The Intentional & the Accidental: The Role of Cultivated and Uncultivated Flowers in Supporting Plant Diversity and Insect Abundance on Farms.

Hudson Valley Seed Co. Report

Farmer-Ecologist Research Circle
Feb. 2026

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Farm Description

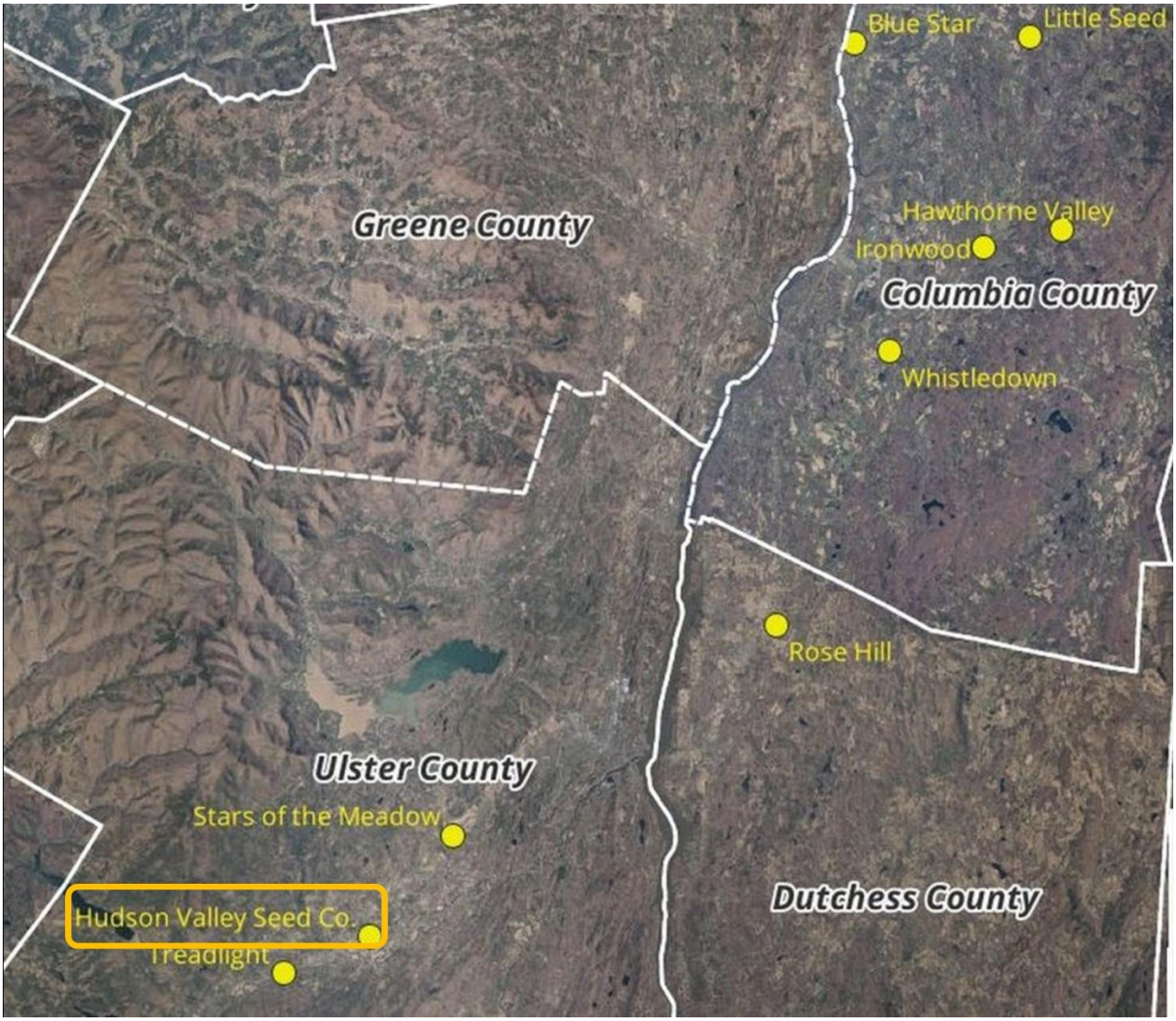


Figure 1. Hudson Valley Seed Co. is located in Ulster County.

