



At the heart of the image

NIKON CORPORATION



At the heart of the image

Technical Guide

Digital SLR camera

D3X

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D3X + AF-S Micro NIKKOR 60mm f/2.8G ED
Manual exposure, 1/250 s, f/8



The image on the left page was taken with the AF-S Micro NIKKOR 60mm f/2.8G ED lens, utilizing the large image sensor of the Nikon FX format. Beautiful image blur effectively emphasizes the subject. Clean pupils, smooth skin texture, and even eyebrows and eyelashes can be naturally reproduced with superior resolution.

Shown below is a part of the image enlarged up to A2-equivalent size (420 x 594 mm). The image captured with 24.5 effective megapixels provides high resolution even when enlarged this much.

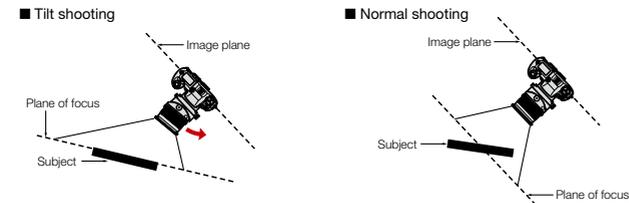




D3X + PC-E Micro NIKKOR 85mm f/2.8D using the tilt function
Manual exposure, 1/100 s, f/4.2



The image on the left was taken by tilting the lens using the tilt mechanism so that the entire subject is in focus, although the subject plane is not parallel to the camera's image plane (f/4.2). With the minimum focus distance of 0.39 m (1.3 ft.), the PC-E Micro NIKKOR 85mm f/2.8D Perspective Control lens achieves close-up shooting like this.



D3X + PC-E Micro NIKKOR 85mm f/2.8D without the tilt function

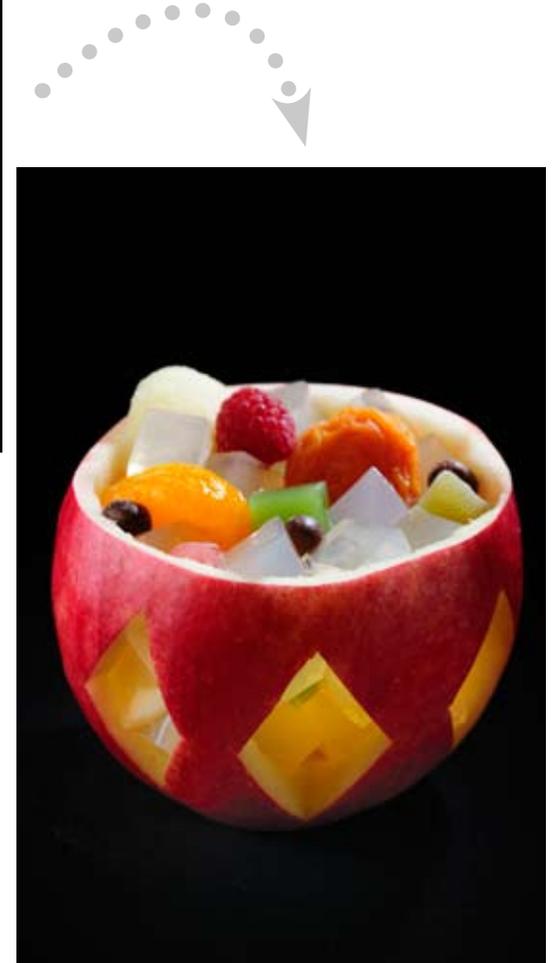
This picture was taken without using the tilt function. Only a specific part of the subject on the image plane is in focus with a shallow depth of field produced by f/4.2 aperture.



D3X + PC-E Micro NIKKOR
85mm f/2.8D
Manual exposure, 1/160 s, f/16

In food shooting, it is extremely difficult to reproduce desired color and brightness because of lighting factors, and it also takes time. Capture NX 2 post-processing software enables adjustment of an image taken with roughly set illumination, remarkably improving shooting efficiency. Because operation is not complicated and the finished image can be accurately presented at the shooting site, it is easy to get the approval of the client or art director.

The above image was processed using Color Control Points to produce the intended color and brightness in a short time.



D3X + PC-E Micro NIKKOR
85mm f/2.8D
Manual exposure, 1/160 s, f/11

Capture NX 2 realizes illumination impossible with actual settings simply and quickly on a processed image.

