

Resistance of Plants to Deer Damage

Damage to ornamental plants by white-tailed deer (*Odocoileus virginianus*) is on the increase. This is associated with (1) increasing deer abundance, (2) human population shifts to rural and suburban homesites, (3) the maturing of abandoned agricultural lands into deer habitat, (4) landowner decisions to prevent deer hunting, and (5) restrictions on firearms use in suburban regions.

In the short run, this situation is largely irreversible. Damage problems, particularly in suburban areas having good quality deer habitat, are likely to intensify in the future. Clearly, elimination of hunting due to firearm restrictions, safety concerns, and changed landowner values, will only increase damage in these areas.

Deer Damage depends on many factors, including the size of the local deer population, the territory they have to roam, other available food sources, and the time of year. Therefore, a plant that is never grazed in one garden may be slightly or even heavily damaged in another garden. This fact sheet is only a general guideline until the characteristics of the local deer population are known.

Deer feeding habits. Deer are selective feeders. They forage on plants or plant parts with considerable discrimination. Their obvious preference for and apparent avoidance of certain plants can be turned to our advantage. Costly browsing damage may be reduced or eliminated by planting less-preferred species or by establishing susceptible plants only in areas protected from deer. Under most circumstances, landscaping based on knowledge of deer feeding preferences can provide an alternative to the use of expensive chemical repellents and unsightly physical barriers.

Whether or not a particular plant species or variety is eaten depends on the deer's previous experience, nutritional needs, plant palatability, seasonal factors, weather conditions, and the availability of alternative foods. Deer are creatures of habit, and prior movement patterns or foraging experience forestalls where damage will occur. Deer are also selective feeders of fertilized plantings and managed croplands. New plantings added to an existing landscape already severely damaged by deer will likely suffer extreme browsing pressure.

In general, the most damage takes place when winter snow cover reduces food availability. Rather than face starvation, deer browse even the most resistant plants during periods of food shortage. Under such conditions, combine other damage control measures with careful plant selection. Ultimately a reduction in deer herd size is the most effective solution to the damage problem.

Information on repellents, physical barriers (i.e., fencing), and deer population control are available from Cornell Cooperative Extension, New York State Department of Environmental Conservation (NYS DEC) regional biologists, and from the following Cornell publications: *Pest Management Recommendations for Control of Vertebrates* and *Control of Wildlife Damage in Homes and Gardens*.

Plant damage comparisons. The following tables provide a guide to the relative likelihood of deer damage to many ornamental woody plants used by New York landscape contractors and property owners. This information is useful both for selecting plants that are unlikely to be damaged by deer, as well as for identifying those ornamentals that frequently require protection. The categories identified are based on the combined experiences

and numerical rankings of nursery operators, landscape contractors, Cornell Cooperative Extension personnel, research staff, and other horticulturists from the northeastern states. The information was derived from personal communications, published articles, and unpublished reports. The user is cautioned that the deer-browsing resistance of any plant species changes due to fluctuations in deer populations, alternative food availability, and environmental factors mentioned previously. No plant species will be avoided by deer under all conditions.

Plants listed in the ‘*Seldom Damaged*’ category are infrequently fed upon by deer, and are the best candidates for landscapes prone to deer damage.

Deer sometimes feed on these ornamentals, but damage is usually minor and has limited effect on the shape or attractiveness of the plant. The category ‘*Occasionally Damaged*’ includes plants that may be severely damaged by deer. Finally, ornamental plants in the category ‘*Frequently Damaged*’ are preferred by deer, and usually require physical or chemical protection whenever deer are present.

Check before planting any of the species listed below to ensure that they are adapted for your local climatic and soil conditions.

Deer prefer fertilized, to unfertilized, plants. During any weather they prefer irrigated plants to those not receiving supplemental water.