Hudson Valley Seed Co. is an organic seed farm in Accord NY. Its lands are divided across a few sites, but our work was at the ca. 36 acre Airport Road site, where their retail outlet is located. Hudson Valley Seed Co. produces seeds of various flowers, vegetables, fruits and culinary herbs. We studied approximately 8.5 acres of this farm, focusing on the flower beds and adjacent fields located north of the shop and green houses. Between June and July, the study area was expanded by including the western fields where the Dahlias were grown. The survey units included extensive areas of cultivated flowers, part of a hay field, fallow, mature cover crops, mowed areas, mature

field edges, and fencelines (Fig. 2). Other than the narrow field edge to the south, there were no semi-wild habitats within our study area.

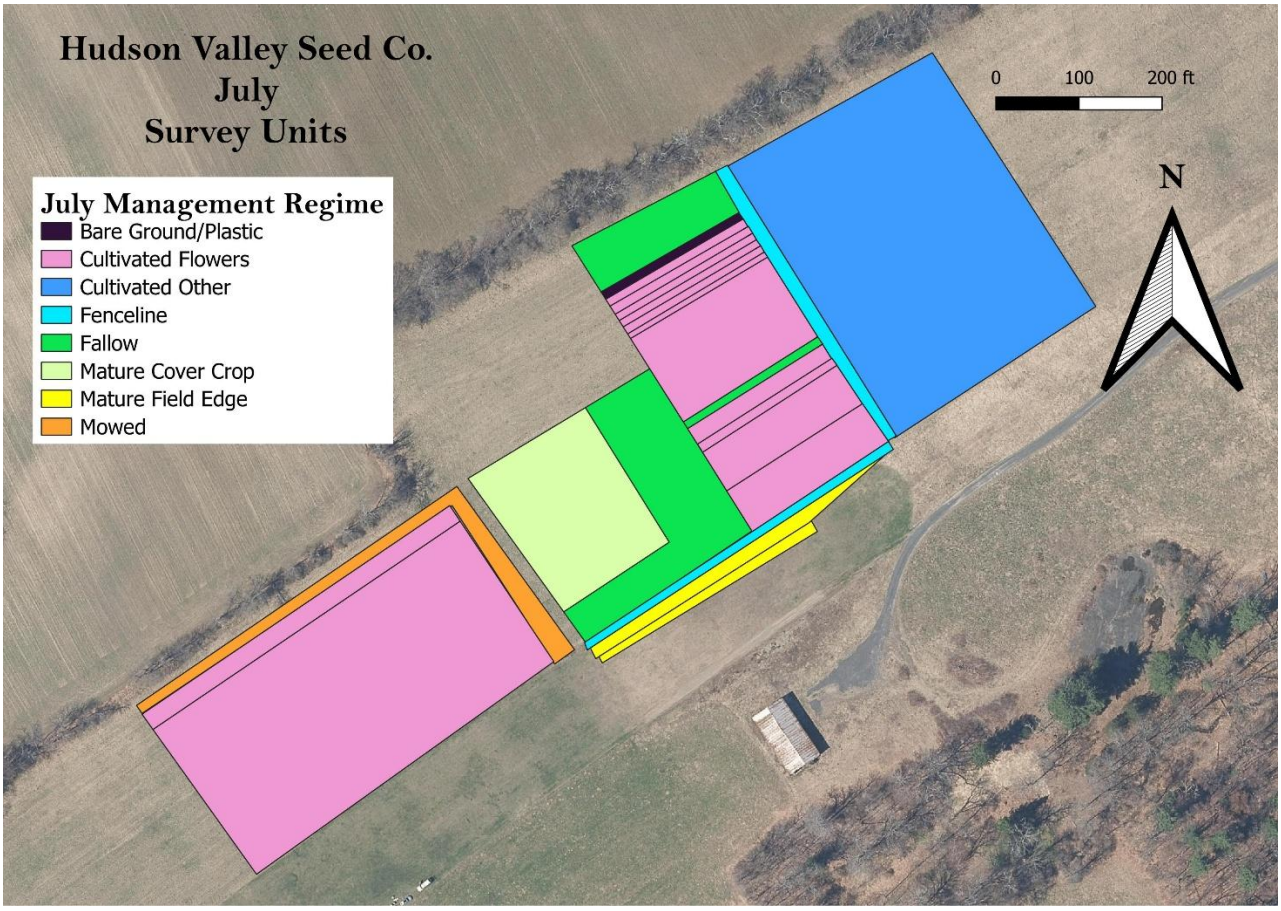


Figure 2. Generalized management regimes in the Hudson Valley Seed Co. survey units during July.

