## Plant Evaluation Notes

# A Comparative Study of Ground Cover *Lamium*

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Shady gardens offer a number of challenges for gardeners. A variety of light levels as well as moisture gradients from soggy to dry can make it difficult for gardeners to place the right plant in the right location. The edge of the shade garden often represents a sharp line of cultural change, where sun-loving plants flop and shade-lovers scorch. However, there's at least one group of plants able to stand up to the rigors of the unpredictable shaded garden. Dead nettles (*Lamium)* are an ideal choice for the gardener who wants a tough plant as well as a variety of foliage colors and textures.

The genus *Lamium* contains approximately 50 species from Europe and Asia. Out of these, only a few have been deemed ornamental. The species most commonly under cultivation include *L. album*, *L. galeobdolon* (syn. *Lamiastrum galeobdolon*), *L. maculatum* and *L. orvala*. This group is commonly referred to as dead nettles due to their resemblance to stinging nettle (*Urtica dioica*); however, *Lamium* species lack stinging hairs on their stems and leaves.

*Lamium* is well suited to a variety of growing conditions. Naturally occurring in areas ranging from poor rocky slopes to forest edges, dead nettles display a breadth of cultural adaptability, something that has made them attractive to gardeners. In addition, the genus *Lamium* provides a variety of plant habits from low-growing and spreading to upright and rounded.

Of the cultivated species, spotted dead nettles (*Lamium maculatum*) constitute the majority of commercially available varieties. At the time of this publication, there were 30 cultivars of *L. maculatum* listed in the RHS Plant Finder, compared to 11 cultivars for all the other species combined. Commonly used as a ground cover in the shade garden, spotted dead nettle is short-branched and stoloniferous and likely the most recognizable of all the dead nettles. Whether donning leaves with a silver stripe or entirely silver, its appearance is unlike other perennial ground covers and contrasts well with dark-leaved varieties of perennials such as coral bells (*Heuchera* 'Velvet Night') and black snakeroot (*Cimicifuga ramosa* 'Hillside Black Beauty'). Tolerance of a variety of light regimes makes it the ideal plant to use as a transition between sunny and shady sites. With a long bloom period and colorful foliage, the many varieties of spotted dead nettles are eye-catching plants throughout the year.

Jenny Lee

*Lamium maculatum* 'Red Nancy'

Exhibiting a more upright habit than *Lamium maculatum*, white dead nettle (*L. album*) is generally considered a weed in Europe and grows in a number of sites including hedgerows, waste dumps and alongside streams. Like spotted dead nettle, it spreads vigorously and is used as an effective ground cover. Although it may have an unfavorable reputation in some parts of the world, it is actually considered by some to be less aggressive than *L. maculatum*. White dead nettle combines well with a variety of grasses, forget-me-nots, primroses and other wildflowers.

DEAD NETTLES (*LAMIUM*) ARE AN IDEAL CHOICE FOR THE GARDENER WHO WANTS A TOUGH PLANT AS WELL AS A VARIETY OF FOLIAGE COLORS AND TEXTURES.

Giant dead nettle (*Lamium orvala*) possesses larger leaves as well as a greater stature than ground cover dead nettles. Stems emerge from a central crown, are generally unbranched and combine to form a nearly spherical habit. Unlike its relatives, giant dead nettle does not spread readily, and any spread it does achieve is due to reseeding rather than vegetative growth. Leaves are up to 6 inches long, sharply toothed and typically solid green, although leaves with a silver stripe down the midrib have been documented in the wild. The species grows best in part shade and is tolerant of a variety of moisture regimes. It can be used in the garden in combination with spring bulbs, ferns and other woodland perennials.

Regardless of differences in foliage and habit type, all dead nettles share the same

flower structure consistent with other members of the mint family (Lamiaceae). The bilabiate, or two-lipped, flower consists of a distinct, large, hooded upper lip and a smaller, bisected lower lip. Closer to the leaf axil, where the flowers first emerge, the lips fuse together into a single tube or throat. In fact, the name *Lamium* is adapted from the Greek *lamios*, which means throat.

