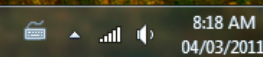
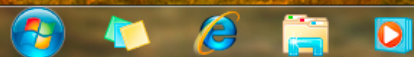


Calibration & Inkjet Profiling in a Colour Management Workflow

by Colin Campbell

colincampbellphotoart.ca/colourmanagement



Calibration & Inkjet Printer Profiling in a Colour Management Workflow

I'm no expert, so my explanations are relatively non-technical. I come to where I'm at now from struggling to get better outputs (prints, web and projection) and trying to match them with what I create and see on my monitor.

Rule 1: Shoot RAW

14-bit Raw if available over 12-bit. *Caveat: See note under Rule 4.*

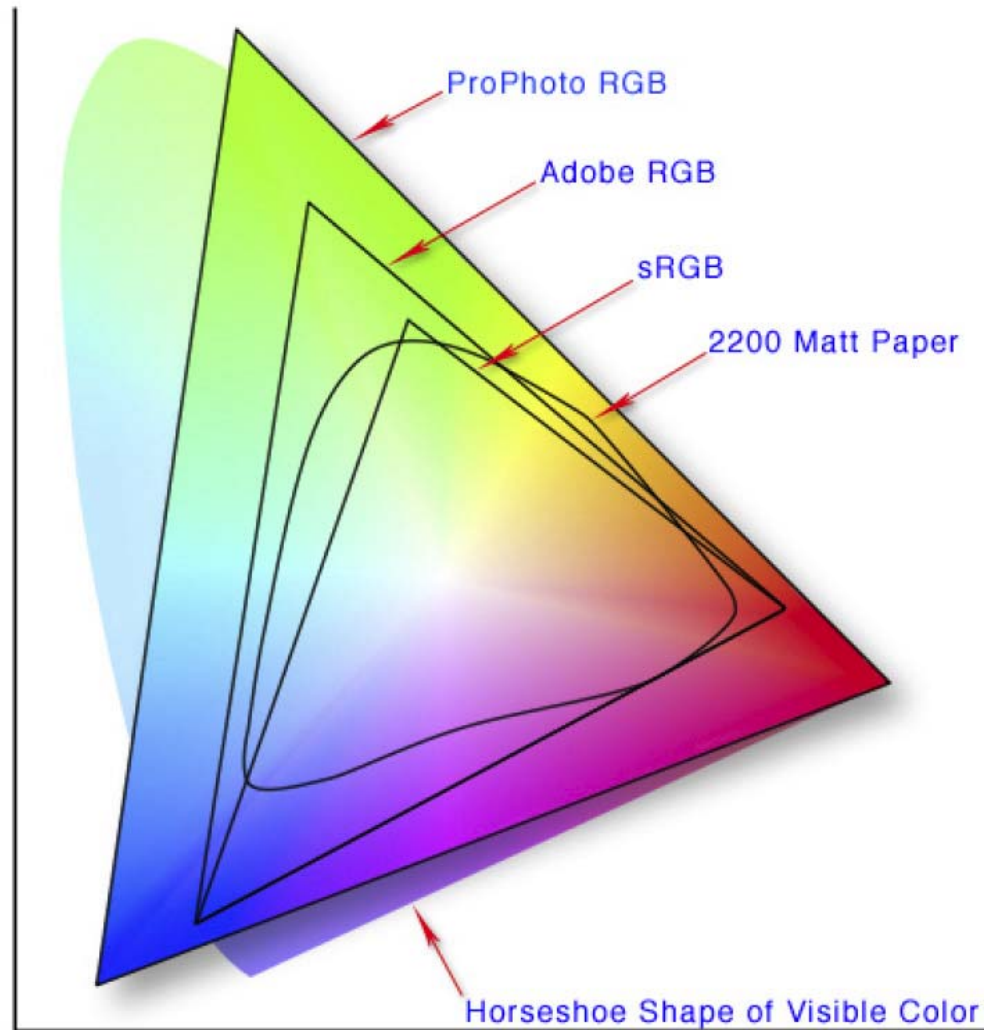
Rule 2: Set camera to Auto White Balance

Unless you need to create a series of images with an identical white balance setting (such as shots to merge into a panorama) your camera can probably do a better job than you can setting an appropriate white balance. If you need more consistency or accuracy, carry and shoot a gray card or equivalent, or better, a ColorChecker. Note that images to be merged can be adjusted & synchronized in Lightroom (LR) or Camera Raw (CR), and more precisely if shot in RAW. Photoshop (PS) also blends images merged to panorama.

You can adjust White Balance in LR or CR. This can also be done in PS using picker tools in Levels or Curves, or a White Balance Adjustment.

Rule 3: Choose the widest-gamut colour space available to you.

Select ProPhoto RGB in CR Preferences and select ProPhoto RGB in PS Color Settings.



The complete range of colours found within a colour space is called its “gamut”. Colours that cannot be produced in a colour space are said to be “out of gamut”. ProPhoto RGB colour space has a large colour space covering most colours visible to the human eye, and a few colours beyond our vision. The gamut of sRGB colour space, which most modern monitors can match, is smaller than ProPhoto and Adobe RGB. Many colours within ProPhoto are outside the gamuts of smaller spaces. When outputting ProPhoto images to the web or to print, the colours that are outside the gamut of smaller spaces needed must be dropped in some way. This is called “rendering intent” (see Rules 9 & 10).

Rule 4: Choose the greatest bit-depth available to you.

That means 16 bits/channel over 8 bits/channel

Bit depth: The number of gradations of colour a pixel can represent

8 bit (2^8) - 256 values per RGB channel = 16.7m colours

16 bit (2^{16}) - 65,536 shades of grey

If you edit with ProPhoto RGB, you must choose 16-bit to avoid banding. Lightroom opens RAW files in 16-bit ProPhoto RGB by default.

Note: If you never intend to make high-quality prints your images, and you can't afford a faster computer and more memory for larger files, 8-bit sRGB will do. So will shooting Jpeg if your exposures are always tack on and you want to do as little digital editing as possible.

Rule 5: Reduce the Brightness of your Monitor.

To simulate the look of a print, reduce brightness (and perhaps contrast) of your display. This only helps for prints. Do some test printing to get a reasonable luminance match. Work from a brighter monitor when editing for projection and the web.

You can adjust the brightness of many laptop displays by holding down the Fn key and pressing the up and down arrow keys. I calibrate my laptop display, but I don't rely on it for critical image editing.

Rule 6: Calibrate your Monitor.

I use X-rite's ColorMunki. More on that later. . .

Rule 7: Remove bright and distracting colours from your workspace and around it.

Set the background around an image to neutral grey. Remove objects with distracting colours from your desk. Low neutral light in the room helps. Avoid direct light and reflections on your monitor(s). A monitor hood would help.

Rule 8: Create a profile for any photo paper you don't already have a good profile for.

I use X-rite's ColorMunki for this. More on that later. . .

Rule 9: Softproof your images with Photoshop's Proof Setup

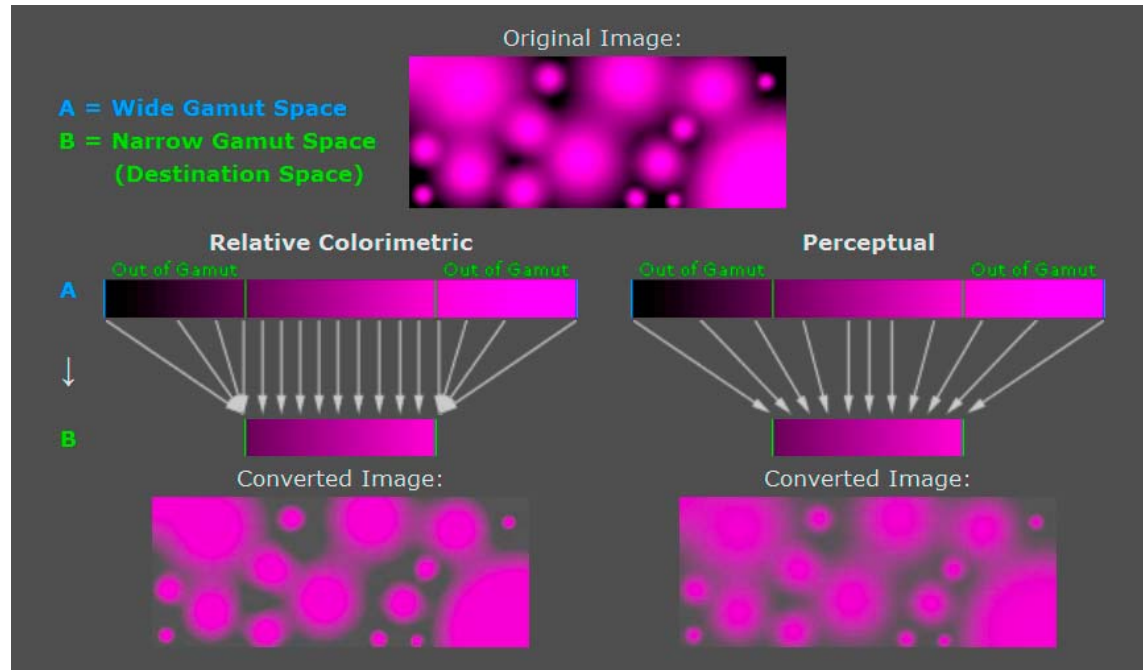
You may want to read Rule 10 and then come back to this rule.

Softproofing only works if there is a reasonable match between monitor & print output. Calibration, and profiled printer/paper choices, are necessary.

- Go to View>Proof Setup>Custom.
- If this option, as well as Proof Colors and Gamut Warning, is not showing, go to Edit>Menus>View and turn them on.
- Choose the profile that matches your printer and the paper you are printing on.
- Preserve RGB Numbers: Leave unchecked
- Black Point Compensation: Check ✓
- Rendering Intent: Perceptual or Relative Colormetric (These are the two intents that work best with photographs) - Go back and forth to see which looks better.
- Turn Gamut Warning on and off (Ctrl+Shift+Y) to see what areas are outside the gamut of your selected profile. Zoom in to better judge colours in out-of-gamut areas.
- Turn Preview on & off. You can turn Proof Colors on and/or off (Ctrl+Y) while editing.
- If no areas are out of gamut, choose Relative Colormetric. Or if out-of-gamut areas look OK to you, you could also choose Relative Colormetric.
- Otherwise, choose Perceptual or edit (by de-saturating, for example) so all areas are in gamut.

Rule 10: Choose the best Rendering Intent for Printing

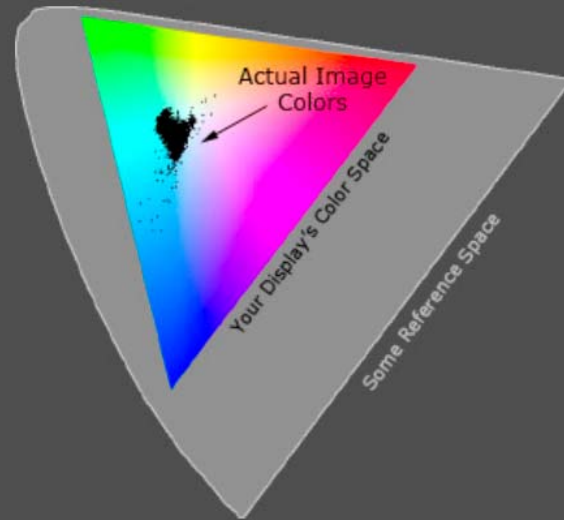
The colour space of your printer will have a smaller gamut than the colour space you are editing your image in, which for me is ProPhoto RGB. See the graphic below.