Botany

With a total of 147 different flowers found within the study area, the Hudson Valley Seed Co. was the most botanically diverse farm of our 2025 study (see Appendix). Please remember that this does NOT represent a full botanical inventory of the studied portion of this farm – it only includes those plants actually seen in flower during our three survey outings. The plant list in the Appendix includes all species we have observed in bloom during our 2025 inventories in the survey units on June 29 (“June”), Aug. 2 (“July”), and Sept. 10 (“Aug/Sept”). The list is organized alphabetically by common name. It also includes rows with (1) the scientific name of each species, (2) its native status (when known), (3) its regional rarity, (4) its ubiquity across the survey units at Hudson Valley Seed Co. during its flowering season, (5) duration of its observed flowering season at the farm, and (6) the specific months when we saw it flowering. Please see the caption of the Appendix for more details.

Only a few native species considered regionally uncommon were observed growing wild and blooming at the Hudson Valley Seed Co.: Marsh Yellowcress and Narrow-leaved Blue-eyed Grass flowered in June in the fallow field; Clammy Ground-cherry was in bloom along the fenceline in July; and Showy Tick-trefoil bloomed, probably as a weed, in a mixed bed of cultivated flowers in July. All of the other regionally rare/uncommon native plants we documented in the study area were cultivated and blooming in the flower beds. These included Butterfly Milkweed, Cardinal Flower, Common Sneezeweed, Hairy Beardtongue, Partridge Pea, Smooth Blue Aster, Stiff Flat-topped Goldenrod, Wild Bergamot, and Wild Lupine.

Overall, Hudson Valley Seed Co. had a large number of unique flower species (37 species, 25% of the total of 147 flower species) which were not observed at any other farm during our 2025 study. These were almost exclusively cultivated, non-native flowers.

Figure 3 shows the number of flowering species at Hudson Valley Seed Co. during our three monthly visits in 2025. The species were grouped into four categories: wild-growing, native species; wild-growing, non-native species and wild-growing species we were unable to identify with certainty as native; cultivated native species; and cultivated non-native species.

More than half of the plants that bloomed from June to Aug/Sept at Hudson Valley Seed Co. were cultivated plants. As on most farms we studied in 2025, the diversity of all plants in bloom increased from June to Aug/Sept. However, this seasonal pattern in flower diversity was not as pronounced as on most of the other farms. While the wild, native flowers showed a slight increase in diversity as the season progressed, the diversity of all other flowers remained quite similar over the months, with non-native flowers, wild-growing as well as cultivated, slightly more diverse in mid summer (Fig. 3).

