Introduction

The focus of this publication is the design and proper maintenance of windbreaks for rural properties and farms. Several topics will be addressed, including an explanation of how windbreaks work and windbreak design and management. Special consideration is given to determining windbreak density and spacing problems.

A windbreak is a barrier that is used to reduce and redirect wind. A typical windbreak consists of trees and shrubs; however, other materials, such as grasses and fences may also be incorporated.

How a Windbreak Works

As wind blows against a windbreak, air pressure builds up on the side towards the wind, and large quantities of air are forced over the top or around the sides of the windbreak. The resulting reduction in wind speed modifies the climate in the sheltered area. A windbreak's effectiveness is determined by many factors, including the species of materials being used, the height and density, and the orientation and continuity.

Height

The height of a windbreak determines the area of protection. In a windbreak with multiple rows, the height of the tallest row determines the height factor.[1]

On the windward side of a windbreak (the side toward the wind), wind speed reductions are measurable upwind for a distance of 2 to 5 times the windbreak height. On the leeward side (the side away from the wind), wind speed reductions can reach up to 30 times the windbreak height. The extent of wind speed reduction is greatly influenced by the windbreak's density.

Density

A windbreak's density is defined as the ratio of the solid portion of the barrier to its total area. The more dense the barrier, the less wind that passes through it. However, with very dense windbreaks, low pressure build on the leeward side, creating turbulence and reducing protection downwind. Adjusting a windbreak's density helps establish specific areas of protection and wind flow patterns.

20 MPH with 40-60% Density					
Height Distance	5	10	15	20	30
MPH	6	10	12	15	19
Open Wind Speed	30%	50%	60%	75%	95%

[1] On the windward side, wind speed reductions are measurable upwind for a distance of 2 to 5 times the height; downwind 30 times the height.

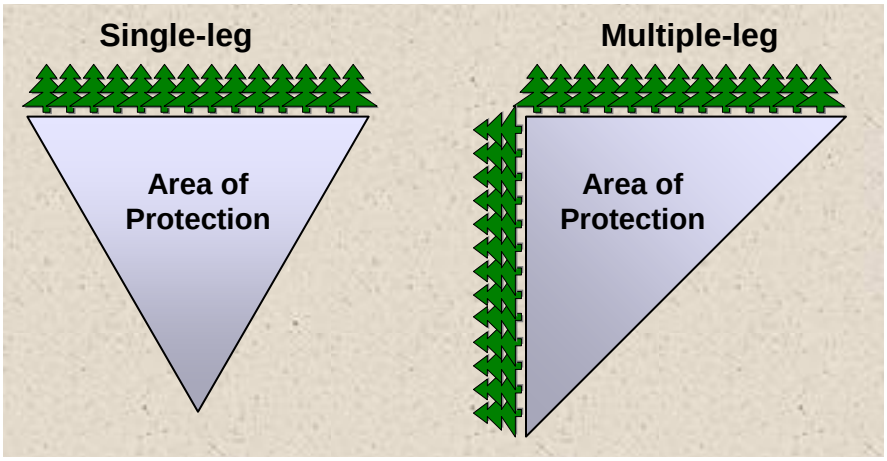
20 MPH with 60-80% Density					
Height Distance	5	10	15	20	30
MPH	5	7	13	17	19
Open Wind Speed	25%	35%	65%	85%	95%

When determining wind break density, keep in mind the particular objectives you want to meet. If the goal is to distribute snow across a field, a density of 25-30% is often most effective. Conversely, if the objective is to catch and store snow in a particular area, a general rule of thumb is to use a multiple-row windbreak with 60-80% density. To provide downwind protection and deter soil erosion, densities of 40-60% are generally most effective.

Together, height and density ultimately determine wind speed reduction. The length of the protected area usually increases as the density increases. An exception occurs when density is below 20% or above 80%. Below 20% no useful wind speed reduction is achieved. Above 80%, excessive turbulence can reduce effectiveness.

Orientation

While orientation ultimately depends on the objective to be met, windbreaks are usually most effective when oriented perpendicular to the prevailing winds. It is important to note, however, that protection is not equal for all areas on the leeward side of a windbreak. As wind direction changes, the protected area decreases. Multiple-leg windbreaks can provide greater protection than single-leg breaks.



Length

While a windbreak's height determines the amount of protected area downwind, the length determines the overall area of protection. Generally speaking, for the most efficiency, a windbreak's length should exceed its height by a ratio of at least 10:1.

Continuity is also a factor. Gaps create areas on the downwind side in which wind speeds can exceed open field wind velocities. Thus, gaps diminish windbreak effectiveness.