For photographic work, the choice is usually between Perceptual and Relative Colorimetric. If the Gamut Warning shows out-of-gamut colours that you do not want clipped, choose Perceptual. If there are no out-of-gamut colours, Relative Colorimetric may work best (see graphic below). Put another way, the more saturated colours in an image, the greater likelihood that Perceptual will create a more balanced result.

One must take the range of image colors present into account; just because an image is defined by a large color space does not mean that it actually utilizes all of those extreme colors. If the destination color space fully encompasses the image's colors (despite being smaller than the original space), then relative colorimetric will yield a more accurate result.

Example Image:



The above image barely utilizes the gamut of your computer display device, which is actually typical of many photographic images. If one were to convert the above image into a destination space which had less saturated reds and greens, this would not place any image colors outside the destination space. For such cases, relative colorimetric would yield more accurate results. This is because perceptual intent compresses the entire color gamut — regardless of whether these colors are actually utilized.

Rule 11: When Printing, make PS/LR Manage Colours. Turn Printer Colour Management Off.

- Turn Printer Colour Management Off
Epson: ICM - Off (No Color Management) checked ✓
- Max dpi
- Proper paper profile selected

PS Print dialogue:

- Color Handling: Photoshop Manages Colours
- Printer Profile: matching printer and paper
- Rendering Intent: Perceptual or Relative
- Black Point Compensation checked ✓

Rule 12: Evaluate your prints with a daylight-balanced lamp.

Rule 13: If you are unhappy with the way LR or CR Render Raw Images, Profile your Camera.

Use ColorChecker Passport with provided software. More on that later. . .

Rule 14: For projected and web images, convert Jpegs to sRGB and Embed the Color Profile.

If working in PS with 16-bit files, you need to convert the Image Mode to 8-bit before saving as a Jpeg.

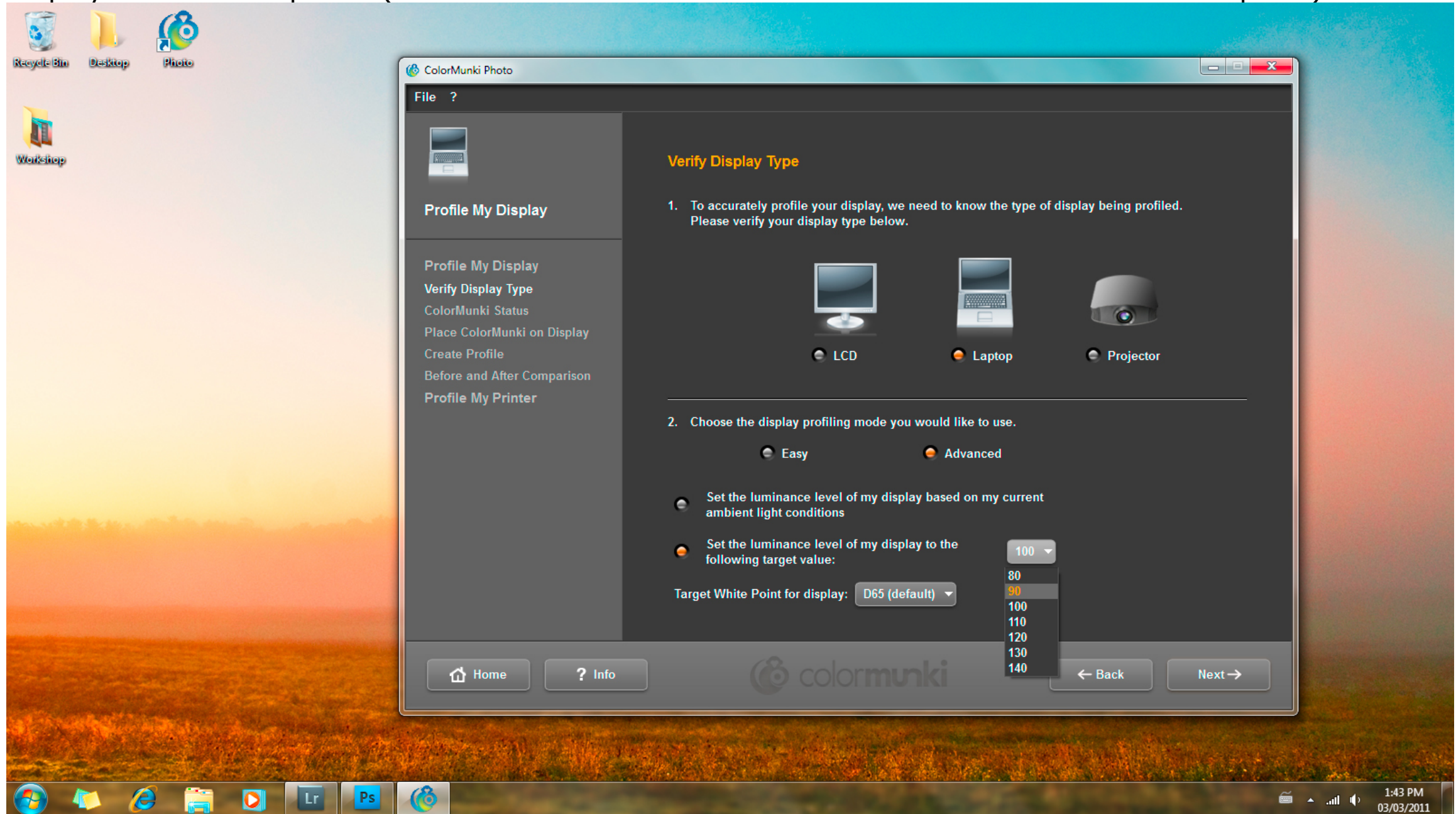
Calibrating your Monitor(s) & Printer Profiling with ColorMunki

(I preformed the operations shown on my laptop)

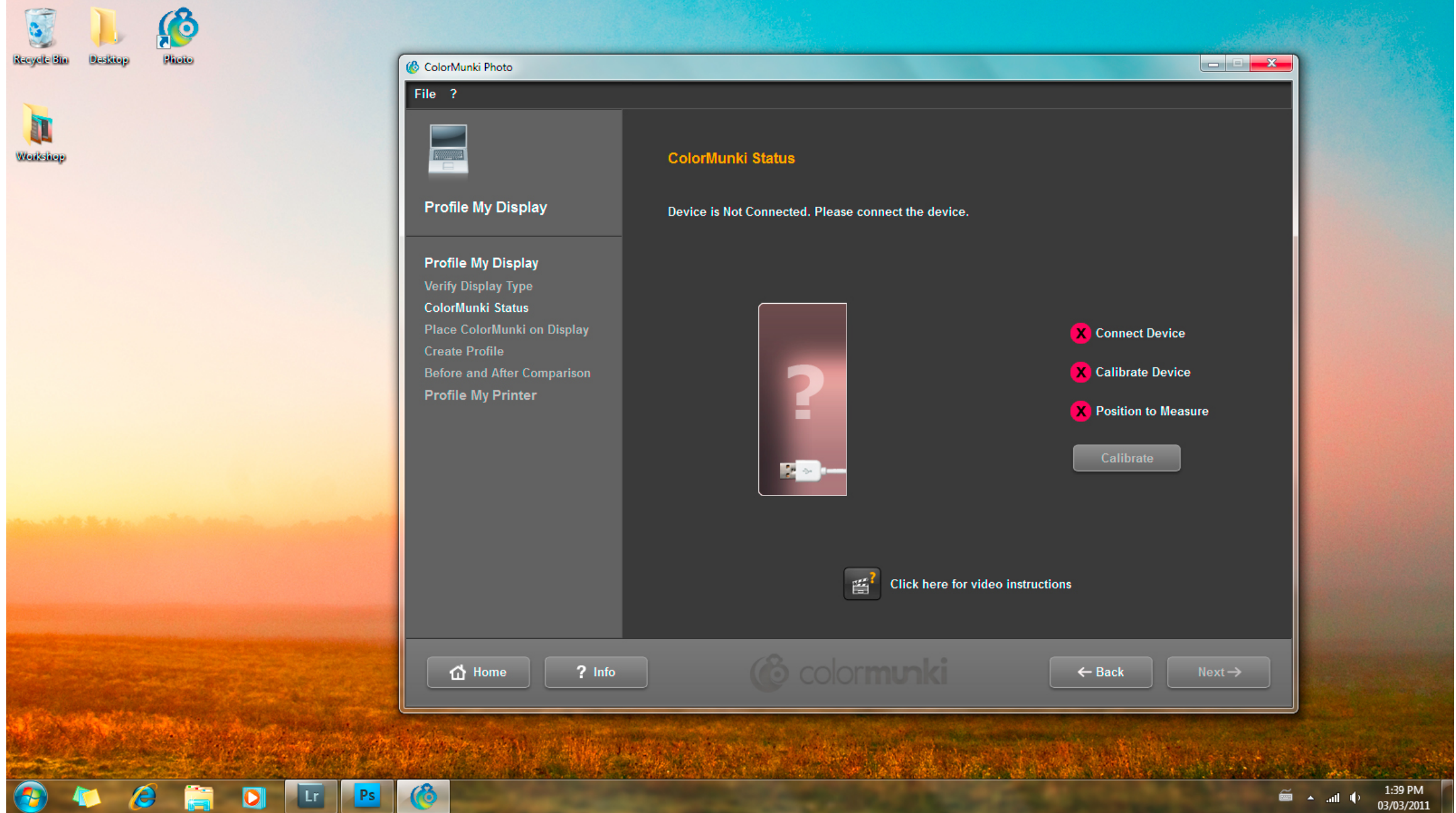
Open ColorMunki Photo



Display Calibration Options (ColorMunki can calibrate two monitors if connected to the computer)



ColorMunki Device is Not Connected



ColorMunki Device is Connected but Not Ready to Calibrate

The screenshot shows the ColorMunki Photo software interface on a Windows desktop. The desktop background is a landscape with a sunset over a field. The taskbar at the bottom shows icons for Recycle Bin, Desktop, Photo, Workshop, and several applications including Adobe Lightroom (Lr) and Adobe Photoshop (Ps). The system tray in the bottom right corner shows the time as 1:45 PM on 03/03/2011.