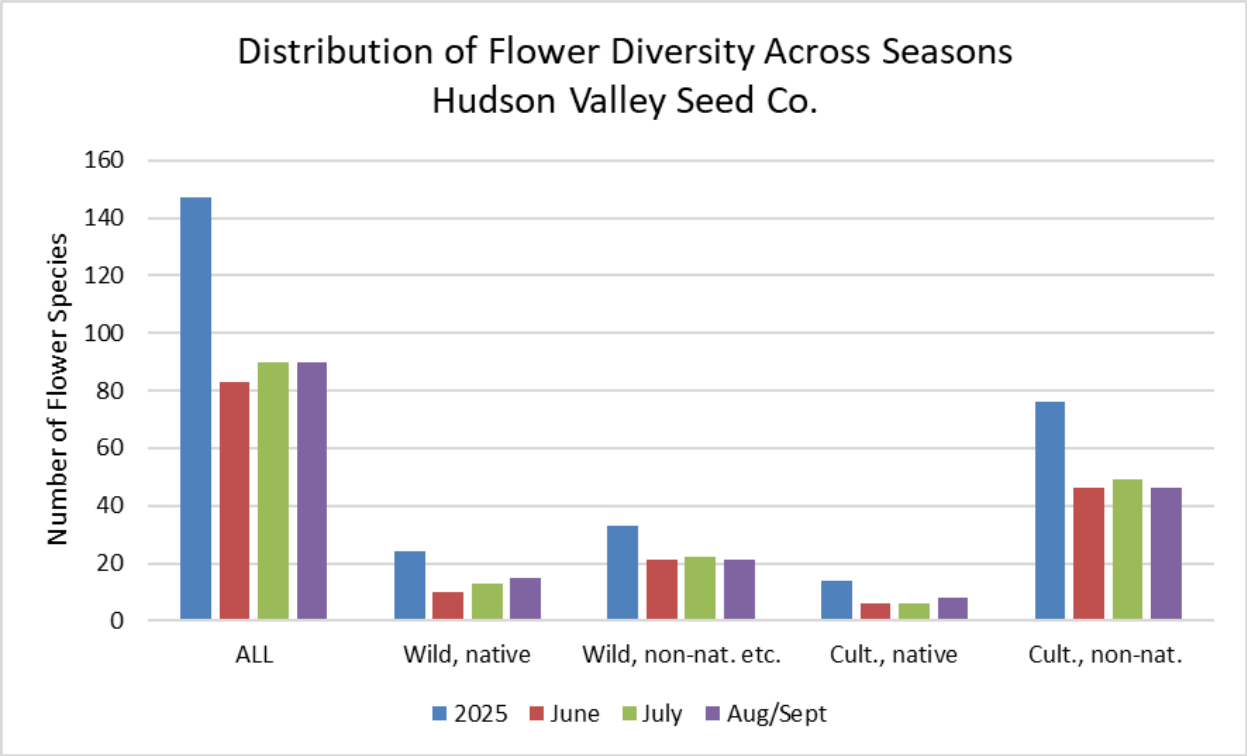


Figure 3. Distribution of flower diversity across seasons at Hudson Valley Seed Co.

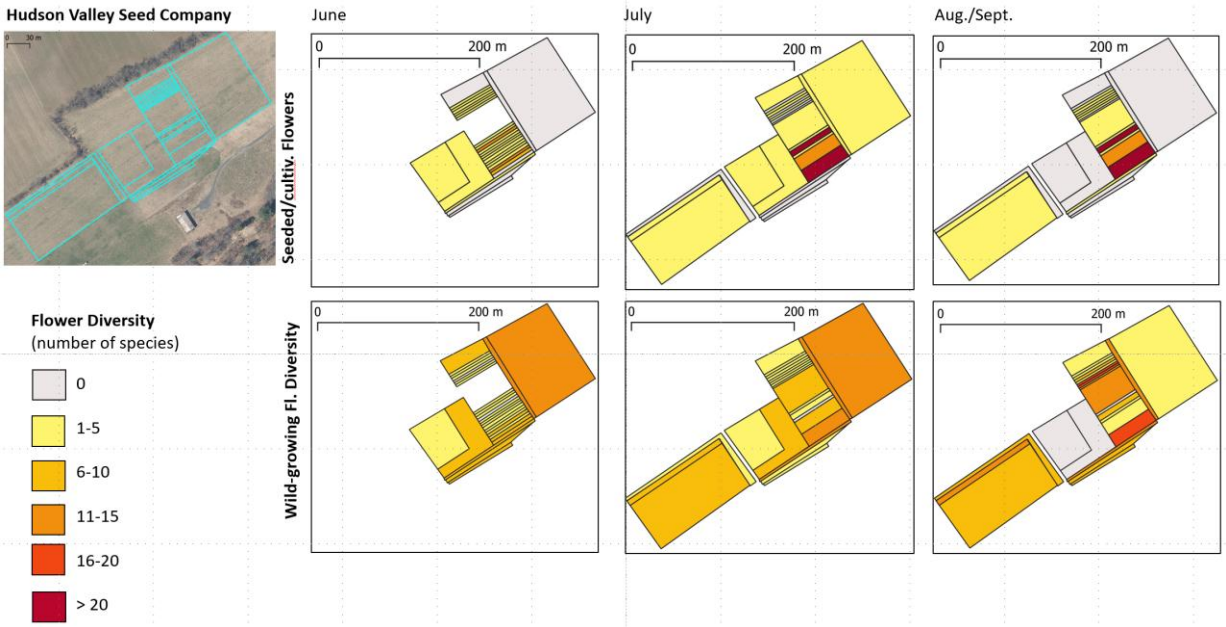


Figure 4. Comparative diversity of seeded/cultivated flowers (above) and wild-growing flowers (below) in the survey units at Hudson Valley Seed Co.