Dead nettles are stalwarts of the shade garden, although their adaptability to a variety of light and moisture regimes makes them worthy candidates for sites that receive more light throughout the day. In addition, unique foliage colors and textures allow the gardener to combine *Lamium* species and cultivars with each other as well as with other annuals and perennials.

## The Evaluation Project

In 1998, the Chicago Botanic Garden (USDA Hardiness Zone 5b, AHS Plant Heat-Zone 5) gathered commercially available *Lamium* taxa, concentrating on cultivars of *L. maculatum*, for a multi-year evaluation study. Observations of the initial evaluation group began in 1998 with subsequent additions as the trial expanded to include *L. album* and *L. orvala*, and newly available *L. maculatum* cultivars. The project concluded at the end of the 2003 growing season. The goal was to recommend superior taxa based on general health and habit, bloom coverage, length of bloom, pest and disease resistance, and cultural adaptability.

All dead nettle taxa were grown in the Pullman Shade Evaluation Garden. Shade was provided by mature trees including oak, birch, ginkgo and pine, and in most cases, trial plants were planted in raised beds to maximize drainage. Protection was provided throughout the garden by wood fencing. The clay-loam soil, amended with composted leaves, had a pH of 7.4 throughout the evaluation term.

Maintenance practices were kept to a minimum to simulate home garden culture. A combination of overhead sprinklers and hand watering provided moisture as needed, and no fertilizer was applied. Trial beds were weeded, and mulch consisting of shredded leaves and wood chips was placed around the plants for weed suppression and water conservation.

## Observations

From 1998 to 2003, 21 taxa of *Lamium* were evaluated, including 17 varieties of *L. maculatum*, one variety of *L. album* and three varieties of *L. orvala*. Of these, 15 taxa survived for more than two seasons and received final ratings (Table 1). Based on the performance of the *Lamium* group, the following criteria determined final ratings: 1) peak flower coverage; 2) length of bloom period; 3) plant health; 4) plant habit quality; and 5) cultural adaptability. The amount of flower production was a significant factor in the comparison between the excellent and mediocre performers. Regardless of the species examined, flowers were consistently borne on the upper half to upper third of the stems. However, flowers were seldom displayed on all stems. For this reason, peak coverage of 60% or greater was considered excellent.

In addition to the variety of leaf forms and colors, another desirable attribute of many dead nettles is their exceptionally long bloom period. In midwestern climates, it is not unusual for varieties of *Lamium maculatum* and *L. album* to bloom from spring until frost. Obviously, these plants are not at peak bloom for the entire period, and may in fact persist at 5% to 10% coverage for the final two months of bloom. *Lamium orvala* and its cultivars tend to bloom for a more modest six weeks from spring to early summer, but blooms densely populate the leaf axils for the majority of the time. Any taxa that did not meet their potential bloom length received a lower rating.

Plant health and habit quality throughout the trial period are always significant factors in the determination of plant performance. While health is generally judged the same for all plants, habit quality rating depends on the desired shape or garden use of the plant group being trialed. In the case of *Lamium maculatum* and *L. album*, plants were expected to have continuous mats of foliage without holes or unsightly upright stems. *Lamium orvala* varieties were expected to maintain dense, rounded habits.

Finally, a factor that significantly affected the performance ratings of *Lamium* varieties was cultural adaptability. Upon initial inspection, plant losses during the winter pointed to a lack of cold hardiness. However, none of the varieties studied were known to be susceptible to severe winter injury in our climate. A closer look at our site revealed that the soil had a higher moisture content than was likely ideal for