Windbreak Design

Windbreak design is largely determined by the specific objectives to be met. However, there are some general principles and guidelines that apply to the design of any good windbreak.

A typical windbreak consists of dense conifers to reduce wind velocity, tall broadleaf or conifer trees to extend the protected area, and dense shrubbery to help stop snow accumulation. Density is also an important factor, as described in the previous section. This section will focus on location, number of rows, species, and spacing.

Location

As previously explained, maximum effectiveness is typically achieved by orienting windbreaks perpendicular to the prevailing wind. Also, single-leg vs. multiple-leg break designs affect different areas, as also previously explained.

Field windbreaks that are meant to reduce soil erosion are typically single row breaks planted parallel to cropping patterns. Windbreaks that are meant to protect crops from damaging winds are typically located on the south and east sides of fields.2

Because height plays an important role in determining the extent of protection, it also plays a role in determining location. If snow deposition is a factor, the windward tree rows should be planted 150-250 feet upwind of the area needing protection.

Number of Rows

Typically, a windbreak design should be composed of windward rows of dense conifers or shrubs, interior rows of conifers or tall broad leaf trees, and leeward rows of conifers or shrubs. Of course, a windbreak's composition is affected by the objectives and the amount of space available. Surrounding area is also a consideration. If the area is open and unobstructed, additional rows may be needed.

As a general guideline, windbreaks for home or farmsteads should consist of 4-10 rows, with 2-4 rows consisting of dense conifers; for livestock, 4-10 rows, with 3-6 rows of dense conifers; for fields, 1-2 rows, with 1 row of dense conifers.

Species

Maximizing the diversity of species in a windbreak helps to reduce the risk of insect, disease, or environmental problems. Species selection will be affected by temperature zones, precipitation amounts, and soil composition.

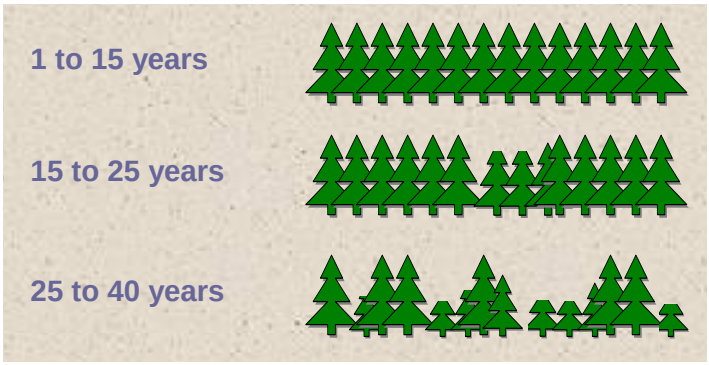
Spacing

[2] Depending on winter weather patterns, you may need to consider alternative locations.

Spacing between trees and rows has a major impact on windbreak health and longevity. Improper spacing can result in serious problems.

Breaks planted on very narrow spacings often results in a decline in effectiveness within 40-50 years. As the closely planted trees grow, competition for critical moisture and light stresses the trees and causes decline.

Other problems associates with close spacing include loss of interior foliage caused by shading, stunted growth, insect infestations, and disease.



Generally speaking, the wider the spacing in a windbreak, the longer it will thrive. This assumes, of course that trees are not so widely spaced as to allow large enough gaps to decrease effectiveness. If you want to build an effectively break quickly, you can space trees narrowly; however, be prepared to remove trees or even entire rows as the trees mature.

Snow Management

In parts of the country that experience high winds and blowing snow, windbreaks can play an important role in snow management. They can confine snow to a small area or spread it out over a large area, depending on your objective. If your goal is to capture snow and confine it to a small area, the windbreak should have high density and multiple rows. If your goal is to distribute snow evenly across a field, the windbreak should be tall and porous.

Benefits of Snow Management

Effective snow management can offer many benefits. A properly designed field windbreak provides additional moisture for crop fields and range lands by depositing snow in those areas. It can also reduce spring runoff due to unfrozen soil beneath the snow cover. Dense, multiple-row windbreaks can alleviate the need to plow roads and driveways by restricting snow to a designated area and, depending on location, can help provide adequate water for summer use by livestock.
Field Windbreaks

Captured snow can provide critically needed moisture for crops and improve crop yields. For example, crops of winter wheat benefit by protection from desiccation and increased moisture provided by the snow on the fields.
Field Windbreak Design

The design and location of a field windbreak will depend on what you are trying to achieve. If the break will be used solely for even distribution of snow across a field, the density should not exceed 40%, and a single row of tall, deciduous trees spaced 15 to 20 feet apart should be ideal. The break should be positioned perpendicular to the prevailing wind. The porous design of the break helps to distribute snow evenly, while snow blowing over the tops of the trees falls out of the air stream as it reaches the leeward side of the break.