Figure 4 illustrates how generally, across the survey units and seasons, wild-growing plants contributed more than cultivated ones to the flower diversity at the Hudson Valley Seed Co. The only exception were a handful of beds on the south side of the garden, which were dedicated to demonstrate the diversity of flowers derived from the Seed Company's seeds and seed mixes.

Figure 5 illustrates that flower diversity and abundance change quite independently of each other between survey units and across time. Survey units can have a high abundance of the flowers of a few species, for example the cover crop of Buckwheat or the Dahlia beds. They can also have a lot of species with few flowers each, like some of the demonstration garden beds.

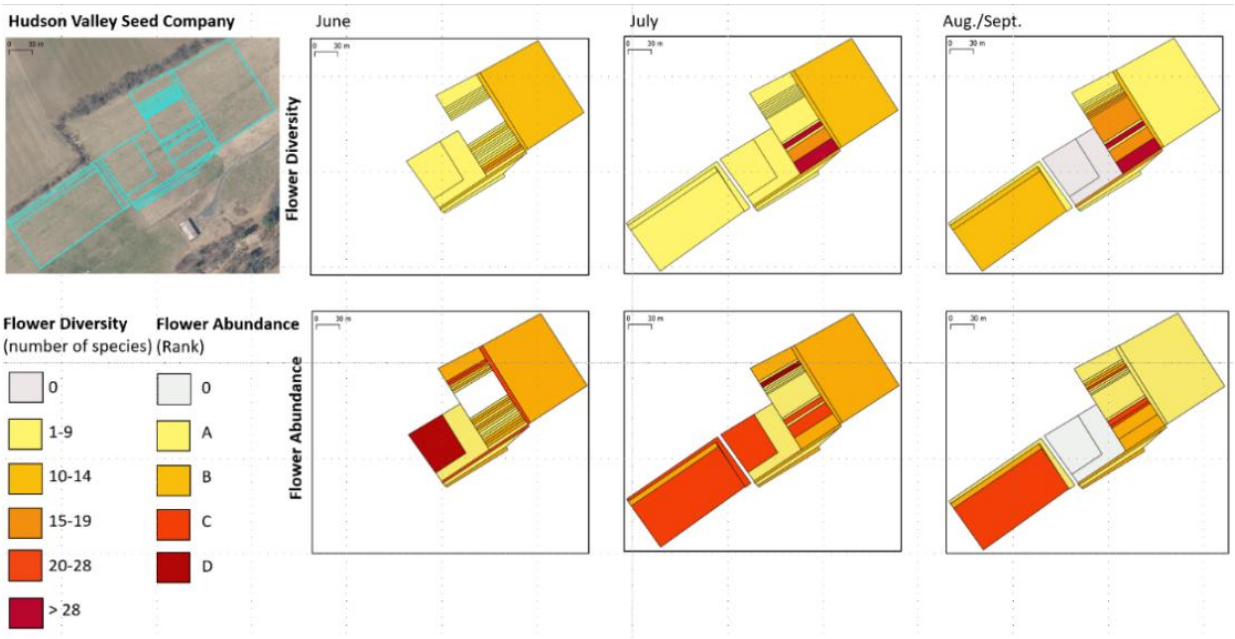


Figure 5. Flower diversity (row of maps above) and abundance (row of maps below) in the survey units at Hudson Valley Seed Co. Claudia ranked flower abundances from A (least) to D (most) and also had a zero category.

Flower Visitor Community.

Honey Bees were especially common at the Hudson Valley Seed Co., otherwise sightings were average or below average with hover flies especially low (Fig. 6). While there were no Honey Bee hives on site, the farmer did report that there were hives within .5 to 1.0 miles – well within Honey Bee foraging range.