**Table 1:** Plant Characteristics and Performance Summary Ratings

| Overall Rating | *Lamium* | Leaf Character | Flower Color | Peak Flower overage[1] | Bloom Period | Height | Width |
|---|---|---|---|---|---|---|---|
| ★★★★½ | *album* 'Friday' | variegated green | white | 30-50% | late Apr-mid Sep | 22 in. | 36 in. |
| ★★★★½ | *maculatum* 'Album' | green, silver stripe | white | 30-50% | late Apr-late Sep | 8 in. | 20 in. |
| ★★★★ | *maculatum* 'Beacon Silver' | silver, green margin | purple-pink | 30-50% | late Apr-late Sep | 9 in. | 19 in. |
| ★★★★ | *maculatum* 'Beedham's White' | yellow, white stripe | white | 10-25% | late May-mid Oct | 9 in. | 35 in. |
| ★★½ | *maculatum* 'Brocade' | silver, green margin | rose-pink | <10% | late Apr-late Aug | 5 in. | 19 in. |
| ★★★★ | *maculatum* 'Chequers' | green, silver stripe | violet | 30-50% | late Apr-mid Oct | 12 in. | 26 in. |
| ★★★★ | *maculatum* 'Elisabeth de Haas' | green/yellow streaks, white stripe | pink | 30-50% | early May-late Sep | 13 in. | 27 in. |
| ★★★★ | *maculatum* 'Pink Nancy' | silver, green margin | pale pink | 30-50% | early May-mid Aug | 6 in. | 10 in. |
| ★★★★ | *maculatum* 'Pink Pearls' | green, silver stripe | pink | 30-50% | late Apr-late Sep | 9 in. | 19 in. |
| ★★★★ | *maculatum* 'Pink Pewter' | silver, green margin | pink | 30-50% | late Apr-mid Sep | 6 in. | 18 in. |
| ★★★★½ | *maculatum* 'Red Nancy' | silver, green margin | purple-pink | 60+% | mid May-mid Sep | 6 in. | 35 in. |
| ★★★★★ | *maculatum* 'Shell Pink' | green, silver stripe | pink | 60+% | late May-early Oct | 12 in. | 24 in. |
| ★★★½ | *maculatum* 'White Nancy' | silver, green margin | white | 10-25% | mid May-mid Sep | 6 in. | 21 in. |
| ★★★★ | *orvala* 'Album' | green | creamy white | 30-50% | early Apr-late Jun | 26 in. | 32 in. |
| ★★★★ | *orvala* 'Silva' | green | dusty pink | 30-50% | late Apr-late Jun | 36 in. | 53 in. |

Overall Ratings: ★★★★★ excellent, ★★★★ good, ★★★ fair, ★★ poor, ★ very poor; half-star ratings included in table.
[1]Ratings of peak flower coverage ranges: 60+% = excellent; 30-50% = good; 10-25% = fair; <10% = poor


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*Lamium maculatum* 'Shell Pink'


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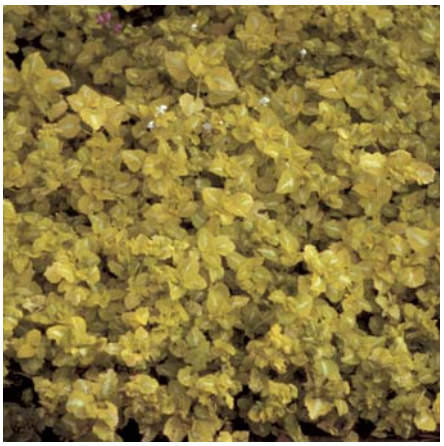
*Lamium orvala* 'Silva'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*Lamium maculatum* 'Beedham's White'

**Table 2:** Plants surviving less than two years of trial

| *Lamium* | Reason |
|---|---|
| *maculatum* 'Angel Wings' | poor cultural adaptability |
| *maculatum* 'Anne Greenaway' | poor cultural adaptability |
| *maculatum* 'Ickwell Beauty' | poor cultural adaptability |
| *maculatum* 'Orchid Frost' | poor cultural adaptability |
| *maculatum* 'White Anniversary' | poor cultural adaptability |
| *orvala* | rabbit damage |

this genus. Nevertheless, several varieties displayed outstanding adaptability to these conditions, while others did not. Since this soil situation is common throughout garden sites in the Midwest, adaptability to moist soils was deemed appropriate to use in the ranking of plants relative to one another. A list of dead nettles that died as a result of poor cultural adaptability is included in Table 2.