If a field windbreak is too dense, it can cause heavy drifting, which can cause excessive moisture in the area adjacent to the windbreak and delay field operations. If an established field windbreak is too dense, it is well worth the time and effort to selectively prune or remove trees. Pruning the lowest branches provides gaps that help evenly distribute snow. However, it is important to keep in mind that pruning can often stimulate sprouting from the base of a tree and increase underlying vegetation, both of which ultimately increase the density of the windbreak. Thus, pruning must be kept up at regular intervals.

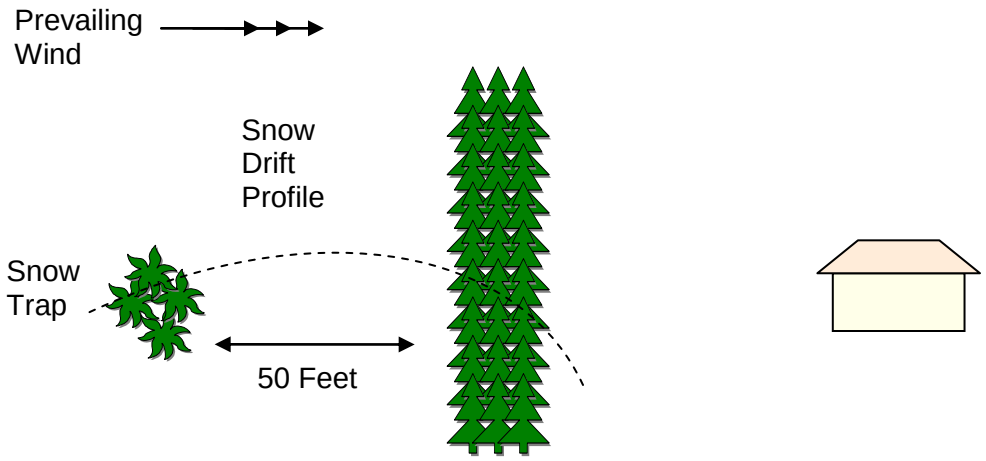
If wind erosion is a problem, a break with a density of less than 40% will be ineffective. Increasing the density will help to curtail erosion, but will result in larger drifts. In such a situation, it is often best to employ carefully chosen conservation practices.

Farmsteads and Feedlots

Windbreaks for farmsteads are usually meant to keep driveways and work areas accessible and minimally impacted by snow. Feedlot windbreaks keep feeding and food storage areas accessible and provide protection for livestock from strong winds and driving snow.

To provide adequate room for drifting snow, these windbreaks should be positioned at least 150 feet from the areas to be protected. The ends of the break should extend at least 100 feet beyond the area to be protected. Proper drainage is also an important consideration, as melting snow will result in runoff.

A typical farmstead or feedlot windbreak will consist of one row of shrubbery, two to three rows of conifers, and one to two rows of tall deciduous trees. In areas of particularly heavy snowfall, additional rows may be necessary. Snow traps can also be incorporated to trip snow before it reaches the windbreak, as shown in Figure 3.



Managing a Windbreak

Windbreak management is as crucial, if not more so, than location and design. Proper management increases the windbreak's effectiveness and longevity. Improper management results in decreased effectiveness and a shorter life span. There are several points to consider, including the care of new trees, weed control, protection from insects and disease, fertilization, and corrective pruning. A good plan for windbreak design will anticipate these needs and incorporate appropriate measures.

New Trees

One of the most critical concerns when planting new trees is adequate moisture. Good soil moisture is particularly important during the first growing season, and careful attention in the first year can help ensure good root growth and increase the chances for survival.

Items	Description	Cost
Herbiquat	Weed control	1,200.50
Pestban	Termites and ants	2003.99
10-10-24	Fertilzer	738.02
		19.99

Weed control is also critical to the health of new plantings. Weeds compete with the new trees for moisture, light, and soil nutrients. Weeds allowed to grow between tree rows serve as a source for new weed growth within the row. Thus, it is important to control weeds both within and between rows.

Weed Control

Weed control is important throughout the life cycle of a windbreak, but most critical in the early years. As trees and shrubs mature they fare much better, but still compete with weeds for live-sustaining elements.

Shallow cultivation when weeds are small is often the most effective method of weed control, particularly around new plantings. It is very important to avoid damaging tree roots. Cultivation should be stopped by late summer.