Using Color Control Points, the above image achieves a fantastic finish as if illumination was incorporated inside an apple, which would be almost impossible in reality.



With the D3X, four Picture Controls — “Standard”, “Neutral”, “Vivid” and “Monochrome” — are preinstalled. You’ll also have access to Optional Picture Controls such as “Portrait” and “Landscape” that can be downloaded from the Nikon website and stored in the camera. This realizes simple image adjustment for efficient workflow.

Portrait: Using “Neutral” as its base, “Portrait” imparts more natural-appearing skin. Skin tones are more lifelike, projecting a real sense of depth — as if shot with professional-quality film — for a clear, authentic finish.

Portrait
Standard



Neutral



Vivid



Landscape: Produces a more profound intensity than “Standard”. Compared with “Vivid”, “Landscape” creates more soothing, relaxed colors, effective for any nature scene. Rich gradations with an eye-catching appeal enhance the vibrancy and liveliness of landscapes, nature and even city street scenes.

“Neutral”, that reproduces the subject’s unique colors and gradations with maximum authenticity, is ideal for materials that you plan to adjust using Capture NX 2 after shooting to express a specific idea.

Optional Picture Controls “Portrait” and “Landscape” can be downloaded from Nikon’s website (free) and installed in the camera.
<http://nikonimglib.com/opc/>

Landscape
Standard



Neutral



Vivid



Prepare equipment that ensures identical color reproduction on the monitor and secure data storage



- Home/office/in-company studio
- Strictly calibrated 24-in. monitor
 - Desktop computer
 - External hard disk x 2
Mirroring to computer's HD and external HD with Nikon Transfer: via e-SATA or CF card
 - Wireless Transmitter WT-4 (wireless)
 - CF card reader [Firewire 800] (wired)

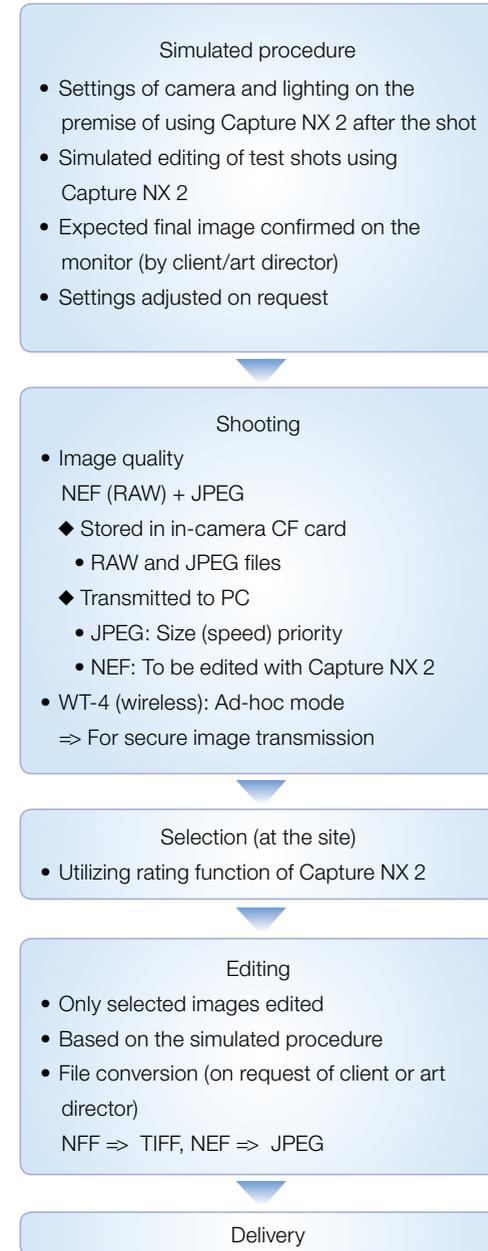


On an assignment

Reproduce the same environment as home/office/in-company studio

- Bring 20-in. monitor of the same maker, panel and settings
- Laptop notebook computer
- External hard disk x 2: mirroring to computer's HD and external HD with Nikon Transfer: via e-SATA or CF card
- Wireless Transmitter WT-4 (wireless)
- CF card reader [Firewire 800] (wired)

From shooting to delivery



D3X + AF-S VR Micro-Nikkor 105mm f/2.8G IF-ED



Capture NX2



Enlarged by 200%

24.5 effective megapixels deliver substantial resolution even compared to a 30-megapixel model. Extremely faithful color reproduction does not require minute post processing.