Plants *Seldom Damaged* by Deer

◆ Annuals/Biennials

| <u>Botanical Name</u> | <u>Common Name</u> |
|---|--------------------|
| <i>Achimenes</i> sp. | Pansy |
| <i>Ageratum houstonianum</i> | Ageratum |
| <i>Antirrhinum majus</i> | Snapdragon |
| <i>Begonia x semperflorens-cultorum</i> | Wax Begonia |
| <i>Calendula officinalis</i> | Pot Marigold |
| <i>Centaurea</i> spp. | Cornflower |
| <i>Cleome Hasslerana</i> | Cleome |
| <i>Dahlia</i> sp. | Dahlia |
| <i>Datura</i> sp. | Thorn Apple |
| <i>Digitalis</i> sp. | Foxglove |
| <i>Gaillardia pulchella</i> | Blanket Flower |
| <i>Helianthus annuus</i> | Sunflower |
| <i>Heliotropium arborecens</i> | Heliotrope |
| <i>Hypoestes phyllostachya</i> | Polka-Dot Plant |
| <i>Ipomoea</i> sp. | Morning Glory |
| <i>Lobelia erinus</i> | Edging Lobelia |
| <i>Lobularia maritima</i> | Sweet Alyssum |
| <i>Mirabilis jalapa</i> | Four-O’Clock |
| <i>Myosotis sylvatica</i> | Forget-Me-Not |
| <i>Ocimum basilicum</i> | Sweet Basil |
| <i>Papaver</i> sp. | Poppy |
| <i>Pelargonium x hortorum</i> | Zonal Geranium |
| <i>Petroselinum crispum</i> | Parsley |
| <i>Salvia farinacea</i> | Blue Salvia |

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|--------------------------|--------------|
| <i>Senecio cineraria</i> | Dusty Miller |
| <i>Silybum</i> sp. | Thistle |
| <i>Tagetes</i> sp. | Marigold |
| <i>Verbena x hybrida</i> | Verbena |

◆ Herbaceous Perennials

| <u>Botanical Name</u> | <u>Common Name</u> |
|--------------------------------|--------------------|
| <i>Achillea</i> sp. | Yarrow, Sneezeweed |
| <i>Allium schoenoprasum</i> | Chives |
| <i>Allium</i> sp. | Ornamental Onion |
| <i>Allium tuerosum</i> | Garlic Chives |
| <i>Althaea rosea</i> | Hollyhock |
| <i>Alyssum saxatile</i> | Basket of Gold |
| <i>Amsonia tabernaemontana</i> | Amsonia |
| <i>Anemone</i> sp. | Anemones |
| <i>Angelica archangelica</i> | Angelica |
| <i>Aquilegia canadensis</i> | Columbine |
| <i>Aquilegia</i> spp. | Columbine |
| <i>Arisaema triphyllum</i> | Jack-in-the-Pulpit |
| <i>Artemisia</i> sp. | Wormwood |
| <i>Aruncus dioicus</i> | Goatsbeard |
| <i>Asclepias tuberosa</i> | Butterfly Weed |
| <i>Astilbe</i> sp. | Astilbe |
| <i>Baptisia</i> | False Indigo |
| <i>Bergenia</i> sp. | Bergenia |
| <i>Boltonia asteroides</i> | Boltonia |
| <i>Buddleia davidii</i> | Butterfly Bush |

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|------------------------------------|--------------------|
| <i>Calluna</i> sp. | Heather |
| <i>Campanula carpatica</i> | Tussock Bellflower |
| <i>Centurea</i> sp. | Knapweed |
| <i>Ceratostigma plumbaginoides</i> | Plumbago |

◆ Herbaceous Perennials (*cont'd*)