Fertilization

Generally, fertilization is not necessary. If you suspect that your soil is lacking critical nutrients, have it tested before applying fertilizer. Over-fertilization or unnecessary fertilization can be damaging to trees as a result of rapid growth. When the trees grow too quickly, their leaders are weak, resulting in reduced density. Fertilization too late in the season can cause injury by delaying the onset of dormancy.

Diseases and Insects

Careful design and management should keep disease and insect problems to a minimum. Invasion by insects or disease is usually assisted by stressful conditions among the trees. Stress can be caused by competition with weeds, poor moisture, and competition among trees caused by poor design.

The key to keeping a windbreak healthy against disease and insects is early detection. Inspect your windbreak frequently and note and signs of stress, disease, or infestation. Treat all problems quickly. Consult your local extension office for information about the appropriate and most effective treatment methods.

Structural Management

The structure of a windbreak is as critical as the health and vigor of its trees and shrubs. The combination of different types of trees and their spacing is crucial to a windbreak's success. Light and shade requirements, expected tree height, density of leaves or needles must all be considered and should be worked into the initial plan and design.

However, even the best planned windbreak will require structural management as it matures. As trees grow, their relationships to one another change, sometimes requiring action on your part. However, good planning should keep such instances to a minimum.

Density Changes

As windbreaks mature, they may become too dense or not dense enough to meet your planned objectives. If a break becomes too dense, careful and selective tree removal can often remedy the problem. Windbreaks that are not dense enough can require interplanting and underplanting to fill in the areas that are ineffective. This can be extremely difficult to accomplish successfully. Careful consideration of density during the planning stage can save a great deal of trouble and difficult solutions later on.

Pruning

It is absolutely crucial to remember that windbreaks are designed to be functional. Many people diminish a break's effectiveness by trying to make it look like a formal landscape element. Pruning, except when absolutely needed, can damage a windbreak by decreasing its density. Keep in mind that the effectiveness of a windbreak is dependent on the overall structure – all the trees and shrubs working together.

Judicious pruning is necessary when ice, wind, or animals cause branch damage. With conifers, pruning is important when the central leader is damaged and lateral branches grow to compensate. To know when pruning is necessary, it is important that you inspect your windbreak regularly.

Summary

With good planning, design, and management, a windbreak can be a useful and valuable part of your property or farm. Energy conservation, protection of structures, snow management, and field soil enhancement can all be achieved with a properly designed windbreak.

When planning a windbreak, make sure you clearly define the objectives you want to meet and plan accordingly. Remember to keep a global picture in mind and think about how different species, heights, combinations, and spacing can all play a role in windbreak effectiveness and longevity.

After planting your windbreak, be diligent in your maintenance to help ensure healthy growth at an appropriate pace. Conduct frequent inspections to ensure that any problems are dealt with early and with proper action. With good planning and maintenance, your windbreak should remain healthy and effective for many, many years. Be willing to put the time and effort into the planning stages, and you will reap rewards for many years to come.

The Bottom Line

It’s hard to get politicians to agree on anything these days. But five years ago this month, President George W. Bush, flanked by Republican and Democratic members of Congress, signed the reauthorization of the Magnuson-Stevens Fishery Conservation and Management Act (MSA).

This moment of bipartisanship was good news for our nation’s marine species and those who rely on them for a living. Lawmakers agreed to both stop and prevent overfishing by incorporating strong, new conservation measures into law, namely the requirement to set science-based, enforceable catch limits on all federally managed ocean fish.

Many stakeholders had insisted this could never be done, and if you look at the history of the MSA, you will understand the skepticism. We can thank the foresight and leadership of the White House and members of Congress, particularly President Bush and the late Sen. Ted Stevens of Alaska, for this accomplishment. They made sure that the MSA reauthorization included firm deadlines for mechanisms to end overfishing. These requirements drove managers from the National Marine Fisheries Service and the eight regional fishery management councils to work together to get the job done.

Now, five years later, we are on the cusp of having science-based limits around the country that guard against overfishing. While this will be a truly historic management milestone, we must remain vigilant to ensure that our stocks continue down the path toward long-term sustainability.

As you read the news about the latest debates in Washington, just remember that there are times when we can come together for the common good.

Let’s keep working for the well-being of our nation’s ocean fish populations and fishermen by continuing to support the MSA’s conservation requirements.

Mmicro-copter
We have two radio-controlled cars right now, clones of each other. Nick has been using these modified remote vehicles to photograph lions from the ground—basically trying to get a lion’s perspective at life in the pride.