30-megapixel model + 120mm micro lens



Software supplied with a 30-megapixel model



Enlarged by 200%

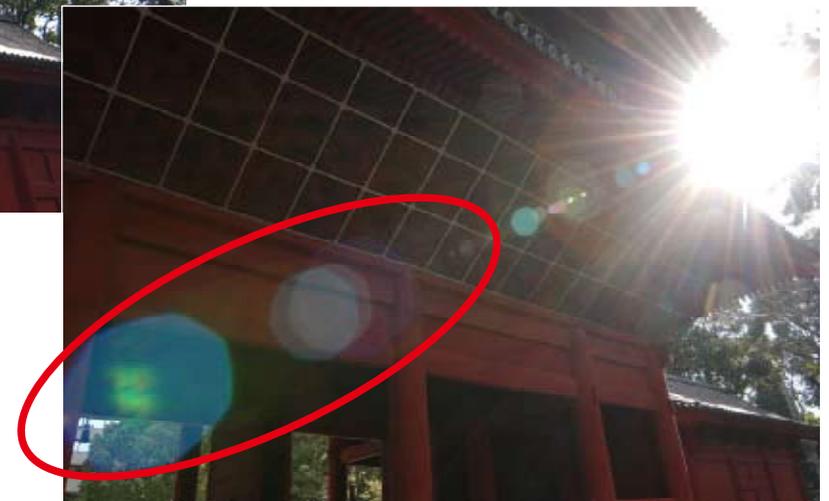
High resolution expected from 30 effective megapixels is achieved, however, significant superiority over the D3X's images cannot be found that justifies the price difference. Because color reproduction is not necessarily precise, satisfactory results cannot be obtained even using genuine software supplied with the 30-megapixel model.



Taken with a Nano Crystal Coat-applied lens

Nano Crystal Coat, employing multiple layers of extra-low refractive index coating that features ultra-fine crystallized particles of nano size (one nanometer equals one millionth of a millimeter), eliminates internal lens element reflections across the entire spectrum of visible light (380 – 780 nm) far more effectively than conventional anti-reflection coatings. Ghost caused by red light that has been thought difficult to reduce conventionally has been remarkably reduced. Outstanding results are also found in reducing ghost and flare caused by light entering the lens diagonally.

To investigate the effect, two lenses of the same type — with/without Nano Crystal Coat were used. Notice the dramatically reduced flare within the ○ area.



Taken with an ordinary lens

Images were not taken with the D3X.

Using a cubic gray chart in measuring white balance



Situations in which a cubic gray chart (white balance target) is used

- ① When measuring white balance under incandescent light
- ② Under the mixed lighting of flash and incandescent light
- ③ When flash light is a priority

Lighting settings: A large flash on the right as a main illumination; an incandescent light above the subject's head; external light from windows



Situation ①



Situation ②



Situation ③

How to make a white balance target

- 1) Make two loops of about 10cm diameter with A4-size hard paper on which gray pigment with 18% reflectivity is printed (e.g. Silver/silk gray card)
 - * Use of approximate colors or conventional 18% reflector is not recommended.
- 2) Set loops as shown and locate them at the point where color should be appropriately reproduced.



Selecting a white balance preset menu by locating a flat gray chart near the subject



Color temperature is not necessarily uniform at a shooting site. Locate a flat gray chart near the subject to be expressed with faithful color reproduction. The chart should be set so that it has an inclination identical to that of the subject's light-receiving angle.



Measured around the subject's face (strongly affected by incandescent light)



Measured with front objects (near the large main flash)

Color temperature setting is effective when images are taken in JPEG format

When used with White Balance Fine Tuning, a finer setting with increments of 5 mired is made possible.

2500	3030	3850	5260	8330
2530	3080	3920	5410	8700
2560	3130	4000	5560	9090
2600	3170	4080	5710	9520
2630	3230	4170	5880	10000
2670	3280	4260	6060	
2700	3330	4350	6250	
2740	3390	4440	6450	
2780	3450	4550	6670	
2820	3510	4650	6900	
2860	3570	4760	7140	
2900	3640	4880	7410	
2940	3700	5000	7690	
2990	3770	5130	8000	

: Available in Color Temperature setting (Kelvin)

: Available in White Balance Fine Tuning (Kelvin)

Live View (Tripod mode) shooting

Utilizing Contrast-detect AF

Contrast-detect AF allows focusing on anywhere in the frame, regardless of the 51 AF points, enabling a greater variety of composition in tripod shooting.