The ColorMunki Photo window is open, displaying the following information:

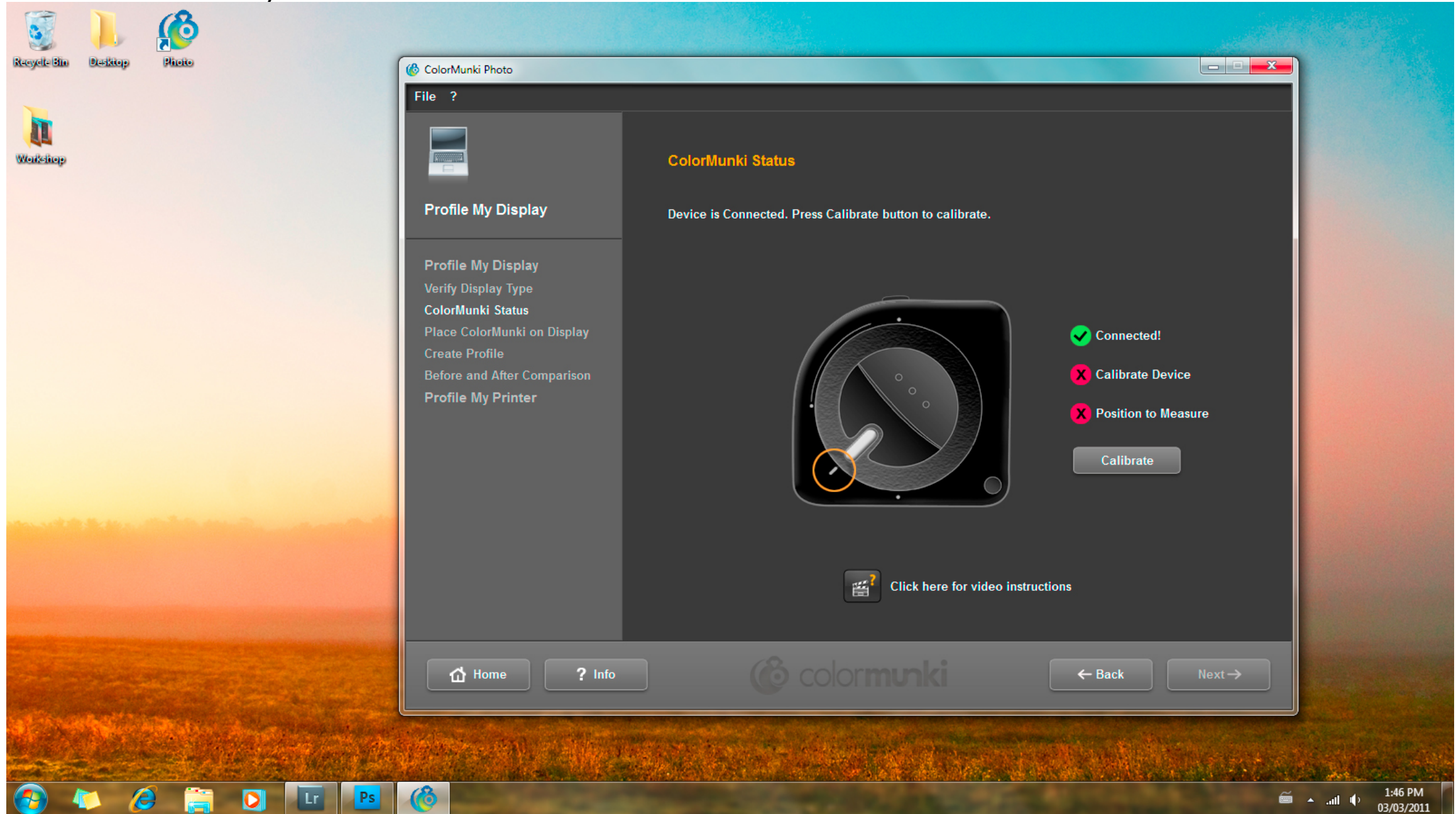
- ColorMunki Status:** Device is Connected, but not ready to calibrate. Please turn the instrument dial into the calibrate position.
- ColorMunki Status List:**
 - Connected! (Green checkmark)
 - Calibrate Device (Red X)
 - Position to Measure (Red X)
- Calibrate Button:** A grey button labeled "Calibrate" is present.
- Instructions:** A diagram of the ColorMunki device is shown with an orange circle around the dial and an orange arrow pointing to the "Calibrate" position. Below the diagram is a link: "Click here for video instructions".

The software interface includes a sidebar with the following menu items:

- Profile My Display
- Verify Display Type
- ColorMunki Status
- Place ColorMunki on Display
- Create Profile
- Before and After Comparison
- Profile My Printer

At the bottom of the window, there are navigation buttons: Home, Info, Back, and Next.

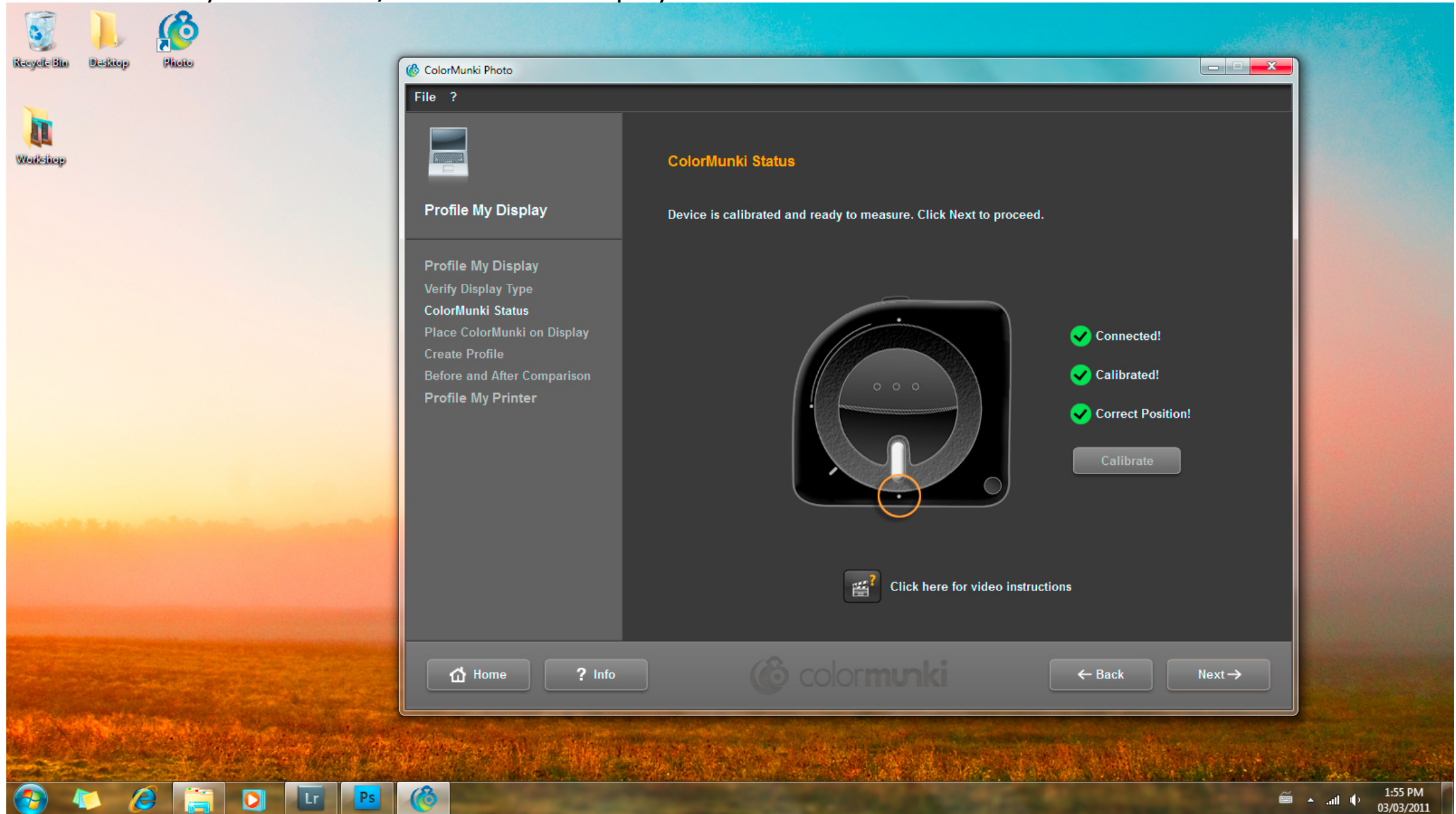
ColorMunki is Ready to Calibrate Itself



Device has Calibrated Itself, but Not Ready to Measure/Calibrate the Display

The screenshot shows a Windows 7 desktop with a sunset background. In the foreground, the ColorMunki Photo application window is open. The window title is "ColorMunki Photo". The interface is divided into a left sidebar and a main content area. The sidebar contains a "File ?" menu and a list of options: "Profile My Display", "Verify Display Type", "ColorMunki Status", "Place ColorMunki on Display", "Create Profile", "Before and After Comparison", and "Profile My Printer". The main content area has a "ColorMunki Status" section with the text: "Device is calibrated, but not ready to measure. Turn the device to the indicated position to proceed." Below this text is a diagram of the ColorMunki device with a yellow arrow pointing to a specific position on its surface, which is also circled in orange. To the right of the diagram, there are three status indicators: a green checkmark for "Connected!", a green checkmark for "Calibrated!", and a red 'X' for "Position to Measure". Below these indicators is a "Calibrate" button. At the bottom of the main content area, there is a link that says "Click here for video instructions" with a small video icon. The bottom of the window features a footer with "Home", "Info", the "colormunki" logo, and "Back" and "Next" navigation buttons. The Windows taskbar at the bottom shows the Start button, several application icons (including Photoshop and Lightroom), and the system tray with the time "1:51 PM" and date "03/03/2011".

Device is Ready to Measure/Calibrate the Display



Place ColorMunki Device on the Display

The screenshot shows a Windows desktop with a sunset background. In the top-left corner, there are icons for Recycle Bin, Desktop, and Photo. In the bottom-left corner, there is a Workshop folder icon. The taskbar at the bottom contains icons for Windows, Start menu, Internet Explorer, File Explorer, VLC, Lightroom (Lr), Photoshop (Ps), and ColorMunki. The ColorMunki Photo application window is open, displaying the 'Place ColorMunki on Display' step. The window has a dark grey background with a yellow border. The title bar reads 'ColorMunki Photo'. The menu bar shows 'File ?'. The left sidebar contains the following options: Profile My Display, Verify Display Type, Place ColorMunki on Display (highlighted), Create Profile, Before and After Comparison, and Profile My Printer. The main area features a monitor icon with a yellow frame around it, containing the text 'Place ColorMunki Here'. To the right of the frame, there is instructional text: 'A series of color patches will now be read to determine the gamut and color response of your display.' and 'Before you begin, reset your display to its factory default settings. Then place ColorMunki into its monitor holder bag and mount it to your display. Be sure the shutter on the bottom of the monitor holder bag is in the open position.' Below this text is a video icon with a question mark and the text 'Click here for video instructions'. At the bottom of the window, there are buttons for 'Home', '? Info', '← Back', and 'Next →'. The ColorMunki logo is centered at the bottom. The system tray at the bottom right shows the time as 1:56 PM on 03/03/2011.