In our somewhat anecdotal but more detailed data on the identity of the 'other' bees, only the green sweat bee *Agapostemon* seemed especially common relative to other farms.

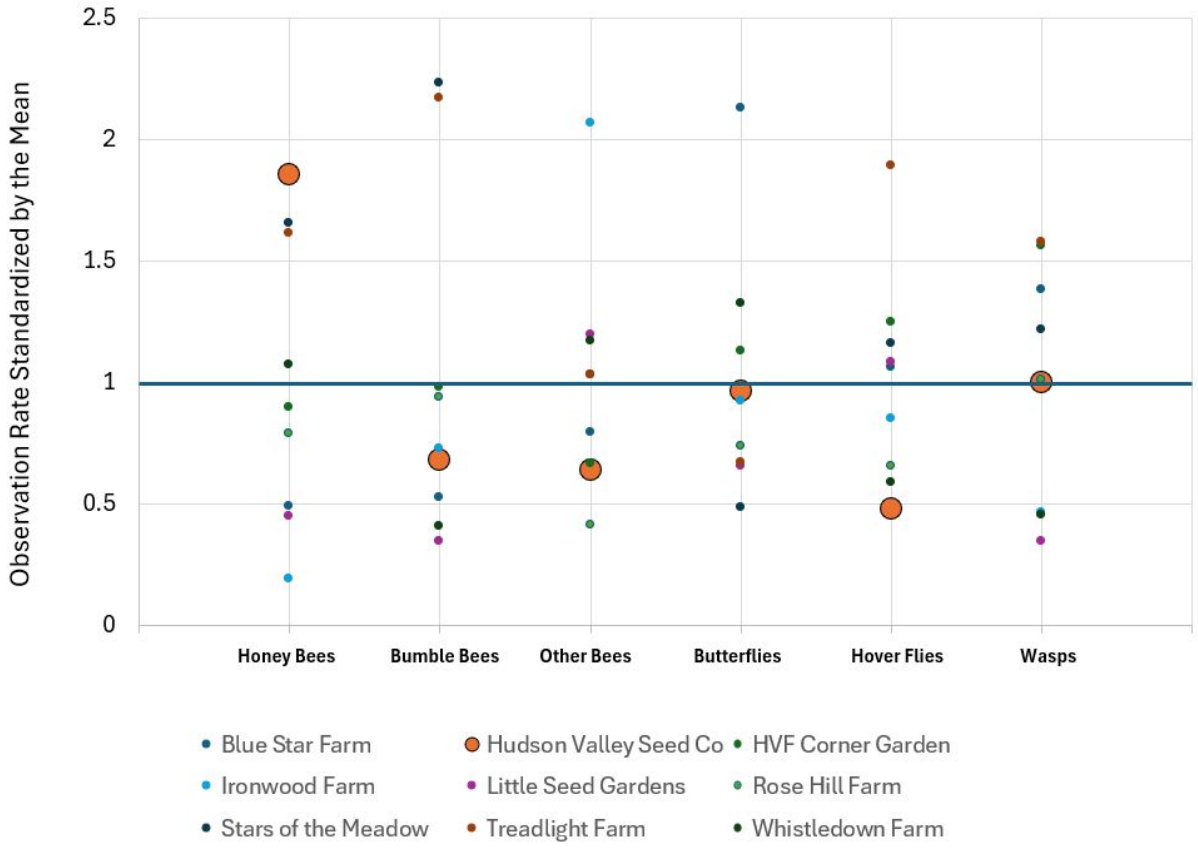


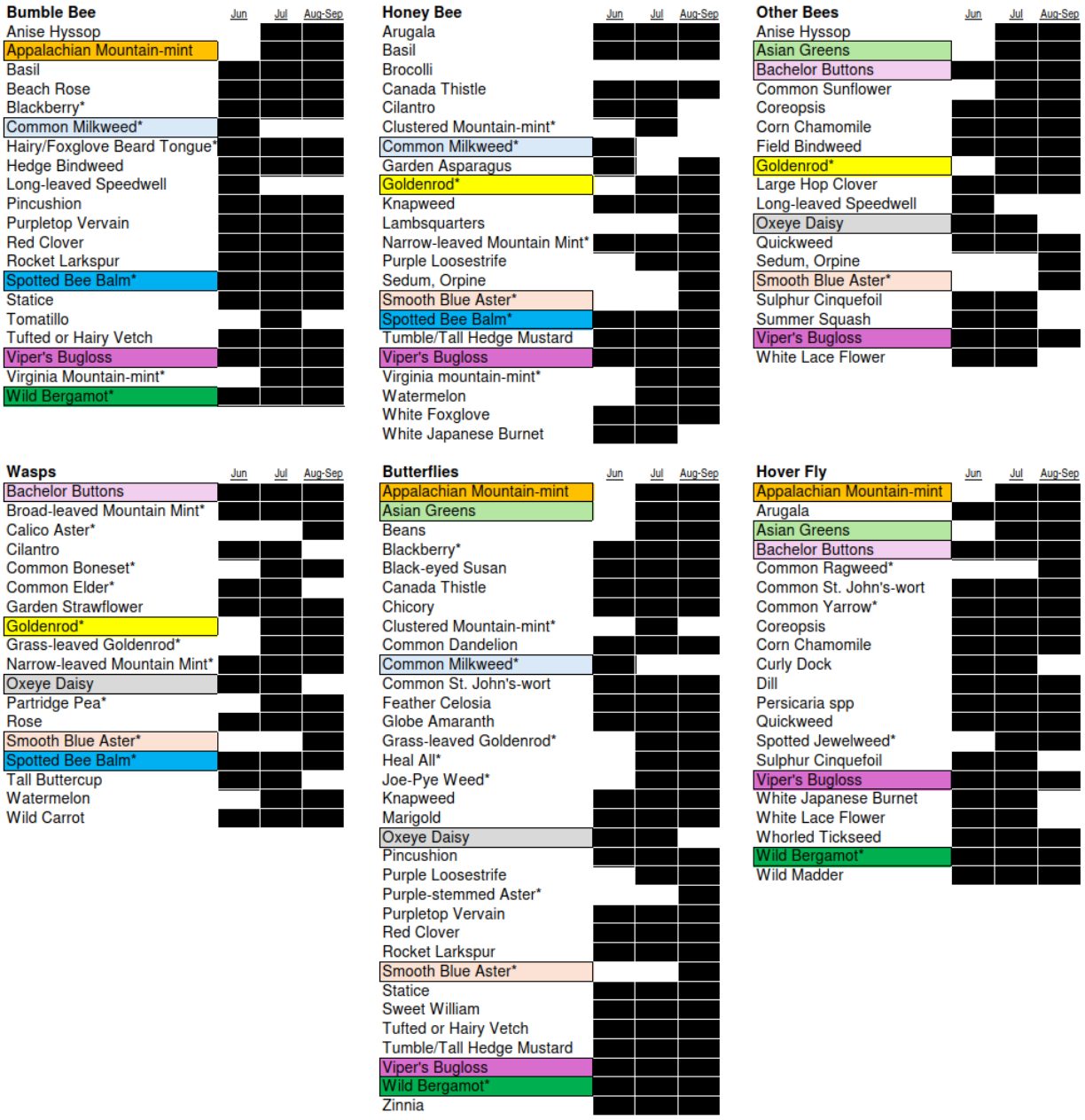
Figure 6. The standardized Hudson Valley Seed Co. observation rates for the various insect groups relative to the mean for all farms (the solid line at 1).

Flower-favorability Data & Maps

For convenience, the flower favorability table from the main blog is repeated here (Table 1 below), even though those data are a summary of observations across all farms and outings.

Figures 7A-F show the flower favorability maps for Hudson Valley Seed Co.; note that the survey area expanded between June and July. By glancing over the following maps, one gets the impression that the Hudson Valley Seed Co. had only modest flower favorability, with Honey Bees (Fig. 7B) and wasps (7D) perhaps showing the best favorability as suggested by Fig. 8. September flowers were consistently relatively low.

Table 1. Most favored plants by our six insect groups, based on data from all farms and all outings. Lists are alphabetical and only include those flowers with notably higher than average visitation rates by the given groups. Plant species native to the Hudson Valley are marked with an asterisk. Colored boxes highlight those species found on three or more lists. Black blocking indicates flowering times observed during the season.