Precise manual focusing is also easy by magnifying the desired portion in the monitor.



Contrast-detect AF

Phase-detection AF

D3X + AF-S VR Micro-Nikkor 105mm
f/2.8G IF-ED
Manual exposure, 1/160 s, f/13



It is possible to magnify the view in the monitor during Live View up to approx. 13x for accurate focus check.
(See p. 95 of D3X User's Manual)



1x

Approx. 13x

Exposure preview

- Current exposure settings can be confirmed in the monitor.
- Set Active D-Lighting to "off", as exposure cannot be previewed while it is activated.

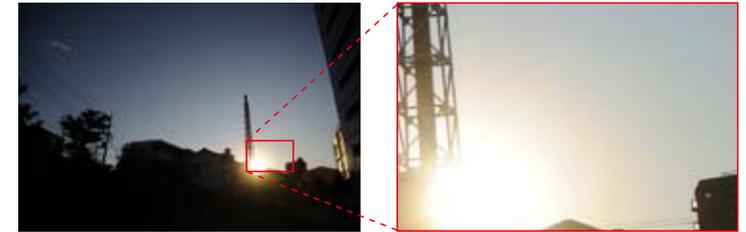


RAW mode selection

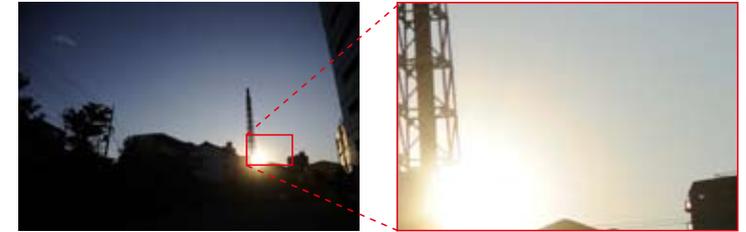
Lossless compressed file format is recommended for RAW recording

- With lossless compressed format, RAW file size can be reduced without degrading the maximum image quality. In normal shooting, this mode is recommended.

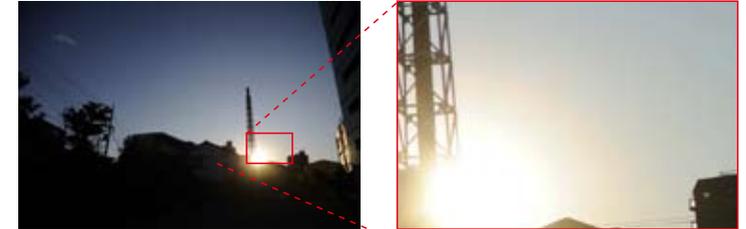
Compressed RAW



Lossless compressed RAW

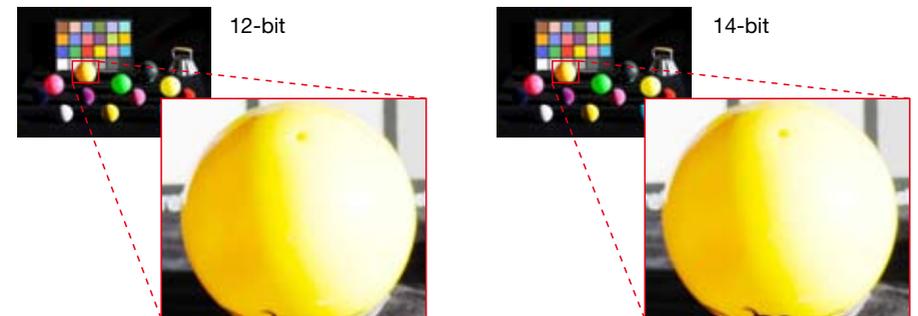


Uncompressed RAW



Select NEF (RAW) bit depth according to your needs

- 12-bit option is recommended when higher-speed recording is required in continuous shooting, while 14-bit option is recommended when picture quality is a priority.