ColorMunki Photo

File ?

Recycle Bin Desktop Photo

Workshop

Profile My Display

Profile My Display
Verify Display Type
Place ColorMunki on Display
Create Profile
Before and After Comparison
Profile My Printer

Place ColorMunki on Display

Place ColorMunki Here

A series of color patches will now be read to determine the gamut and color response of your display.

Before you begin, reset your display to its factory default settings. Then place ColorMunki into its monitor holder bag and mount it to your display. Be sure the shutter on the bottom of the monitor holder bag is in the open position.

Click here for video instructions


Home ? Info ← Back Next →

colormunki

1:56 PM 03/03/2011

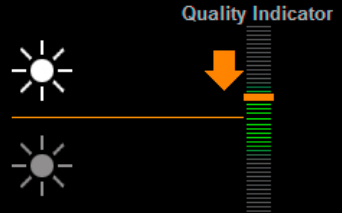
Luminance/Brightness Measured First, Then Colours. Fn + Arrow Keys to adjust brightness on Laptop

Profile My Display



Brightness Adjustment

Quality Indicator



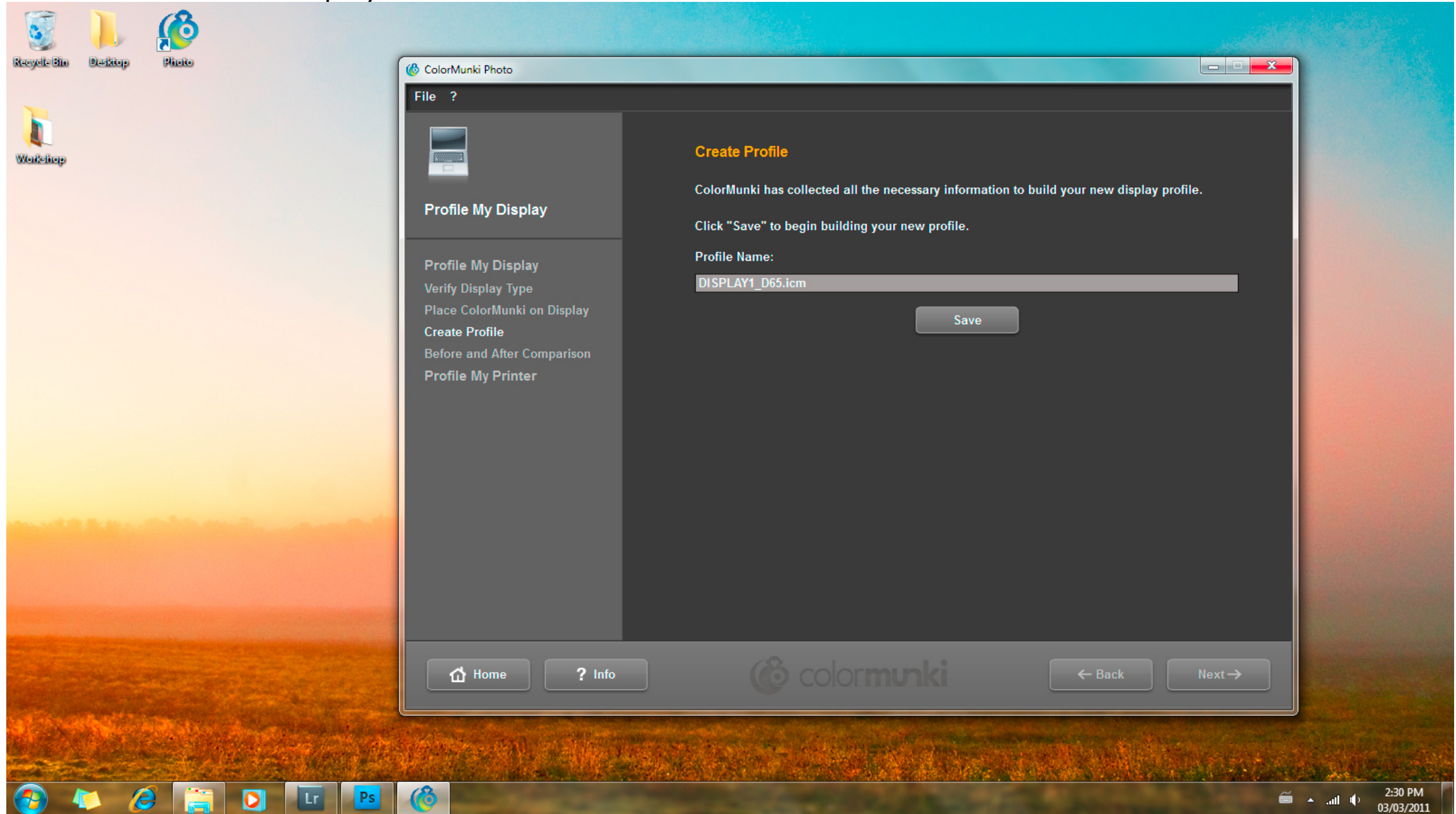
Adjust your display's brightness or backlight control until the measured luminance is as close as possible to the target. If your display cannot be adjusted low enough, ColorMunki will automatically match the target luminance when building the profile. When you are finished making adjustments (or if your display does not have a brightness control), press "Next" to continue.