Normally you’d have a photographer running around in a 4×4, and you’d get the same perspective as you’re relegated to in the safety of your vehicle. Nick is trying to push the envelope not only in the air, but also on the ground. So we have modified a small, off-the-shelf remote-controlled car—a kind of dune buggy that you can purchase in a hobby shop. But we’ve equipped it with a video camera, still camera, infrared lights, all sorts of things to try to shoot lions from their perspective.

How’s that working out?

Really well. Nick made some unique and interesting pictures of cubs and lionesses. He’s able to slowly creep the electric car up to them, allow the lions to get used to the presence of the car and camera rig, and then start making photographs. The car’s been modified: It’s got a fiberglass cover on it to protect the camera package, the wheels, and the electronics—to make it a little bit more lion proof. Lions are just big, inquisitive cats, and the remote car makes for a great toy for inquisitive cubs.

We’ve changed the gear ratio, so that instead of a fast, little electric cart that was meant to go around a race course at high speeds, it creeps and moves very slowly and cautiously into the lions’ area. Nick is able to see through the camera via a video feed to a laptop and use that live video feed to see what he is photographing. He can remotely focus, change exposure, and completely control the camera functions, as if he were holding the camera in his hands.

And the vehicle can traverse all kinds of terrain?

It does to a certain point. This is a little, four-wheel-drive hobbyist race car that has been modified by Walter Boggs in our photo engineering department. Off the shelf it probably cost about $600, but with six months’ worth of development and reengineering, it’s now a camera platform for Nick’s imagination. It’s been tricked out well beyond what went into the micro-copter, to the point of it not being recognizable as a little dune buggy. But the small platform has its own problems—ground clearance and power—because it’s just a modified little race car with a beefed-up suspension.

So when Nick returns to Africa in January, we’re building him something more robust that’s going to handle the terrain and the tall grass much better. It’s going to be a heavier unit, more in the 40-pound range, and it will have tank tracks on it, rather than four wheels. It’s a solid metal platform with all the electronics protected inside, and the

camera mounted on top. So if a big, cranky male lion decides it's going to eat it, maybe, just maybe, the vehicle will survive the attack.

A lot of the equipment used by National Geographic for photographers in the field is developed by engineers in a special workshop in Washington, D.C., who report to you. Could you tell a little about that process?

You're also using camera traps for Nick's lions story. Is there any new technology involved in those?

Camera traps are pretty standard fare on most NGM mammal stories. Nick is the master and uses them very effectively. Something new for us, however, is that we have incorporated live video feed off some of the camera traps.

Nick was trying to shoot the wildebeest crossings on the Mara River in the northern Serengeti. Instead of using passive camera traps, where the animal triggers the camera by crossing an invisible beam, essentially taking its own photograph, he needed and tried something different for temperamental wildebeest during their migration.

With wildebeest, you never know when they will actually cross the river. They keep walking up and down the riverbank, waiting for some invisible sign to trigger the mass river crossing. If you set up set passive camera traps in this type of scenario, the wildebeest would just burn through compact flash cards, regardless of how big a card you have. Kenji Yamaguchi and Dave Mathews, both with our photo engineering department, designed and built a new type of trap, so Nick and Nathan Williamson could set up camera traps with a view of the river crossing—equipped with live video feed. That allowed them to drive off a short distance, monitor the camera traps remotely, and actually see what the camera was seeing.

Then when the river crossings start, with the live video feed in the camera they were able to trigger the multiple still and video cameras they had set up to capture the wildebeest jumping off the cliffs into the river and swimming across—while actually viewing what was going on in the camera viewfinders. That's the first time we've used camera traps like that.

Does Nick have Mission Control back in his vehicle, with a lot of monitors to track the various camera platforms and equipment?

Yes, he does. The 4×4 that Nick and his team use on the Serengeti is totally tricked out with dual alternators and extra batteries. It has plugs everywhere to power and recharge all the cameras and electrical devices—electricity is in very short supply while tent camping in the African bush. Thus the truck is the sole means to power all things digital.

It's quite sophisticated. All the video displays for the remote cameras and the micro-copter are built into waterproof and dust-proof Pelican cases, which can be plugged directly into outlets in the truck. And one display can view multiple devices with the use

of control switches built into the boxes. The different video feeds coming out of camera trap one, two, three, etc, can be switched on the fly. So they are ready to go, and depending on where the wildebeest cross, they're ready to shoot with the flip of a switch. They just have to be within distance to pick up the video feed off the cameras.

What technologies are you using to shoot at night?

Lions are nocturnal predators; trying to photograph them without disturbing them and their prey is a challenge. If you turn on a big spotlight to create enough light to photograph, what happens? You may be able to see the lions, but the prey animals can also see the lions, thereby changing the behavior of all involved in the hunt. So you want to be able to photograph the lions without disrupting their natural behavior, and that means switching to thermal and infrared photography.