| <u>Botanical Name</u> | <u>Common Name</u> |
|----------------------------------|----------------------|
| <i>Chelone</i> sp. | Turtlehead |
| <i>Chrysanthemum</i> spp. | Mum |
| <i>Chrysanthemum coccineum</i> | Painted Daisy |
| <i>Chrysanthemum x superbum</i> | Shasta Daisy |
| <i>Cimicifuga racemosa</i> | Bugbane |
| <i>Coreopsis</i> sp. | Coreopsis |
| <i>Delphinium</i> spp. | Larkspur |
| <i>Dennstaedtia punctilobula</i> | Hay-scented Fern |
| <i>Dianthus</i> sp. | Sweet William, Pinks |
| <i>Dicentra exima</i> | Bleeding Heart |
| <i>Dicentra spectabilis</i> | Bleeding Heart |
| <i>Dictamnus albus</i> | Gas Plant |
| <i>Digitalis</i> spp. | Foxglove |
| <i>Echinacea purpurea</i> | Purple Coneflower |
| <i>Echinops</i> sp. | Globe Thistle |
| <i>Endymion</i> sp. | Wood Hyacinth |
| <i>Erica</i> sp. | Heath |
| <i>Eupatorium</i> sp. | Joe-Pye Weed |
| <i>Euphorbia</i> sp. | Spurge |
| <i>Filipendula</i> sp. | Queen-of-the-Prairie |
| <i>Fritillaria imperialis</i> | Crown Imperial |
| <i>Geranium maculatum</i> | Cranesbill Geranium |
| <i>Geum</i> sp. | Avens |
| <i>Gypsophila paniculata</i> | Baby's Breath |
| <i>Helleborus</i> sp. | Hellebore |
| <i>Iberis sempervirens</i> | Candytuft |
| <i>Iris</i> spp. | Iris |
| <i>Kirengeshoma palmata</i> | Kirengeshoma |
| <i>Lavandula</i> sp. | Toadflax |
| <i>Lavandula</i> spp. | Lavender |
| <i>Liatris spicata</i> | Spike Gayfeather |
| <i>Lilium lancifolium</i> | Tiger Lily |
| <i>Limonium latifolium</i> | Statice |
| <i>Linaria</i> sp. | Toadflax |
| <i>Linum perenne</i> | Perennial Blue Flax |
| <i>Lobelia laxiflora</i> | Lobelia |
| <i>Lupinus</i> sp. | Lupine |
| <i>Lythrum</i> sp. | Loosestrife |
| <i>Matteuccia struthiopteris</i> | Ostrich Fern |
| <i>Mentha pulegium</i> | Pennyroyal |

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|-------------------------------------|------------------------------|
| <i>Mentha</i> sp. | Mint |
| <i>Mitchella repens</i> | Partridgeberry |
| <i>Monarda didyma</i> | Beebalm |
| <i>Myosotis scorpioides</i> | Forget-Me-Not |
| <i>Myosotis</i> spp. | Forget-Me-Not |
| <i>Myrrhis odorata</i> | Sweet Cicely |
| <i>Narcissus</i> spp. | Narcissus, Daffodil, Jonquil |
| <i>Nepeta</i> sp. | Catmint |
| <i>Oenothera tetragona</i> | Sundrops |
| <i>Oenothera</i> sp. | Evening Primrose |
| <i>Onoclea sensibilis</i> | Sensitive Fern |
| <i>Origanum</i> sp. | Oregano |
| <i>Osmunda cinnamomea</i> | Cinnamon Fern |
| <i>Osmunda claytoniana</i> | Interrupted Fern |
| <i>Osmunda regalis</i> | Royal Fern |
| <i>Paeonia</i> sp. | Peony |
| <i>Papaver orientale</i> | Oriental Poppy |
| <i>Phalaris arundinacea</i> 'Picta' | Ribbon Grass |
| <i>Platycodon grandiflorus</i> | Balloon Flower |
| <i>Polemonium caeruleum</i> | Jacob's Ladder |
| <i>Polystichum acrostichoides</i> | Christmas Fern |
| <i>Potentilla</i> sp. | Cinquefoil |
| <i>Primula</i> sp. | Primrose |
| <i>Pulmonaria</i> sp. | Lungwort |
| <i>Ranunculus</i> sp. | Buttercup |
| <i>Rheum</i> sp. | Rhubarb |
| <i>Rosmarinus officinalis</i> | Rosemary |
| <i>Rudbeckia</i> sp. | Coneflower |
| <i>Salvia</i> sp. | Sage |
| <i>Saponaria</i> sp. | Soapwort |
| <i>Scilla</i> sp. | Scilla |
| <i>Sedum purpureum</i> 'Autumn Joy' | Autumn Joy Sedum |
| <i>Solidago</i> sp. | Goldenrod |
| <i>Stachys byzantina</i> | Lamb's Ear |
| <i>Tanacetum</i> sp. | Tansy |
| <i>Thalictrum</i> sp. | Meadow Rue |
| <i>Thelypteris noveboracensis</i> | New York Fern |
| <i>Verbascum</i> sp. | Mullein |
| <i>Veronica latifolia</i> | Hungarian Speedwell |
| <i>Vinca major</i> | Greater Periwinkle |
| <i>Viola labradorica</i> | Labrador Violet |
| <i>Yucca</i> sp. | Yucca |