Luminance
Target White Luminance: 100
Measured White Luminance: 104

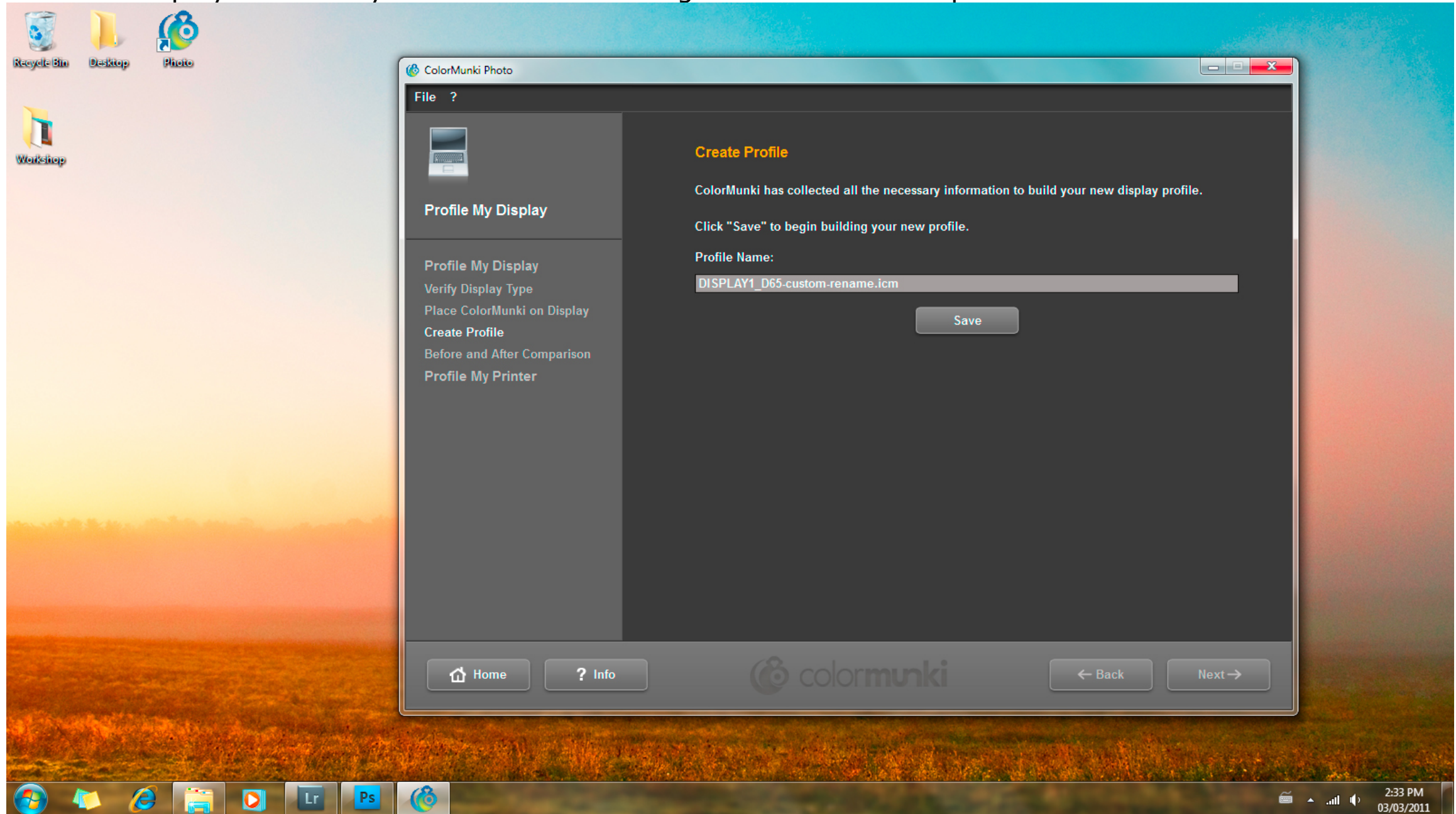
← Back Next →



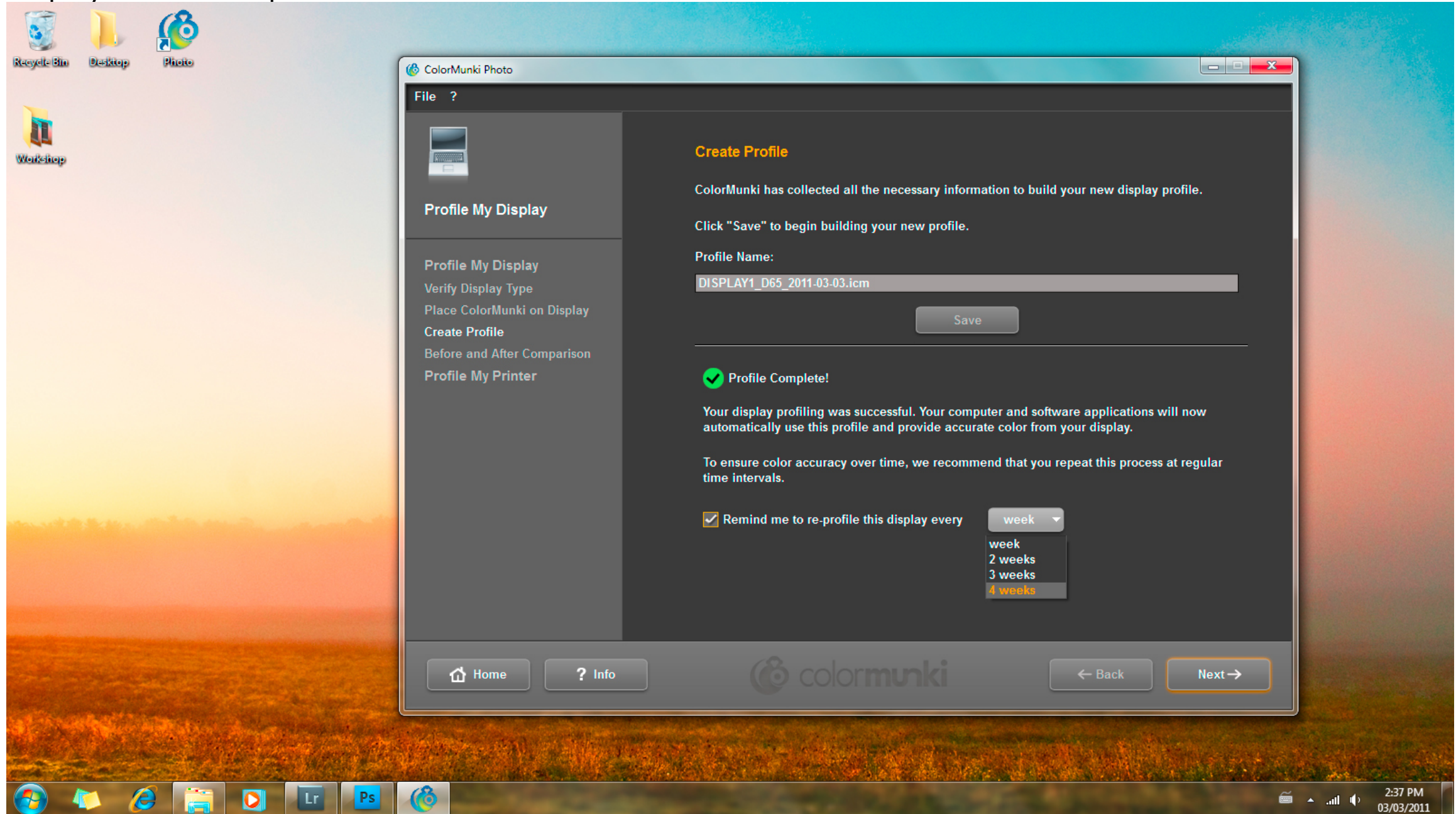
Name and Save the Display Profile



Name of Display Profile May Be Renamed – Adding the Date for Example



Display Profile Completed. Set Reminder to Recalibrate



Compare Results – This is Before

The screenshot shows the ColorMunki Photo software window on a Windows desktop. The desktop background is a sunset over a field. The taskbar at the bottom shows icons for Recycle Bin, Desktop, Photo, Workshop, and several applications including Adobe Lightroom (Lr) and Adobe Photoshop (Ps). The ColorMunki Photo window is titled "ColorMunki Photo" and has a menu bar with "File ?". The main area is titled "Before and After Comparison" and features a central image of a woman holding a bouquet of flowers. Below the image are two buttons labeled "Before" and "After". To the right of the image, there is instructional text: "Use the 'Before' and 'After' buttons to see how your new profile has enhanced your display's color accuracy and image quality. Click Next when you are done." The sidebar on the left contains a "Profile My Display" section with a list of options: "Profile My Display", "Verify Display Type", "Place ColorMunki on Display", "Create Profile", "Before and After Comparison", and "Profile My Printer". The bottom bar of the window includes "Home", "Info", "Back", and "Next" buttons, along with the ColorMunki logo.

ColorMunki Photo

File ?

Before and After Comparison

Use the "Before" and "After" buttons to see how your new profile has enhanced your display's color accuracy and image quality.

Click Next when you are done.

© Dana Harris at Sherwood Triart

Before After

Home ? Info Back Next →

colormunki

2:39 PM 03/03/2011

Compare Results – This is After (Not much difference here)

The screenshot shows the ColorMunki Photo software interface. The window title is "ColorMunki Photo". The interface is divided into several sections:

- File ?**: A menu bar at the top left.
- Profile My Display**: A sidebar on the left containing a list of options: Profile My Display, Verify Display Type, Place ColorMunki on Display, Create Profile, Before and After Comparison, and Profile My Printer.
- Before and After Comparison**: The main central area. It features a photo of a woman holding a bouquet of flowers. Below the photo is a color calibration bar with red, green, and blue segments. At the bottom of this section are two buttons: "Before" and "After".
- Instructions**: Text on the right side of the main area: "Use the 'Before' and 'After' buttons to see how your new profile has enhanced your display's color accuracy and image quality. Click Next when you are done."
- Bottom Bar**: A navigation bar at the bottom of the window with buttons for "Home", "? Info", "Back", and "Next". The ColorMunki logo is also present in the bottom bar.

The desktop background is a landscape image of a field at sunset. The taskbar at the bottom shows the Windows Start button, several application icons (including Adobe Lightroom and Photoshop), and the system tray with the date and time: 2:40 PM, 03/03/2011.

Now Choose the Printer to be Profiled

The screenshot shows the ColorMunki Photo software window on a Windows desktop. The desktop background is a landscape with a sunset over a field. The taskbar at the bottom shows icons for Recycle Bin, Desktop, Photo, Workshop, and several applications including Adobe Photoshop (Ps) and Adobe Lightroom (Lr). The ColorMunki Photo window has a dark grey theme and a sidebar on the left with a list of steps. The main area is titled "Begin Printer Profiling" and contains three numbered steps. Step 1 asks if the user wants to create a new profile or optimize an existing one, with radio buttons for "Create New Profile" (selected) and "Optimize Existing Profile". Step 2 asks the user to select a printer, with a "Choose Printer..." dropdown menu open, listing several printers: "PageManager PDF Writer", "Microsoft XPS Document Writer", "EPSON Stylus Pro 7900", "EPSON Stylus Photo R220 Series", "Artisan 810(Network)", and "Adobe PDF". The "Artisan 810(Network)" printer is highlighted. Step 3 is partially visible, asking for the paper used. At the bottom of the window are buttons for "Home", "Info", "Back", and "Next", along with the ColorMunki logo.

ColorMunki Photo

File ?

Profile My Printer

Profile My Display
Profile My Printer
Begin Printer Profiling
Print 1st Test Chart
Allow Test Chart to Dry
Measure 1st Test Chart
Generate 2nd Test Chart
Print 2nd Test Chart
Allow Test Chart to Dry
Measure 2nd Test Chart
Save Profile
AppSet™

Begin Printer Profiling

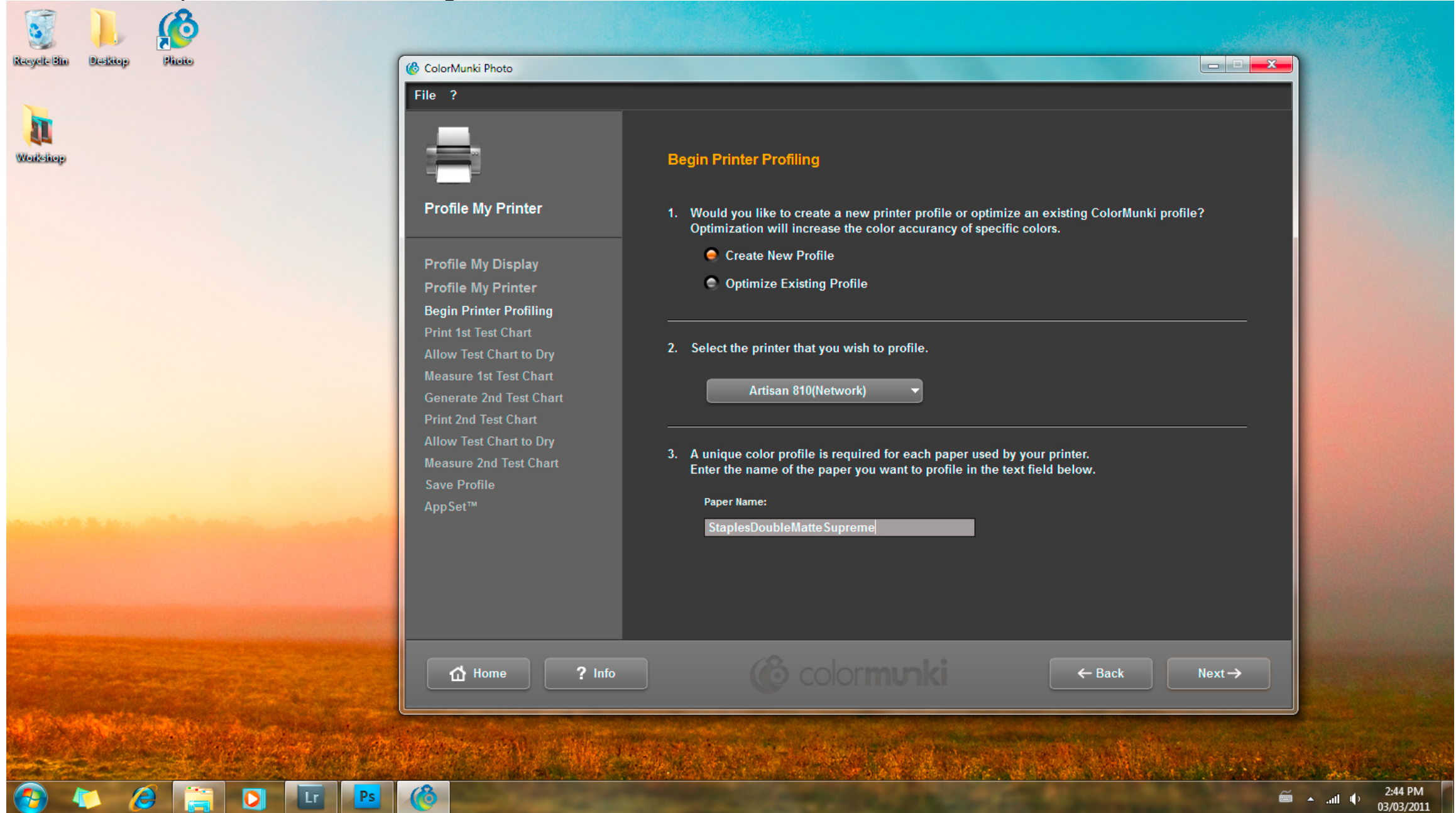
1. Would you like to create a new printer profile or optimize an existing ColorMunki profile? Optimization will increase the color accuracy of specific colors.
 - Create New Profile
 - Optimize Existing Profile
2. Select the printer that you wish to profile.
 - Choose Printer...
 - Choose Printer...
 - PageManager PDF Writer
 - Microsoft XPS Document Writer
 - EPSON Stylus Pro 7900
 - EPSON Stylus Photo R220 Series
 - Artisan 810(Network)**
 - Adobe PDF
3. A
En

h paper used by your printer.
profile in the text field below.