We've modified normal digital cameras to shoot infrared. If you remove the anti-aliasing and infrared filters that are standard on every digital camera sensor, you have a camera that's capable of gathering a broader spectrum of light than is possible to see with the human eye. Camera manufacturers constrain sensors to capture only visible light. We modify and replace the daylight-bias filtering with an infrared filter so that the camera captures only the infrared spectrum. That camera, coupled with strobes or spotlights filtered for infrared, allows you to photograph in the dark without disturbing the natural behavior of the animals.

National Geographic has a long legacy. Hasn't a lot of this know-how been developed over the years for many magazine stories? Do you build on that legacy of figuring out what off-the-shelf technology pieces and parts are available, and take all your experience over the years and build something new for a story?

Every time a photographer gets ready to go out into the field to solve a visual problem, capture an image that has never been captured before, we apply our collective years of experience, both successes and failures, with the newest technologies, to create the custom tools needed to make great photographs.

Tips for Long Word Documents: Style and Formatting

Microsoft Word offers several features that will help you give even the lengthiest of documents a professional appearance. These tools and options make it easy to manage long Word docs.

Formatting Paragraphs

Formatting paragraphs can be done with just a few clicks of the mouse. You can easily format a single paragraph or all of the paragraphs in a long Word document. To format a single paragraph, place the cursor anywhere in that paragraph. To format all of the paragraphs in the document, click the Select drop down arrow in the Editing group on the Home tab of the ribbon in Word 2007. In Word 2003 or earlier, go to the Edit menu and click Select All. You can also use the keyboard shortcut Ctrl+A.
In Word 2007, go to the Paragraph group on the Home tab of the ribbon. Click the Paragraph Dialog launcher in the bottom right.

In Word 2003 or earlier, go to the Format menu and click on Paragraph. The Paragraph dialog box will open. In the Paragraph dialog, you can format the alignment, add indentations or change line spacing. For example, if you have created a long Word document and realize that you want to indent the first line of every paragraph, simply select the entire document and launch the Paragraph dialog. In the Indentation section, click the Special drop down arrow and select First Line.
In a long document, keeping paragraphs together improves readability and makes the document easier to manage. Click the Line and Page Breaks tab of the dialog to use formatting features such as Widow/Orphan control, which prevents the first line of a paragraph from being alone at the bottom of a page, or a last line from ending up by itself on a new page.

Format Painter

Another feature that makes it easy to format a long Word document is Word's Format Painter. You can use the Format Painter to copy the style of a line or paragraph in a Word document and apply it to other sections of the document. To use the Format Painter, click the line in the Word document that contains the formatting you wish to apply elsewhere. Click the Format Painter button, which is in the Clipboard section of the Home tab of the ribbon in Word 2007, or on the Standard toolbar in Word 2003 or earlier.
The cursor will turn into a paintbrush. Select the text to which you want to apply the formatting. When you release the mouse, the style will be applied.

Styles

To apply a style to a specific paragraph, place your cursor anywhere in the paragraph. Go to the Styles group on the Home tab of the ribbon in Word 2007. Click the Styles dialog launcher to open the Styles dialog box. In Word 2003, go to the Format menu and click on Styles and Formatting.
Select an option from the Available Styles presented, or click the Show drop down arrow and select All Styles to choose a style from all the available formatting options.
To apply a style to an entire document, no matter how long, you can either select the style prior to creating the document, or select the entire document and then select a style.
There are dozens of styles from which to choose. Learn about Word's Outline document style by reading How to Create an Outline in Word. If you cannot find a style that suits your document, read Creating and Saving Your Own Quick Style and make a custom style.

Learn How to Insert Microsoft Word Table of Contents in Your DocumentsIf you need to create a Table of Contents in Microsoft Word for a project you are working on, this tutorial will help you. In this tutorial, you will learn the options for inserting a table of contents and how to insert the table of contents.

Microsoft Word 2010

In almost anything that anyone does, organization is important. It helps us to do a lot of things in a short amount of time. This is why the table of contents is very helpful when included in documents that you make. With Microsoft Word, creating the table of contents can be done either manually or by making use of the tabs found on the menu on

the upper part of the blank document. In this tutorial, I will show you how to create Microsoft Word table of contents using version 2010

Making a Table of Contents Manually

You can make the table of contents manually by typing the entries that you want to include and then using the tab bar for spacing until you reach the other end of the page. That's where you can put the corresponding page of the entry. You can also type dots instead to point the content to the page. You can continue to do this until you have added all of the entries for the table of contents. However, if you use this option, you will have to do everything manually when you need to update it.