ISO sensitivity

- Can be set between Lo 1 (ISO 50 equivalent) and Hi 2 (ISO 6400 equivalent)
- Sensitivity range: ISO 100 to 1600 in normal setting
ISO 100 is recommended when image quality is a priority

Image quality

- RAW+JPEG (FINE): Single image can be recorded in two formats to be used according to applications (e.g. RAW: stored as the original/JPEG: used for output by an art director)
- Choose "Optimal quality" option from JPEG compression menu
- Choose [RAW+JPEG] option
 - Slot 1 (RAW): Smaller-capacity memory card is recommended to protect taken images
 - Slot 2 (JPEG): Larger-capacity memory card is recommended (e.g. 32 GB per day) for efficient shooting



Picture Control

- Nikon's original system of image creation settings enables users to easily control image factors such as tone, hue, and contrast, utilizing characteristics of digital cameras.
- For details, visit this website.
<http://www.nikon-image.com/jpn/event/special/pcs/index.htm>
- This system becomes more effective by freely choosing each Picture Control to make the most of its characteristics according to subject and scene situations.
=> ex. Fruits were taken using Landscape



Neutral



Vivid



Landscape

Optional Picture Control Landscape can be downloaded from Nikon's website (free).<http://nikonimglib.com/opc/>

Active D-Lighting

- Reproduces brightness as you see it to create appropriately exposed picture with natural contrast, while compensating highlights and shadows.
- Effective for outdoor shooting where a large brightness difference makes light control difficult.
- Choose the levels from among "Auto", "Extra high", "High", "Normal", "Low" or "Off", prior to shooting.
- Options set at the time of shooting other than "Off" can be changed afterward using Capture NX 2. (Not possible if "Off" was set.)
- "Off" is recommended when brightness can be easily controlled such as in a studio.



Active D-Lighting "Normal" was applied



D-Lighting was applied after the shot



"Shadow Adjustment", a Quick Fix option of Capture NX 2, was applied after the shot

Image transfer

- For use/settings of the Wireless Transmitter WT-4, visit the following Nikon website:
https://recept.nikon-image.com/nps/solution/data/01_wt_4.htm
- Ad-hoc mode is basically recommended for secure transmission to a designated computer.

To capture portraits emphasizing a soft image

AF-S NIKKOR 50mm f/1.4G



AF-S NIKKOR 50mm f/1.4G

Feminine gentleness can be impressively expressed by effectively utilizing background blur. Brightness is naturally balanced across the entire image, and skin texture is finely reproduced to enhance the soft image.



AF-S NIKKOR 60mm f/2.8G ED

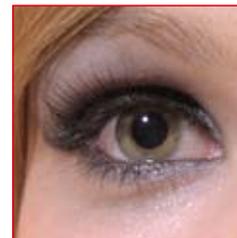
Advantages of AF-S NIKKOR 50mm f/1.4G

This Nikon FX-format normal lens with built-in SWM enables quiet AF operation. Featuring fast maximum aperture of f/1.4 and rounded diaphragm opening it delivers beautiful background blur. Also, high reproduction capability throughout the entire frame provides clear images from infinity to the closest distance. In portrait shooting, skin tones and shadows are accurately reproduced to realize soft and natural results.



To capture portraits emphasizing a sharp image

AF-S Micro NIKKOR 60mm f/2.8G ED



The cool image is emphasized by reproducing eyes clearly utilizing the high resolving power of the lens.



AF-S NIKKOR 50mm f/1.4G



AF-S Micro NIKKOR 60mm f/2.8G ED

Advantages of AF-S Micro NIKKOR 60mm f/2.8G ED

While offering a wide range of reproduction ratios up to 1:1 life size, sharp images are ensured throughout the range even at the maximum aperture. Nano Crystal Coat provides clear images by effectively reducing ghost and flare. Beautiful image blur makes the lens suitable not only for macro photography but also a wide variety of shooting such as portraits and landscapes. Especially in portrait shooting, sharp images can be captured by solidly reproducing specific features such as the eyes.



PC-E NIKKOR 24mm f/3.5D ED: shifting



D3X + PC-E Micro NIKKOR 24mm f/3.5D ED using the shift function
Manual exposure, 1/125 s, f/10 (images were trimmed)

PC-E Micro NIKKOR 45mm f/2.8D ED: tilting



D3X + PC-E Micro NIKKOR 45mm f/2.8D ED using the tilt function
Manual exposure, 1/200 s, f/3

PC-E Micro NIKKOR 85mm f/2.8D: tilting



D3X + PC-E Micro NIKKOR 85mm f/2.8D using the tilt function
Manual exposure, 1/20 s, f/8

PC-E NIKKOR 24mm f/3.5D ED

Utilizing an ultra-wide angle of view of 84°, the picture was taken as if looking up at the building from the ground. Shift mechanism places the camera parallel to the subject to correct distorted perspective in the frame including windows in a grid pattern.