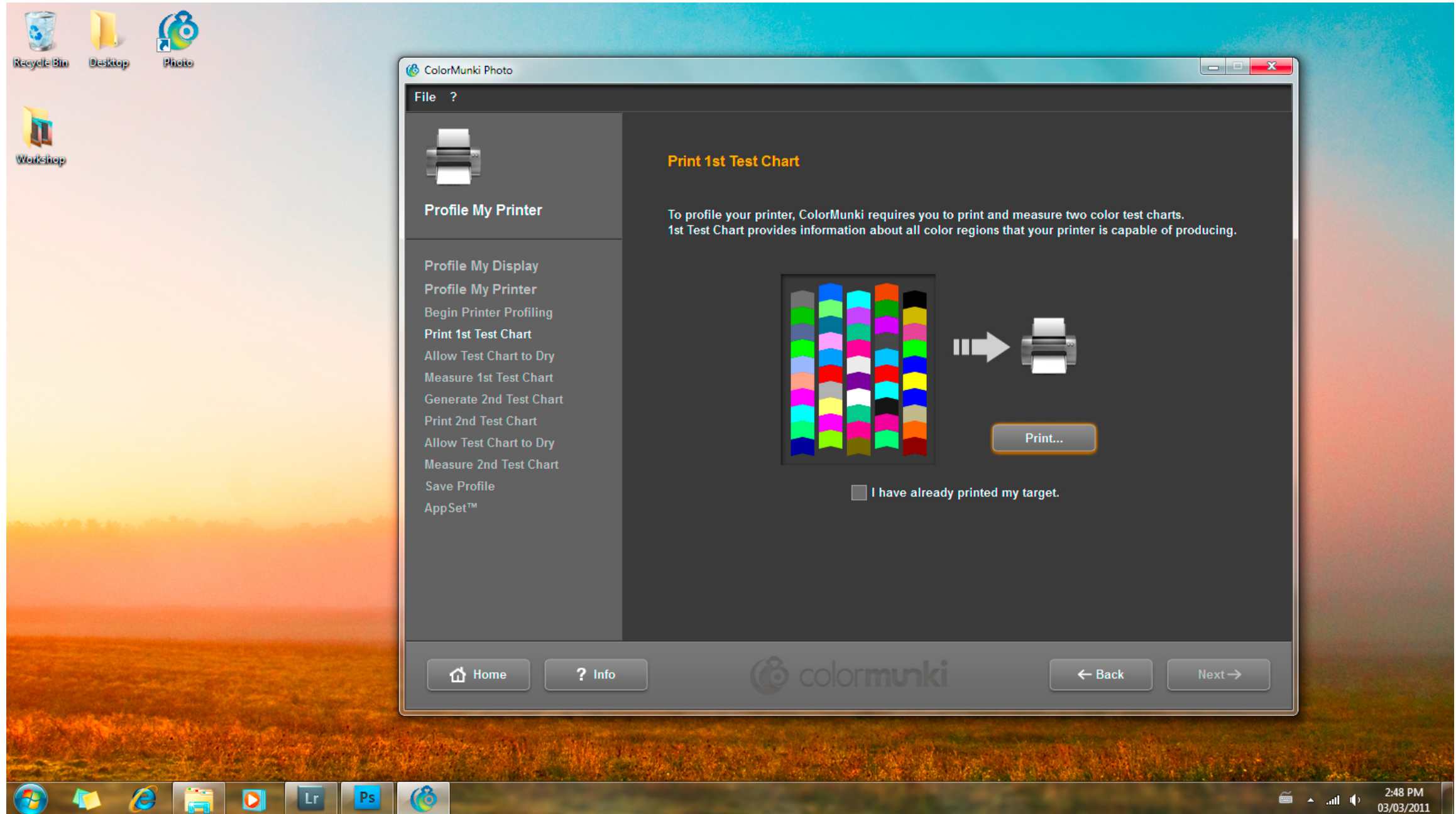
Home ? Info colormunki Back Next

2:43 PM 03/03/2011

Name the Paper You are Creating the Profile For



Print the First Test Chart



Measure the First Test Chart with the ColorMunki – One strip at a time

The screenshot shows the ColorMunki Photo software interface on a Windows desktop. The desktop background is a landscape image of a field at sunset. In the top-left corner, there are icons for Recycle Bin, Desktop, and Photo. In the bottom-left corner, there is a Workshop icon. The taskbar at the bottom contains icons for Windows Explorer, Internet Explorer, a folder, a video player, and applications for Lightroom (Lr) and Photoshop (Ps). The system tray in the bottom-right corner shows the time as 2:50 PM on 03/03/2011.

The ColorMunki Photo window is the central focus. It has a title bar with the text "ColorMunki Photo" and standard window controls. The interface is divided into a left sidebar and a main content area. The sidebar contains a printer icon and a list of steps: "Profile My Printer" (highlighted), "Profile My Display", "Begin Printer Profiling", "Print 1st Test Chart", "Measure 1st Test Chart", "Generate 2nd Test Chart", "Print 2nd Test Chart", "Allow Test Chart to Dry", "Measure 2nd Test Chart", "Save Profile", and "AppSet™".

The main content area is titled "Measure 1st Test Chart" and contains the following text: "Measure the row indicated by the yellow marquee. If the measurement succeeds, the marquee will advance to the next row. If a measurement error occurs, the marquee will flash to red while the error is cleared. Once the marquee has returned to yellow, you may remeasure the row." Below this text is a graphic of five vertical test chart strips, numbered 1 to 5. A yellow marquee highlights the top row of the first strip. Below the strips is a button with a question mark icon and the text "Click here for video instructions".

At the bottom of the window, there are four buttons: "Home", "? Info", "← Back", and "Next →". The ColorMunki logo is centered at the bottom of the window.

Remeasure a Strip if an Error Occurs

The screenshot shows the ColorMunki Photo software interface. The window title is "ColorMunki Photo". The sidebar on the left contains the following menu items:

- Profile My Printer
- Profile My Display
- Profile My Printer
- Begin Printer Profiling
- Print 1st Test Chart
- Measure 1st Test Chart**
- Generate 2nd Test Chart
- Print 2nd Test Chart
- Allow Test Chart to Dry
- Measure 2nd Test Chart
- Save Profile
- AppSet™

The main area displays the instruction: "Measure 1st Test Chart". Below the text, there is a test chart consisting of five vertical strips, numbered 1 to 5. A yellow marquee is positioned over the top row of the fifth strip, which is highlighted with a red border. The text below the chart reads: "Measure the row indicated by the yellow marquee. If the measurement succeeds, the marquee will advance to the next row. If a measurement error occurs, the marquee will flash to red while the error is cleared. Once the marquee has returned to yellow, you may remeasure the row."

At the bottom of the main area, there is a button with a question mark icon and the text "Click here for video instructions".

The bottom navigation bar contains the following buttons: Home, Info, colormunki logo, Back, and Next.

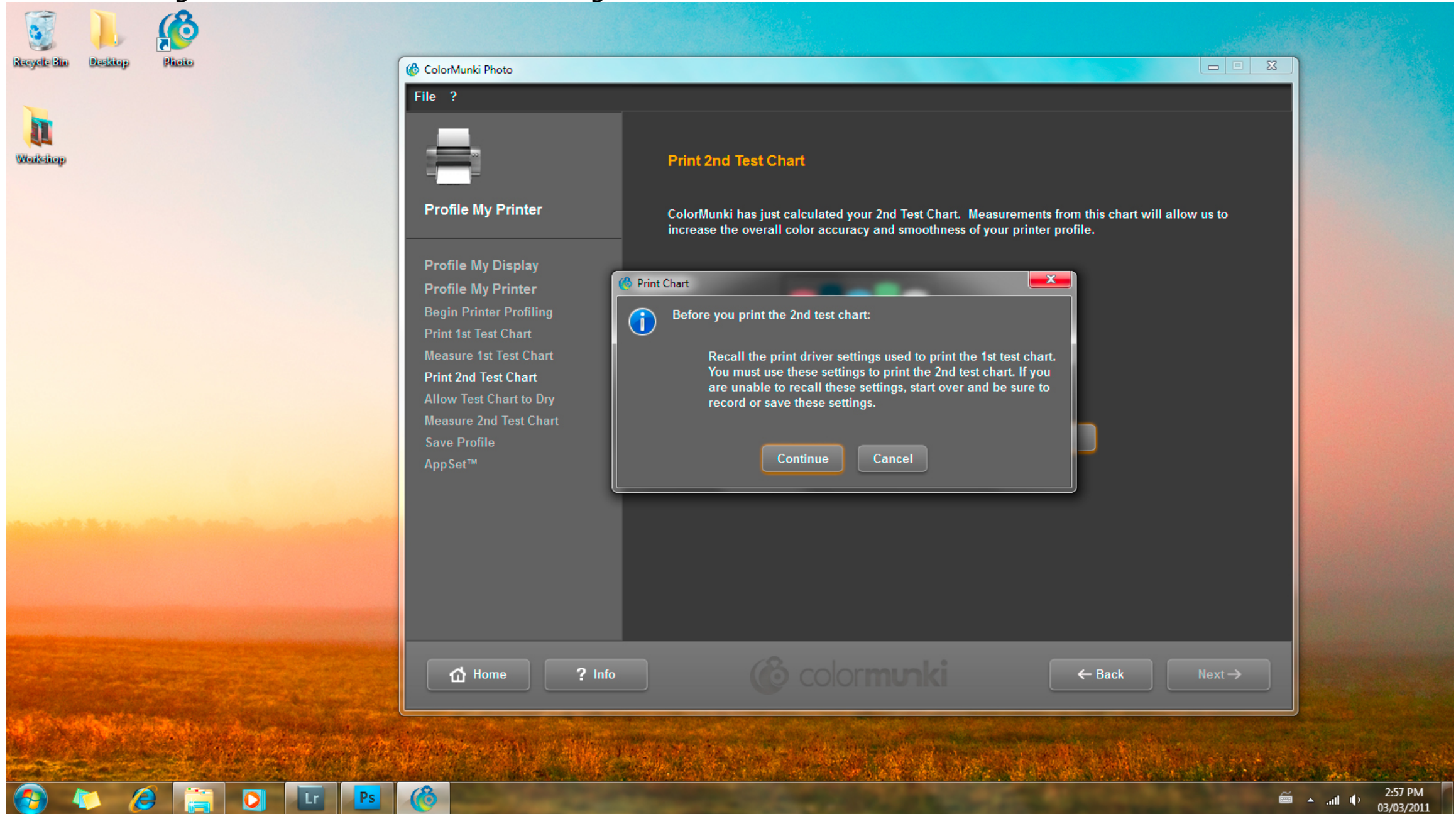
The Windows taskbar at the bottom shows the Start button, several application icons (including Photoshop and Lightroom), and the system tray with the date and time: 2:53 PM, 03/03/2011.

ColorMunki Creates a Second Test Chart to Print

The screenshot shows the ColorMunki Photo application window on a Windows 7 desktop. The desktop background is a landscape with a sunset over a field. The taskbar at the bottom shows icons for Recycle Bin, Desktop, Photo, Workshop, and several applications including Photoshop (Ps) and Lightroom (Lr). The system tray in the bottom right corner displays the time as 2:55 PM on 03/03/2011.