◆ Perennial Groundcovers

| <u>Botanical Name</u> | <u>Common Name</u> |
|-------------------------------|----------------------|
| <i>Aegopodium podagraria</i> | Bishop's Weed |
| <i>Ajuga reptans</i> | Bugleweed |
| <i>Asperula odorata</i> | Sweet Woodruff |
| <i>Convalaria majallis</i> | Lily-of-the-Valley |
| <i>Epimedium</i> sp. | Barrenwort |
| <i>Helleborus</i> spp. | Lenten Rose |
| <i>Lamium</i> sp. | Dead Nettle |
| <i>Lupinus</i> spp. | Lupine |
| <i>Pachysandra terminalis</i> | Japanese Pachysandra |
| <i>Vinca minor</i> | Periwinkle |

◆ Perennial Shrubs & Vines

| <u>Botanical Name</u> | <u>Common Name</u> |
|--------------------------------|----------------------|
| <i>Berberis</i> spp. | Barberry |
| <i>Berberis vulgaris</i> | Common Barberry |
| <i>Buxus sempervirens</i> | Common Boxwood |
| <i>Celastrus scandens</i> | American Bittersweet |
| <i>Celastrus</i> sp. | Bittersweet |
| <i>Clematis</i> spp. | Clematis |
| <i>Cornus florida</i> | Flowering Dogwood |
| <i>Cornus kousa</i> | Kousa Dogwood |
| <i>Cornus sericea</i> | Red Osler Dogwood |
| <i>Crataegus laevigata</i> | English Hawthorn |
| <i>Elaeagnus angustifolia</i> | Russian Olive |
| <i>Enkianthus campanulatus</i> | Redvein Enkianthus |
| <i>Forsythia</i> spp. | Forsythia |
| <i>Hedera helix</i> | English Ivy |
| <i>Ilex Opaca</i> | American Holly |
| <i>Juniperus chinensis</i> | Chinese Junipers |
| <i>Kalmia latifolia</i> | Mountain Laurel |
| <i>Kolkwitzia amabilis</i> | Beautybush |
| <i>Leucothoe fontanesiana</i> | Drooping Leucothoe |
| <i>Lonicera</i> sp. | Honeysuckle |
| <i>Syringa vulgaris</i> | Common Lilac |
| <i>Wisteria floribunda</i> | Japanese Wisteria |
| <i>Wisteria</i> sp. | Wisteria |

◆ Trees

| <u>Botanical Name</u> | <u>Common Name</u> |
|----------------------------------|---------------------------|
| <i>Betula papyrifera</i> | Paper Birch |
| <i>Betula pendula</i> | European White Birch |
| <i>Fagus sylvatica</i> | European Beech |
| <i>Gleditsia triacanthos</i> | Honey Locust |
| <i>Ilex cornuta</i> | Chinese Holly |
| <i>Ilex glabra</i> | Inkberry |
| <i>Picea abies</i> | Norway Spruce |
| <i>Picea glauca</i> | White Spruce |
| <i>Picea pungens</i> | Colorado Blue Spruce |
| <i>Pieris japonica</i> | Japanese Pieris |
| <i>Pinus mugo</i> | Mugo Pine |
| <i>Pinus nigra</i> | Austrian Pine |
| <i>Pinus resinosa</i> | Red Pine |
| <i>Pinus rigida</i> | Pitch Pine |
| <i>Pinus sylvestris</i> | Scots Pine |
| <i>Prunus serrulata</i> | Japanese Flowering Cherry |
| <i>Salix matsuciana tortuosa</i> | Corkscrew Willow |
| <i>Sassafras albidum</i> | Common Sassafras |

**Plants Occasionally Damaged
by Deer**

◆ Annuals/Biennials

| <u>Botanical Name</u> | <u>Common Name</u> |
|--------------------------|--------------------|
| <i>Achimenes</i> sp. | Pansy |
| <i>Helianthus annuus</i> | Sunflower |