PC-E Micro NIKKOR 45mm f/2.8ED

By tilting the lens so that the subject plane is parallel to the camera's image plane, focus is achieved across the entire subject.



PC-E Micro NIKKOR 85mm f/2.8D

While utilizing telephoto effect with 85mm focal length and shallow depth of field with fast maximum aperture of f/2.8, the picture was taken by tilting the lens so that only a specific part of the subject is in focus to emphasize depth.



Effective use of Capture NX 2 -1-

Apply “Unsharp Mask” only to eyes



Result
Applying “Unsharp Mask” to eyelashes makes eyes clearer.



Original



“Unsharp Mask” applied to eyelashes



“Unsharp Mask” applied to eyelashes, “Contrast/Brightness” to eyes



Original
Although subject's eye is in focus, the image lacks sharpness.

Effective use of Capture NX 2 -2-

“Noise Reduction” makes skin smoother



Result
Using Selection Control Points, “Noise Reduction” was applied to skin to reproduce smooth texture. Because adjustment was applied only to the selected area, lips and eyes remained clear while skin became smoother. “Auto Retouch Brush” was also used to remove moles.



Locate a Selection Control Point on the subject's face, reduce the size and select the skin area to be adjusted. After producing the first Control Point, make three duplicated points and locate them as shown above. Apply minus (-) effect of the “Selection Brush Tool” to areas where adjustment is not necessary including the hair.



Original
Skin texture looks fine but lacks smoothness. Some moles are found.

Reflector effect after shot -1-: reducing shadows on the face



Result
Selection Control Points and D-Lighting brightened the intensely shaded area only. The resulting image was as if taken using a reflector. Natural expression was reproduced without dazzling the subject's eyes with a reflector.



Locate a Selection Control Point on the shaded subject's cheek. Areas where D-Lighting should be applied are colored in green. Next, apply minus (-) effect of the "Selection Brush Tool" to the background where adjustment is not required.



Original
Fine weather at the time of shooting caused intense shadow on the subject's face which was not controlled because a reflector was not available.

Reflector effect after shot -2-: brighten only a specific area



Result
Selection Control Points and D-Lighting brightened specific areas only as if a spotlight was used. Even an extremely small area can be brightened where actual lighting cannot be controlled.



Locate Selection Control Points on dark areas of the cuisine. Areas where D-Lighting should be applied are colored in green. Apply minus (-) effect of the "Selection Brush Tool" to other areas where adjustment is not required.



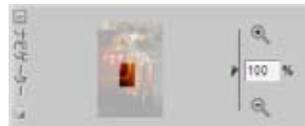
Original
It is almost impossible to brighten a desired area only by using flashes or reflectors without affecting other areas.

“Auto Retouch Brush” removes unwanted details

Dust spots photographed on an image can be easily removed with a mouse click and stroke to achieve more natural-looking results. This tool can also be used to remove other unwanted objects within the frame.



Result
Even small reflections were removed simply and accurately.



Original
Surrounding reflected illuminations photographed.

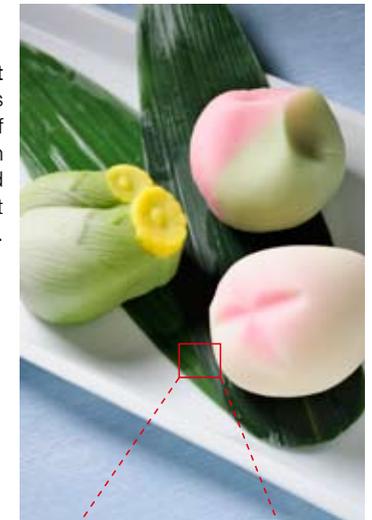
Enlarge the image size to 100% to make adjustment easy. With a mouse click on the desired point, a circle showing the size turns pink. Releasing the mouse button removes the unwanted reflection.

Result
Even small reflections that could not be prevented were removed simply and accurately.



Original
Some small reflections were not prevented even with wide-ranging lighting angles.

Result
After the defect was removed, the leaf looked perfect with naturally connected veins as if no defect had ever existed.



Original
A serious defect was found on a bamboo leaf.