The ColorMunki Photo window has a dark grey interface. On the left is a sidebar menu with the following options: Profile My Printer (highlighted), Profile My Display, Profile My Printer, Begin Printer Profiling, Print 1st Test Chart, Measure 1st Test Chart, **Print 2nd Test Chart**, Allow Test Chart to Dry, Measure 2nd Test Chart, Save Profile, and AppSet™. The main area of the window displays the title "Print 2nd Test Chart" in orange text. Below the title, a message reads: "ColorMunki has just calculated your 2nd Test Chart. Measurements from this chart will allow us to increase the overall color accuracy and smoothness of your printer profile." In the center, there is a preview of a color calibration chart with 15 vertical columns of color patches. To the right of the chart is a printer icon with a large arrow pointing towards it, and a "Print..." button below the printer icon. At the bottom of the window, there are navigation buttons: "Home", "? Info", the "colormunki" logo, "← Back", and "Next →".

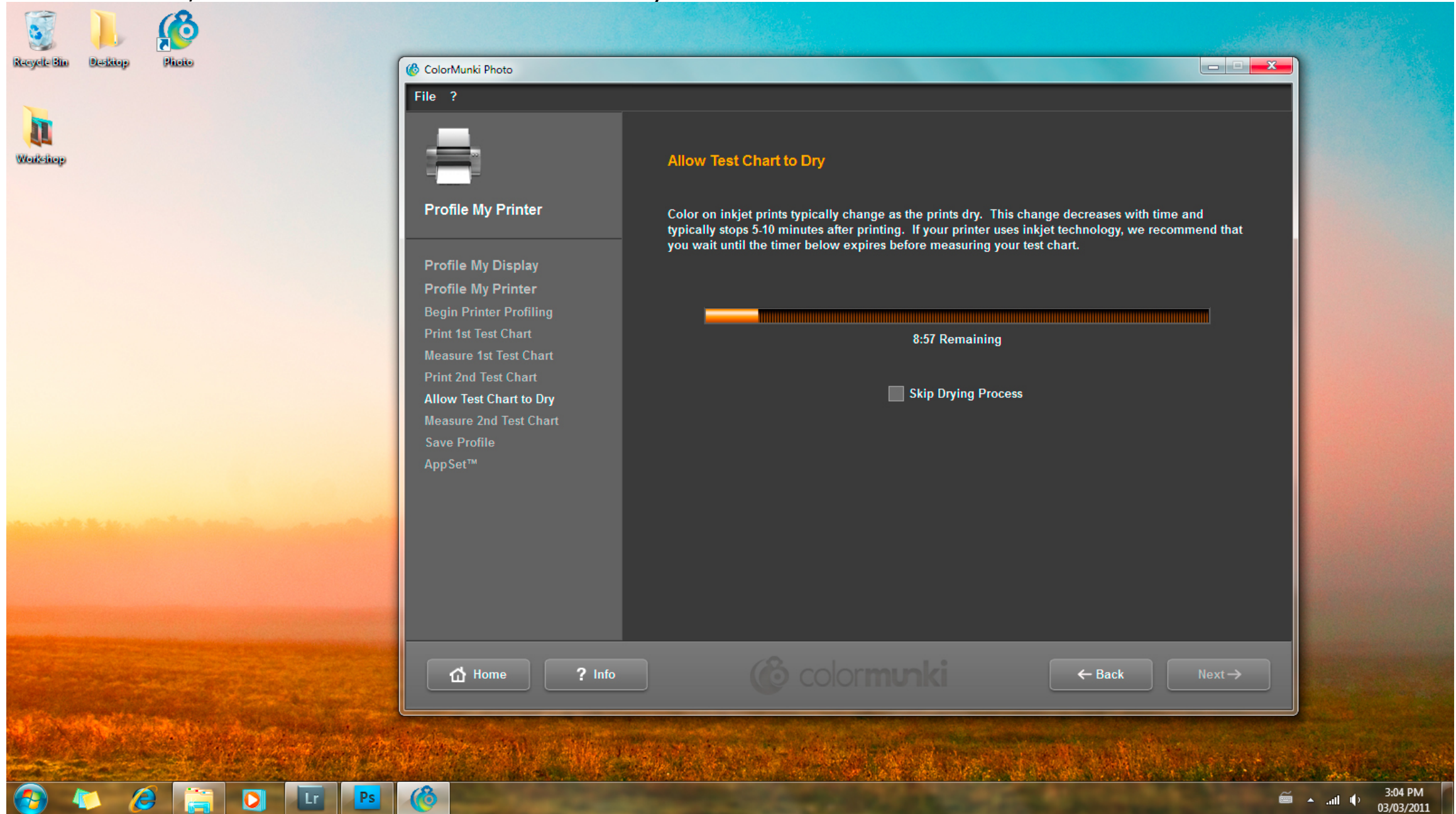
Print Warning: Use the Same Printer Settings



Printer Properties – Printer Color Management Turned Off & Highest Quality Printing

The image shows a Windows desktop environment with several windows open. In the foreground, the 'Artisan 810(Network) Properties' window is open, displaying the 'Advanced' tab. Under the 'Color Management' section, the 'Off (No Color Adjustment)' option is selected. Other settings include 'Paper & Quality Options' set to 'Presentation Paper Matte' and 'Letter (8 1/2 x 11 in)', and 'Print Options' with 'High Speed' and 'Edge Smoothing' checked. A 'Print' dialog box is also open, showing the printer name 'Artisan 810(Network)' and 'Number of copies: 1'. In the background, a 'ColorMunki' test chart window is visible, titled 'Print 2nd Test Chart'. It contains the text: 'ColorMunki has just calculated your 2nd Test Chart. Measurements from this chart will allow us to increase the overall color accuracy and smoothness of your printer profile.' Below the text is a color calibration chart with various color bars and a printer icon with a 'Print...' button. The desktop background is a landscape image, and the taskbar at the bottom shows icons for Recycle Bin, Desktop, Photo, Workshop, and several applications including Lr and Ps. The system tray in the bottom right corner shows the time as 3:02 PM on 03/03/2011.

When Printed, Time is Given for the Chart to Dry



Measure the Second Test Chart

The screenshot shows the ColorMunki Photo software window on a Windows desktop. The desktop background is a landscape with a sunset over a field. The taskbar at the bottom shows icons for Recycle Bin, Desktop, Photo, Workshop, and several applications including Adobe Lightroom (Lr) and Adobe Photoshop (Ps). The system tray in the bottom right corner shows the time as 3:05 PM on 03/03/2011.

The ColorMunki Photo window has a dark grey interface. On the left is a sidebar with a printer icon and the title "Profile My Printer". Below this are several menu items: "Profile My Display", "Profile My Printer", "Begin Printer Profiling", "Print 1st Test Chart", "Measure 1st Test Chart", "Print 2nd Test Chart", "Allow Test Chart to Dry", "Measure 2nd Test Chart" (which is highlighted in bold), "Save Profile", and "AppSet™".

The main area of the window is titled "Measure 2nd Test Chart" in orange text. Below the title is a paragraph of instructions: "Measure the row indicated by the yellow marquee. If the measurement succeeds, the marquee will advance to the next row. If a measurement error occurs, the marquee will flash to red while the error is cleared. Once the marquee has returned to yellow, you may remeasure the row." Below the text is a test chart consisting of five vertical columns of color patches, numbered 1 through 5 at the bottom. A yellow marquee is positioned around the top row of the first column. Below the test chart is a small icon of a clapperboard with a question mark and the text "Click here for video instructions".

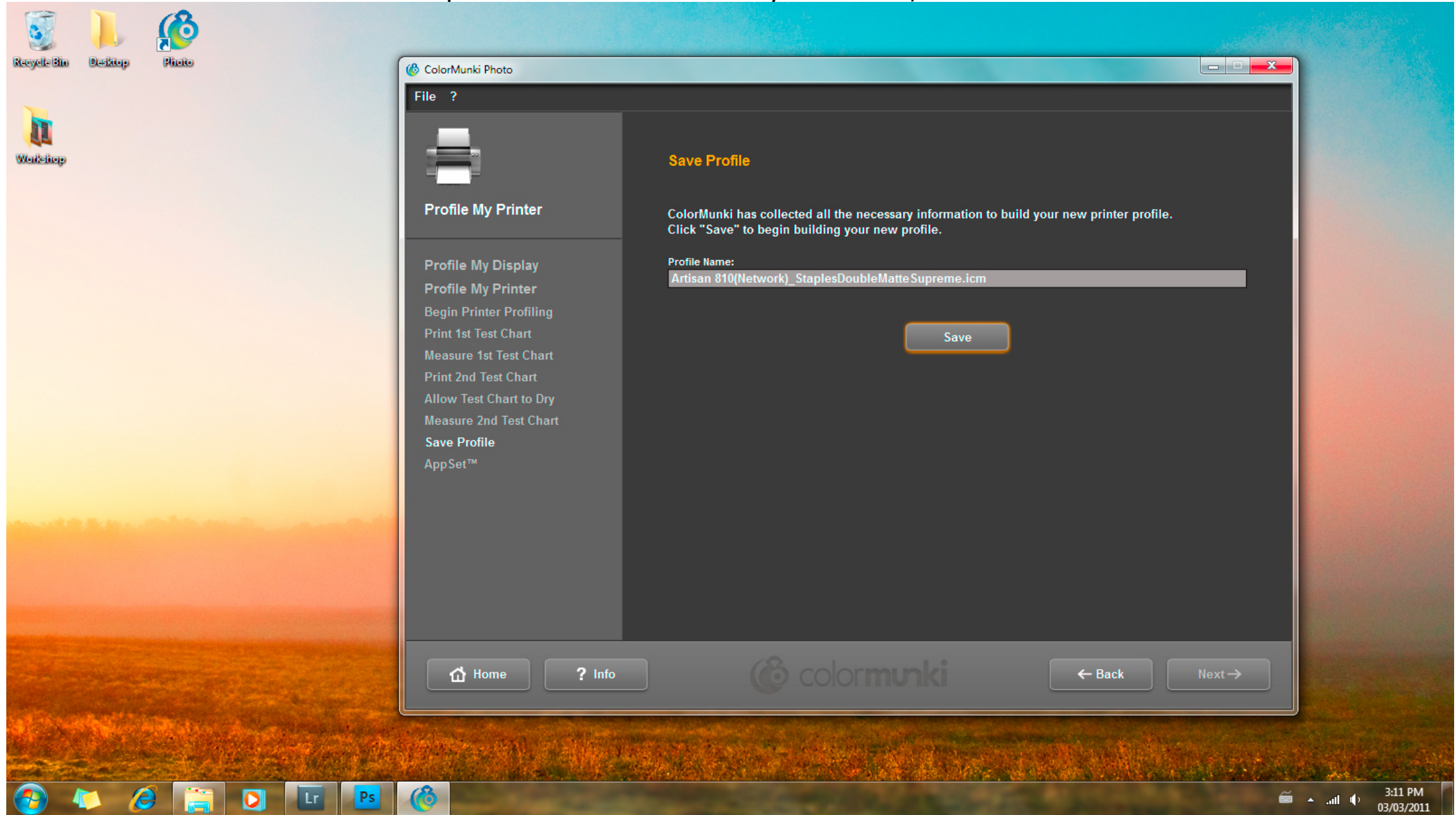
At the bottom of the window are several navigation buttons: "Home" (with a house icon), "? Info", the "colormunki" logo, "← Back", and "Next →".