◆ Herbaceous Perennials

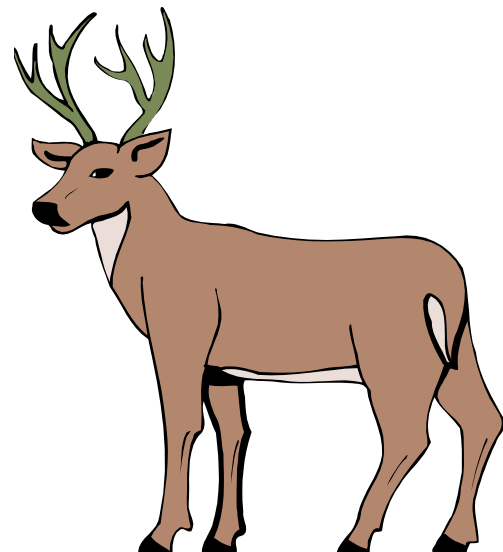
| <u>Botanical Name</u> | <u>Common Name</u> |
|-------------------------------------|---------------------|
| <i>Endymion</i> sp. | Wood Hyacinth |
| <i>Geranium maculatum</i> | Cranesbill Geranium |
| <i>Hedera helix</i> | English Ivy |
| <i>Iris</i> sp. | Iris |
| <i>Paeonia</i> sp. | Peony |
| <i>Rudbeckia</i> sp. | Coneflower |
| <i>Sedum purpureum</i> 'Autumn Joy' | Autumn Joy Sedum |
| <i>Thalictrum</i> sp. | Meadow Rue |

◆ Perennial Shrubs & Vines

| <u>Botanical Name</u> | <u>Common Name</u> |
|-------------------------------------|---------------------------|
| <i>Amelanchier arborea</i> | Downy Serviceberry |
| <i>Amelanchier laevis</i> | Allegheny Serviceberry |
| <i>Campsis radicans</i> | Trumper Creeper |
| <i>Chaenomeles speciosa</i> | Japanese Flowering Quince |
| <i>Cornus racemosa</i> | Panicked Dogwood |
| <i>Cotinus coggygria</i> | Smokebush |
| <i>Cotoneaster</i> spp. | Cotoneaster |
| <i>Forsythia (x) intermedia</i> | Border Forsythia |
| <i>Hybiscus syriacus</i> | Rose of Sharon |
| <i>Hydrangea arborescens</i> | Smooth Hydrangea |
| <i>Hydrangea anomala petiolaris</i> | Climbing Hydrangea |
| <i>Hydrangea paniculata</i> | Panicle Hydrangea |
| <i>Ilex crenata</i> | Japanese Holly |
| <i>Ilex (x) meserveae</i> | China Girl/Boy Holly |
| <i>Lonicera (x) hackrottii</i> | Goldflame Honeysuckle |
| <i>Ligustrum</i> spp. | Privet |
| <i>Parthenocissus quinquefolia</i> | Virginia Creeper |
| <i>Philadelphus coronarius</i> | Sweet Mock Orange |
| <i>Potentilla fruticosa</i> | Bush Cinquefoil |
| <i>Pyracantha coccinea</i> | Firethorn |
| <i>Pyrus calleryana 'Bradford'</i> | Bradford Callery Pear |
| <i>Rhododendron</i> spp. | Deciduous Azaleas |
| <i>Rhododendron carolinianum</i> | Carolinia |
| <i>Rhododendron</i> | |
| <i>Rhododendron maximum</i> | Rosebay Rhododendron |
| <i>Rhus typhina</i> | Staghorn Sumac |
| <i>Rosa multiflora</i> | Multiflora Rose |
| <i>Rosa rugosa</i> | Rugosa Rose |
| <i>Spirea (x) bumalda</i> | Anthony Waterer Spirea |
| <i>Spirea prunifolia</i> | Bridal Wreath Spirea |
| <i>Syringa (x) persica</i> | Persian Lilac |
| <i>Syringa reticulata</i> | Japanese Tree Lilac |
| <i>Syringa vilosa</i> | Late Lilac |
| <i>Viburnum carlesii</i> | Korean Spice Viburnum |
| <i>Viburnum plicatum</i> | Dbl. File Viburnum |
| <i>tomentosum</i> | |
| <i>Viburnum rhytidophyllum</i> | Leather Leaf Viburnum |
| <i>Weigela florida</i> | Old Fashioned Weigela |