Based on the evaluation criteria, nine *Lamium maculatum* varieties received good to excellent ratings of four stars or greater. These included 'Album', 'Beacon Silver', 'Beedham's White', 'Chequers', 'Elisabeth de Haas', 'Pink Pearls', 'Pink Pewter', 'Red Nancy' and 'Shell Pink'.

Of the spotted dead nettles under trial, four varieties had green leaves with a silver stripe in the midrib. *Lamium maculatum* 'Shell Pink' proved to be the best performer of this group. In fact, it was the only plant in the dead nettle trial to receive a five-star excellent rating. In addition to its abundant coverage of clear pink blossoms and extended bloom period, 'Shell Pink' had excellent health and the best habit of all the *L. maculatum* varieties. 'Shell Pink' maintained a full, mounded habit and was a fast spreader, making it an effective ground cover. *Lamium maculatum* 'Album' was another excellent performer out of the group with silver-striped leaves. This white-flowered variety was rated slightly lower than 'Shell Pink' due to a shorter bloom time and lower maximum flower coverage, but it exhibited superior traits to other plants in the trial.

*Lamium maculatum* 'Red Nancy' performed best of the taxa that possessed predominantly silver foliage. Vigorous growth and excellent flower coverage separated this variety from other similarly colored cultivars. Purple-pink flowers were held clearly above the silver foliage with dark green margins, but red-tinged stems distinguished it from other pink-flowered varieties. This trait was not as apparent as some references indicated, because stem pigmentation varied throughout the growing season. 'Red Nancy' also made an effective ground cover, as evidenced by its rapid spread during the trial period. Plants quickly grew together within two years of planting to create a solid mass generally free of open spaces.

A departure from the green or silver leaves of other dead nettles, *Lamium maculatum* 'Beedham's White' has bright yellow foliage with a white stripe and white flowers. More than any other *Lamium* variety, 'Beedham's White' can brighten the darker corners of the shade garden. A preliminary trial of 'Beedham's White' was conducted from 1993 to 1999. As the lone variety that preceded the main evaluation group, it had the benefit of being grown in a number of different sites within the trial gardens. In a site with even-to-dry moisture levels, this variety thrived, forming a dense mat of bright yellow that eventually faded to chartreuse. However, in moister sites 'Beedham's White' did not demonstrate the same tolerance as other *Lamium* varieties, with plants dying out during the first winter. This lack of cultural adaptability, coupled with low flower coverage, is what kept 'Beedham's White' from earning the highest rating.

Aside from *Lamium maculatum*, several other dead nettles stood out as worthy plants for Midwest gardens. *Lamium album* 'Friday' features a coarser, taller habit than *L. maculatum* and can appear weedy from a distance. Upon closer inspection, it has interesting lance-shaped leaves with a variegation of three different shades of green. The white flowers offer contrast but are generally obscured by the foliage. 'Friday' did spread, but it is likely not as aggressive as the species, although this was the only *L. album* variety in the trial. The upright flowering stems did show a propensity to flop in mid- to late summer, creating a somewhat unsightly, tangled appearance at times.

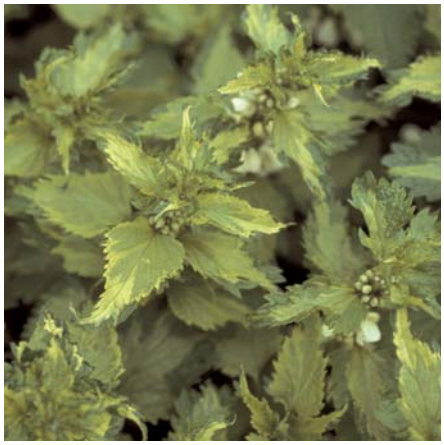
The two cultivars of large-leaved *Lamium orvala* in this trial were both good performers overall. 'Silva', with dusty pink flowers, was generally a larger plant than 'Album'. In the spring and early summer, these plants had tight, nearly spherical habits that rival many small or medium-sized shrubs. Plants became somewhat leggy after flowering and had a tendency to flop open as summer wore on. As an alternative, giant dead nettles can be grown for early season interest and then cut back when habits become floppy or open, much like *Dicentra spectabilis* (common bleeding heart) or *Euphorbia palustris* (marsh spurge).