Making a Table of Contents Automatically

Creating a table of contents automatically is probably the fastest and easiest way to do this. To make your table of contents, you utilize the heading styles to the contents that you want included. The heading styles range from Heading 1 to Heading 9. Choose the text that you want to come out in the table of contents. Choose from among the styles available in the "Styles" group which you can find on the "Home" tab of your Word 2010 menu.

If you can't find the style that you wish to use, click the arrow so that the Quick Style gallery will be expanded. If you don't find it in the Quick Style gallery, open "Apply Styles" by pressing CTRL+SHIFT+S. Then you can choose from the styles that you find under "Style Name".

If you want to, you can even customize your own heading styles. After you have applied the heading styles, you can pick a design and create the finished table of contents. As you make your table of contents, Microsoft Word looks for headings with the particular styles, groups them according to the heading level, positions the page numbers, and shows the table of contents in the text.

Making a Table of Contents from the Gallery

When you've decided and marked the entries that you want to include in your table contents, you are now ready to create it. Click at the beginning of the document because that's where you'll be placing your table of contents. Click on the "References" tab and you will see the "Table of Contents" group. Click that and choose which among the styles available you want to use. Click on the style of your choice. If you want more specific options, go to "Insert Table of Contents" and the "Table of Contents" dialog box will open. From there, choose how you want to customize your table of contents.

Making a Custom Table of Contents

Click the Table of Contents on the Reference tab then click the "Insert Table of Contents". When you see the Table of Contents dialog box, you can then do the following steps.

- Go to “Show levels” which is found under “General” and type in the number of heading levels you want displayed on the table of contents.
- Choose a different format by going to the “Formats” list and you will be able to change the entire appearance of your table of contents. If you want to see how your choice will look, go to “Print Preview” or “Web Preview”.
- Go to “Tab leader” list and with the options there you will be able to change the kind of line that will show between your entry and the corresponding page number.
- Click “Modify” if you want to alter how the heading levels are displayed. Go to the “Style” dialog box and click on the level you’d like to change and click on “Modify”. You can change the font and its size as well as the amount of indentation in the “Modify Style” dialog box.

If you want to utilize the custom styles for table of contents, click on “Options”. Look for the style that you applied to the headings of your document under “Available Styles”. Under the “Table of Contents level”, beside the style name, choose from 1-9 to designate the level that you want represented in the heading style.

You can also pick a table of contents to fit the type of document. If you are going to produce a printed document, make a table of contents which has both the heading and the page number where you can find the heading. The readers can easily go to the page they want. For online documents, you can use hyperlinks for the entries in the table of contents. This way, the readers can just easily click on the entry at the table of contents page.

Updating the Table of Contents

If you want to make changes in your table of contents, do so by clicking on the “Update Table” which you can find on the Table of Contents group found on the References tab. You can either “Update the page numbers only” or if you want to redo the entire thing, “Update entire table”.

Deleting a Table of Contents

You can easily delete a table of contents by clicking on “Remove Table of Contents” which you can find under Table of Contents in the Table of Contents group on the References tab.

Become an Advanced Microsoft Word User

Don't waste your time in Microsoft Word messing around with font sizes and italic type - this word processor has so many powerful features waiting to be used.

Getting Started with Microsoft Word

Microsoft Word is one of the most popular desktop computer applications in the world; students, secretaries, executives, politicians and even the military use it. Designed with one simple aim in mind – enabling you to create the perfect document – Word is available either on its own or as part of the Microsoft Office suite. There is even a version available for Mac OS X.

Thanks to the software's quality and longevity, you will find that older versions of the software are still in use. If you have recently switched from Word 2003 or are a complete beginner, the menus in Word 2007 and 2010 are where you should be starting in order to gain familiarity with the product. Previews are available for many commands.

Rather than create documents from scratch (something an advanced user might need to do) Office Online offers a range of document templates that enhance the selection already available in Word.

- Locating MS Word 2003 Commands in MS Word 2007
- Microsoft Word 2007 Keyboard Tricks
- Compatibility Between Microsoft Word and Open Office Writer: Advanced Functions
- Ten Great Certificate Templates for MS Word
- Certificate of Appreciation Template in Microsoft Word For Awards
- How to Get Avery Templates on Microsoft Word

Maximize Your Page

In addition to these basic steps, anyone with an interest in using Microsoft Word long term or for creating a variety of different document types should be aware of how headers and footers can be used to maximize the use of the printed page and include page numbers, section titles and footnotes, for example.