Second Test Chart Successfully Measured

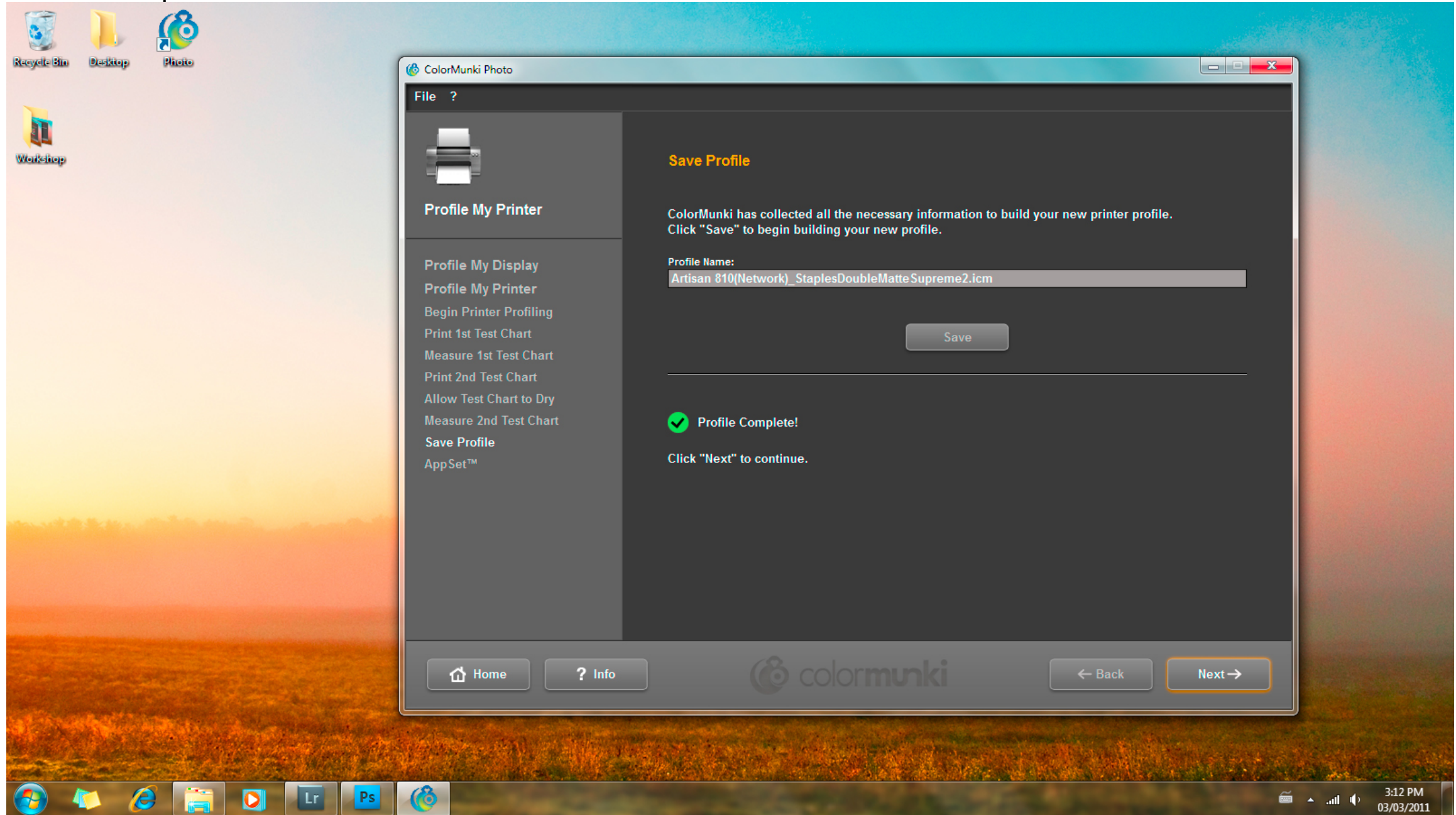
The screenshot shows the ColorMunki Photo software interface on a Windows desktop. The desktop background is a landscape image of a field at sunset. In the top-left corner, there are icons for Recycle Bin, Desktop, and Photo. In the bottom-left corner, there is a Workshop icon. The taskbar at the bottom contains icons for Windows, Explorer, Internet Explorer, a folder, a media player, and applications for Lightroom (Lr) and Photoshop (Ps). The system tray in the bottom-right corner shows the time as 3:09 PM on 03/03/2011.

The ColorMunki Photo window is open, displaying the 'Measure 2nd Test Chart' step. The window title is 'ColorMunki Photo'. The interface is divided into a left sidebar and a main content area. The sidebar contains a printer icon and a list of steps: Profile My Printer (selected), Profile My Display, Profile My Printer, Begin Printer Profiling, Print 1st Test Chart, Measure 1st Test Chart, Print 2nd Test Chart, Allow Test Chart to Dry, Measure 2nd Test Chart, Save Profile, and AppSet™. The main content area has a dark background with the title 'Measure 2nd Test Chart' in orange. Below the title is a paragraph of instructions: 'Measure the row indicated by the yellow marquee. If the measurement succeeds, the marquee will advance to the next row. If a measurement error occurs, the marquee will flash to red while the error is cleared. Once the marquee has returned to yellow, you may remeasure the row.' Below the text is a color calibration chart with five columns labeled 1 through 5. Each column contains a vertical stack of colored triangles. A yellow marquee is positioned over the second row of the chart. Below the chart is a button with a question mark icon and the text 'Click here for video instructions'. At the bottom of the window, there are buttons for 'Home', '? Info', '← Back', and 'Next →'. The ColorMunki logo is centered at the bottom of the window.

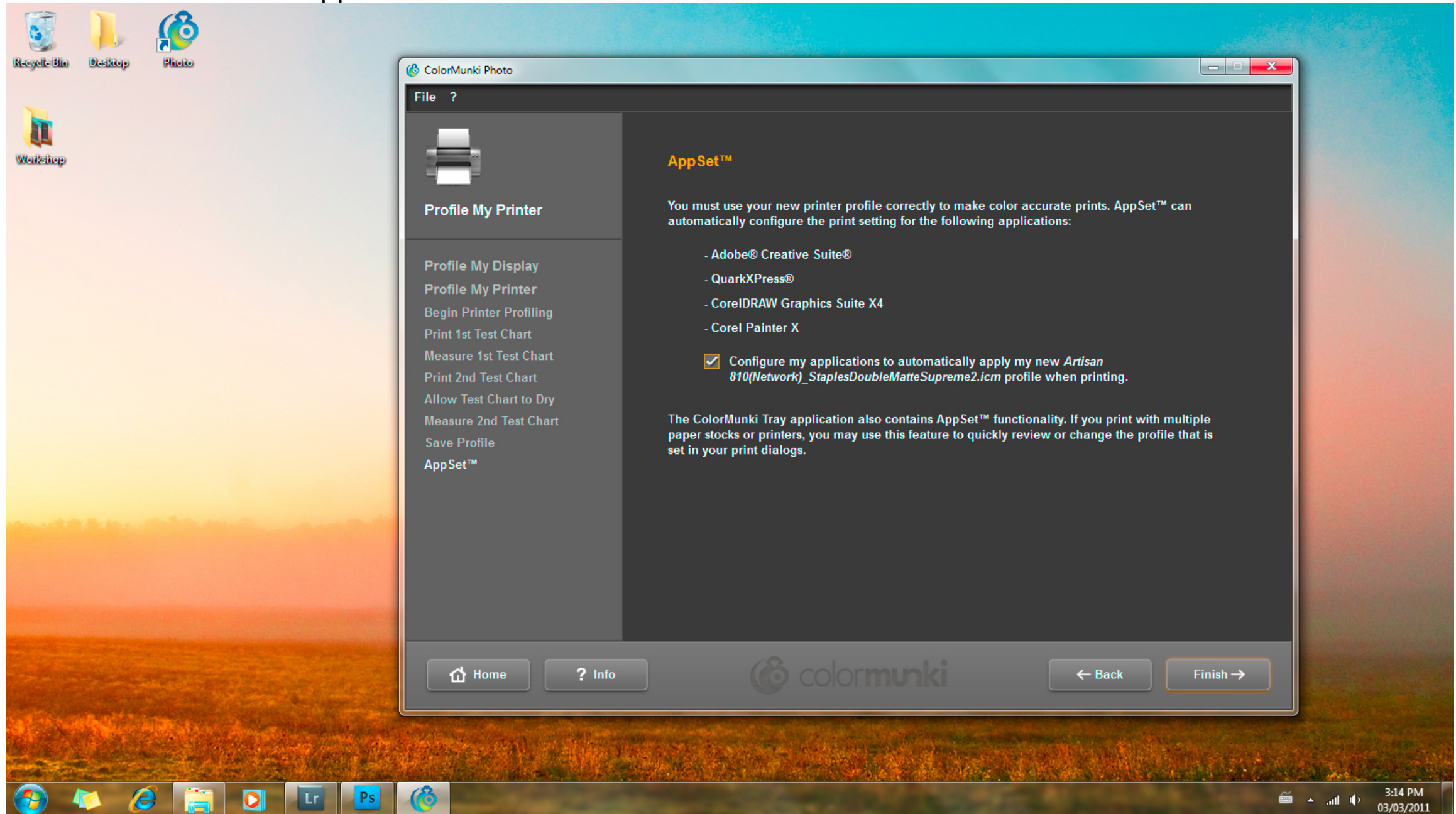
Save Printer Profile. Printer & Paper Names Automatically Included, but the Profile Name can be Edited



Profile Completed



Profile Is Available to Applications – New Profile can be set as the Default Profile



ColorMunki Available for Other Tasks



Camera Calibration with ColorChecker Passport:

- Shoot the ColorChecker Passport
- Camera calibration: Create camera profile
- Restart LR and apply camera profile just created under Camera Calibration. Then synch all other images with the same shooting/light conditions.

Online Resources:

luminous-landscape.com/tutorials/prophoto-rgb.shtml

http://www.xritephoto.com/ph_product_overview.aspx?id=1115

blurb.com/resources/color_management

ronbigelow.com/articles/white/white_balance.htm

photoshop-tutorials-plus.com/8-bit-and-16-bit.html

adobe.com/digitalimag/pdfs/color_managed_raw_workflow.pdf

dpbestflow.org/color/color-management-overview

color.org/index.xalter (International Color Consortium)

zuberphotographics.com/content/digital/color-management.htm

cambridgeincolour.com/tutorials/color-space-conversion.htm

Notes re ICC and ICM files

.icc (International Color Consortium) is interchangeable with .icm (Image Color Management - an alternate extension to .icc promoted by Microsoft)

Location of ICC and/or ICM profiles are:

Mac OS X

/Users/username/Library/ColorSync/Profiles

Windows 7

\Windows\system32\spool\drivers\color

Location of camera profiles (Windows 7):

\Users\username\AppData\Roaming\Adobe\CameraRaw\CameraProfiles

Thanks to Peter Steeper and Eric Boutilier-Brown for insights into colour management gained previously, though any errors or omissions here are mine alone.

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