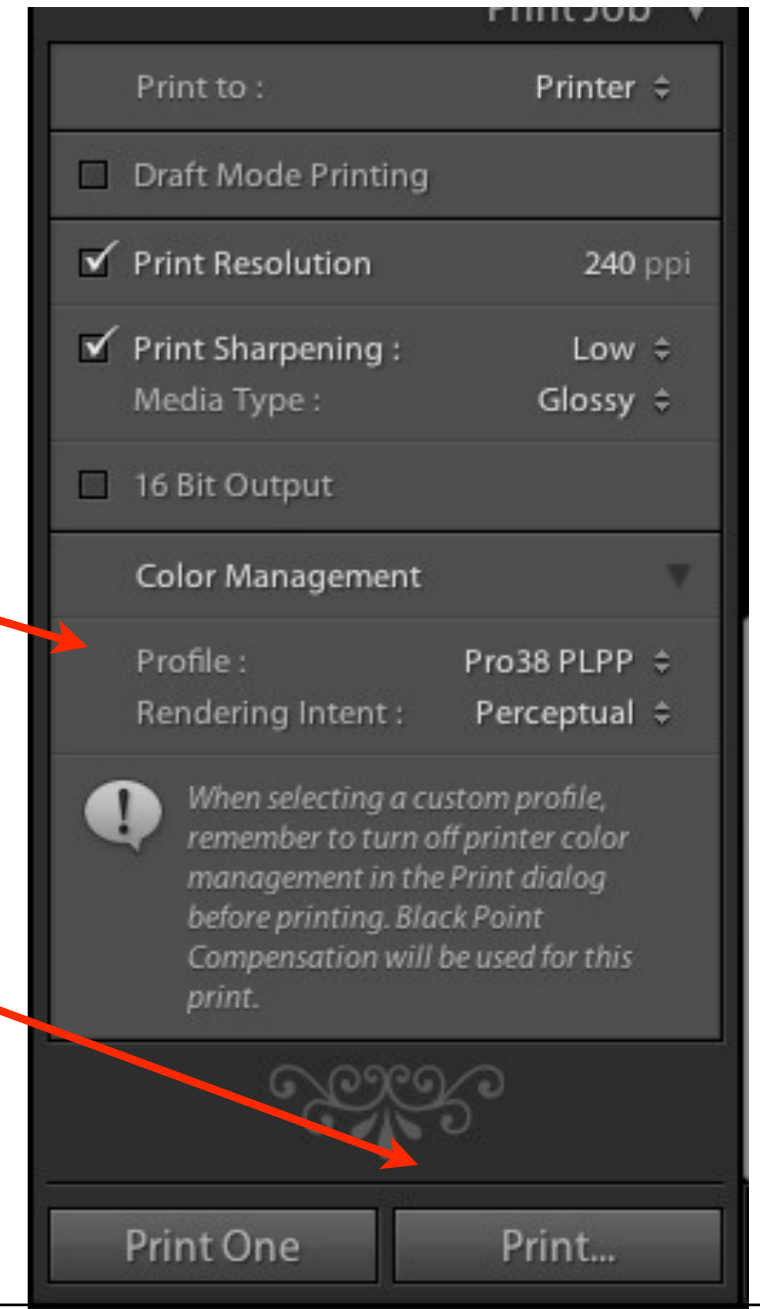
- Once the printer is selected the printer profiles need to be chosen



Select required printer profiles

# Adobe Lightroom 2

- Select Profile and Rendering Intent
- Print



\*The easiest way to choose a rendering intent is, (bright colourful pictures) select Perceptual.  
For subtle muted tones choose Relative colorimetric.  
Checking results with soft proofing will be discussed later

# Conclusion

We hope this guide has helped you to understand the requirements for printing to Epson printers. As mentioned in the guide earlier, there is a wealth of information available on the internet as well as many good publications.

As updates to Operating Systems and Applications are made available we will also update this guide.

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## Thank You