- Section Breaks and Different Headers and Footers
- How to Create Headers and Footers in Microsoft Word 2003
- Working with Footnotes in MS Word 2007

What Intermediate Users Should Know

After you have been using Word for a few weeks, you will probably want to learn some key additional functions, mainly relating to page formatting. These are useful building blocks for more advanced processes such as creating formatted documents from scratch,

so it is worth taking the time to understand headers and footers, section breaks and tabs and using borders in Microsoft Word.

Basic and intermediate users should also be able to change fonts and make other text-based formatting changes such as applying styles or simply switching between normal, bold, italic and underlined type.

- How to Set Tabs in Microsoft Word
- Using Borders and Lines in Microsoft Word 2007
- Using Borders in MS Word
- Free Sources for Downloading MS Word Borders
- Hate Word's Default Font? Change It to Something Else!
- How to Load New Fonts into MS Word
- Download Free Fonts for Microsoft Word
- Where to Find Great Cursive Fonts For Microsoft Word

Insert and Improve

As you build your repertoire of Word-based skills, you will find that the software features a wide selection of great options. For instance, rather than stick to the standard dull header format, why not take advantage of WordArt to add some color and flair to the document?

Meanwhile if you are planning to insert images into your Word project, the text can be instructed to wrap around the images, enabling you to maintain a smooth flow throughout the document. There are also tools available for inserting symbols, accents and watermarks.

There is more to Word than inserting images, however. You might import a PDF file, open a document from another format (such as Microsoft Works), or even scan a document directly into Word.

- Need Some Flair in Your MS Word Document? Try Adding WordArt!
- Add Clip Art Borders to Microsoft Word Documents
- Inserting Watermarks Using Microsoft Word 2007
- Inserting Captions in Microsoft Word 2007
- Wrapping Text Around Images in Microsoft Word 2007

- Learn How to Insert Microsoft Word Table of Contents in Your Documents
- Put Your Adobe Files in Microsoft Word
- How to Scan a Document from a Document Scanner into Microsoft Word
- Opening Microsoft Works Files in Word
- Positioning Objects in Microsoft Word 2007

Creating a Document with Character

You would expect all of the usual characters and punctuation on your keyboard to appear in Word, but about foreign language characters, accents, umlauts and even copyright symbols?

There are various ways that you can incorporate these into a Word document, from creating keyboard shortcuts to inserting them from the appropriate menu.

- Shortcuts for Typing Accent Marks in Microsoft Word
- Inserting Symbols into Microsoft Word
- Insert a Copyright Symbol in Microsoft Word

Create Your Own Word Documents

With the basics of Microsoft Word understood and the locations of the various templates that are available, you should be in a position to create new projects based on the available tools. Whether this means building a flyer from scratch, creating one based on a template, downloading a banner or importing all of the elements yourself depends entirely on your level of confidence.

- Creating a Calendar in MS Word
- MS Word Tutorials: Design and Print Your Own Banner
- MS Word How-To: Creating a Flyer
- Desktop Publishing Page Layouts and Setup in MS Word

Using Word as Excel

It is not all tables of contents and basic desktop publishing tasks with Word, however. Thanks to greater integration among Microsoft Office products, it is now possible to enjoy some Excel-style number crunching in a Word document.

Whether you want to create a flow chart or build a table to run regular calculations in (perhaps for invoicing), integration with Excel makes it possible. Pie charts and Venn diagrams are also possible, as is directly importing data from Excel spreadsheets.

- How to Make a Flow Chart in Word
- Microsoft Word Tables
- Adjusting the Column Width of a Word Table
- Instructions in Microsoft Word: How to Make a Line
- How to Calculate in Word Tables
- How to Create a Pie Chart Using Microsoft Word
- Working with Tables and Figures in Microsoft Word
- How to Find and Create Venn Diagrams in Microsoft Word
- Importing Excel Data into Microsoft Word 2007
- How to Create an Invoice in Microsoft Word

Advanced Tips and Tricks in Word

If you have made it this far then you are well on the way to becoming an advanced user of Microsoft Word. This really is a feature-packed suite of tools that enables you to do so much more than type a shopping list! You might want to type in Spanish, for instance, or view the underlying HTML code of your document; you might need to send a fax from Word, or perform a regular repeated task that requires a macro.

Even the most advanced Word experts are finding new ways of using the application on a daily basis – there is a lot to learn for an app that is so easy to use.

- How to Type in Spanish in Microsoft Word
- Viewing the HTML Code of a Word Document
- Guide to Using Microsoft Word 2010 Text Effects
- Sending Faxes From Microsoft Word
- Macro Creation in Microsoft Word 2007
- Microsoft Word: Creating Forms