◆ Trees

| <u>Botanical Name</u> | <u>Common Name</u> |
|-------------------------------------|------------------------------|
| <i>Abies concolor</i> | White Fir |
| <i>Acer griseum</i> | Paperbark Maple |
| <i>Acer rubrum</i> | Red Maple |
| <i>Acer saccharinum</i> | Silver Maple |
| <i>Acer saccharum</i> | Sugar Maple |
| <i>Aesculus hippocastanum</i> | Common Horse Chestnut |
| <i>Cryptomeria japonica</i> | Japanese Cedar |
| <i>Hamamelis virginiana</i> | Common Witch Hazel |
| <i>Juniperus virginiana</i> | Eastern Red Cedar |
| <i>Larix decidua</i> | European Larch |
| <i>Magnolia (x) soulangiana</i> | Saucer Magnolia |
| <i>Metasequoia glyptostroboides</i> | Dawn Redwood |
| <i>Pinus strobus</i> | Eastern White Pine |
| <i>Prunus avium</i> | Sweet Cherry |
| <i>Pseudotsuga menziesii</i> | Douglas Fir |
| <i>Pyrus communis</i> | Common Pear |
| <i>Quercus alba</i> | White Oak |
| <i>Quercus prinus</i> | Chestnut Oak |
| <i>Quercus rubra</i> | Northern Red Oak |
| <i>Salix</i> spp. | Willows |
| <i>Thuja plicata x standishii</i> | 'Green Giant' Arbor Vitae |
| <i>Tilia cordata 'Greenspire'</i> | Greenspire Littleleaf Linden |
| <i>Tilia americana</i> | Basswood |
| <i>Tsuga canadensis</i> | Eastern Hemlock |
| <i>Tsuga caroliniana</i> | Carolina Hemlock |



Plants *Frequently Damaged* by Deer

◆ Annuals/Biennials

| <u>Botanical Name</u> | <u>Common Name</u> |
|------------------------------|--------------------|
| <i>Alcea rosea</i> | Hollyhocks |
| <i>Impatiens</i> sp. | Impatiens |
| <i>Tithonia rotundifolia</i> | Mexican Sunflower |

◆ Herbaceous Perennials

| <u>Botanical Name</u> | <u>Common Name</u> |
|---------------------------|--------------------|
| <i>Clematis</i> spp. | Clematis |
| <i>Crocus</i> sp. | Crocus |
| <i>Hemerocallis</i> sp. | Daylily |
| <i>Hosta</i> sp. | Hosta |
| <i>Lobelia cardinalis</i> | Cardinal Flower |
| <i>Phlox</i> sp. | Phlox |
| <i>Tulipa</i> sp. | Tulips |

◆ Perennial Shrubs & Vines

| <u>Botanical Name</u> | <u>Common Name</u> |
|---------------------------|---------------------|
| <i>Cornus mas</i> | Cornelian Dogwood |
| <i>Euonymus alatus</i> | Winged Euonymus |
| <i>Euonymus fortunei</i> | Winter Creeper |
| <i>Rhododendron</i> spp. | Rhododendrons |
| <i>Rosa (x) hybrid</i> | Hybrid Tea Rose |
| <i>Taxus</i> spp. | Yews |
| <i>Thuja occidentalis</i> | American Arborvitae |

◆ Trees

| <u>Botanical Name</u> | <u>Common Name</u> |
|-------------------------------|-----------------------|
| <i>Abies balsamea</i> | Balsam Fir |
| <i>Abies fraseri</i> | Fraser Fir |
| <i>Acer platanoides</i> | Norway Maple |
| <i>Cercis canadensis</i> | Eastern Redbud |
| <i>Chamaecyparis thyoides</i> | Atlantic White Cedar |
| <i>Malus</i> spp. | Apples |
| <i>Prunus</i> spp. | Cherries |
| <i>Prunus</i> spp. | Plums |
| <i>Sorbus aucuparia</i> | European Mountain Ash |

Note. Whenever possible, a specific plant is indicated using both the scientific genus and species names. Otherwise, the abbreviation ‘sp.’ is used to indicate plants belonging to the entire genus in question.

Hedera helix (English ivy) and other ivies have inclusive reports. There are reports of severe browsing by deer and others of the plant being avoided.

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The following information is for file information only. It does not need to be printed on the fact sheet for public distribution.

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