Slugs and chewing insects were common pests that dead nettles faced during

the trial period. Slug damage left holes in the interior of leaves and chewing insect damage created notches along the margins. A significant occurrence of slug damage was noted in early June of 2001 following several days of high humidity and fog coupled with temperatures 15°F below average. Cultivars of *Lamium maculatum* that exhibited some degree of slug damage included 'Album', 'Beacon Silver', 'Brocade', 'Pink Nancy', 'Pink Pewter', 'Red Nancy', 'Shell Pink' and 'White Nancy'.

Chewing insect damage occurred over a wider span of time than slug damage, ranging anywhere from late June to late August in multiple years. Varieties exhibiting chewing insect damage included *Lamium album* 'Friday', *L. maculatum* 'Beedham's White', *L. maculatum* 'Beacon Silver', *L. maculatum* 'Brocade', *L. maculatum* 'Red Nancy', *L. maculatum* 'Shell Pink', *L. maculatum* 'White Nancy' and *L. orvala* 'Silva'. Generally, damage from slugs and chewing insects was not significant enough to affect the overall appearance of any of the plants being studied. *Lamium orvala* was so badly damaged by rabbits in its first year that it did not survive (see Table 2) and was not retested.

Though they are tough garden plants, dead nettles are not entirely maintenance free. A high level of promiscuity leads to large numbers of seedlings annually, and without some attention to weeding and maintenance, new seedlings may overtake the original plants. *Lamium* cultivars do not remain true from seed; therefore, seedlings should be removed to maintain the integrity of the cultivars that were originally planted. Seedlings of *L. maculatum* are easy to spot among the silver- and yellow-leaved varieties, since the true species has green leaves with a silver stripe. Weeding out seedlings among silver-striped varieties can prove more challenging, as it requires proper identification using flower color or subtle variations in leaf traits to distinguish differences.



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*Lamium album* 'Friday'

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*Lamium maculatum* 'White Nancy'

## Conclusion

Among the challenges that face the shade gardener, unpredictable light and uneven moisture regimes can make the placement of plants in the shady garden an all-or-nothing experiment. In these circumstances, a variety of dead nettles come to the rescue. From green, silver, yellow and variegated leaves to ground covers and upright habits, dead nettles offer ornamental versatility as well as a tolerance to a wide range of conditions. A breadth of cultural adaptability gives dead nettles the upper hand whether growing in deep shade or along the sunny edges of the garden. Dead nettles combine well with ferns, spring bulbs and a variety of wildflowers, among other plants.

Indicating their excellent overall performance as a plant group, 12 *Lamium* taxa received ratings of four stars or greater, including *L. album* 'Friday', *L. maculatum* 'Album', *L. maculatum* 'Beacon Silver', *L. maculatum* 'Beedham's White', *L. maculatum* 'Chequers', *L. maculatum* 'Elisabeth de Haas', *L. maculatum* 'Pink Pearls', *L. maculatum* 'Pink Pewter', *L. maculatum* 'Red Nancy', *L. maculatum* 'Shell Pink', *L. orvala* 'Album' and *L. orvala* 'Silva'. These varieties possessed good flower coverage and long bloom periods as well as good cultural adaptability. Poor cultural adaptability to wet soils was the greatest factor in the failure of a few taxa, while damage from chewing insects and slugs had little more than a temporary impact on plant appearance.

Dead nettles offer a number of advantages in the shade garden and beyond. The ability to adapt to a variety of conditions makes them ideal for spaces where other plants have languished and died. Numerous varieties of *Lamium maculatum* maintain a reputation as effective ground covers in shady situations. In addition, varieties of white dead nettle and giant dead nettle expand the palette of plant sizes and foliar textures. Whether several varieties are grown together as a tapestry or combined with annuals, perennials and shrubs, dead nettles stand up to the challenges of the unpredictable shade garden.

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