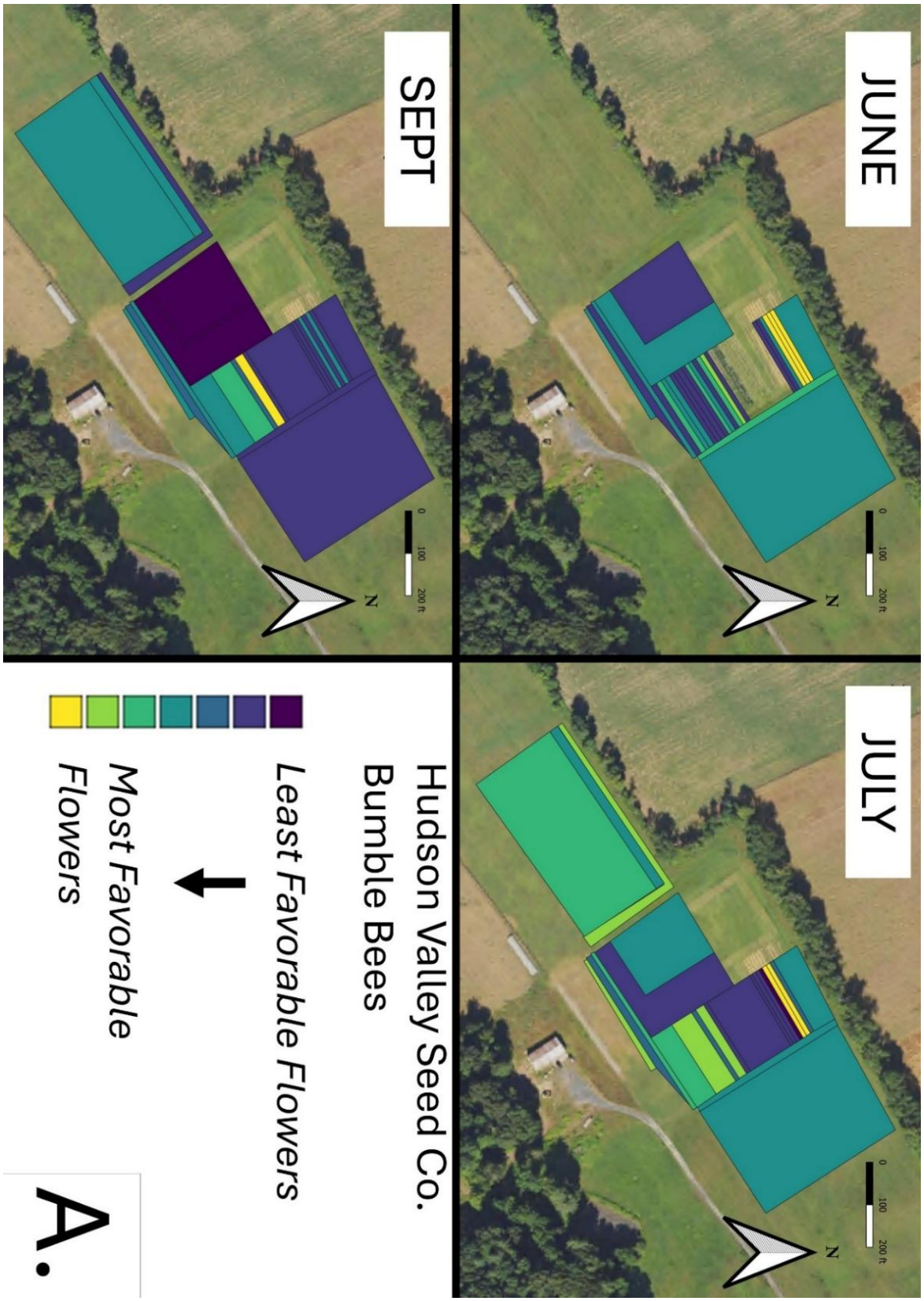


Figure 7A. Flower favorability for bumble bees in the different survey units and different months at Hudson Valley Seed Co.. Generally, darker signifies less favored flowers, and lighter colors mean more favored.

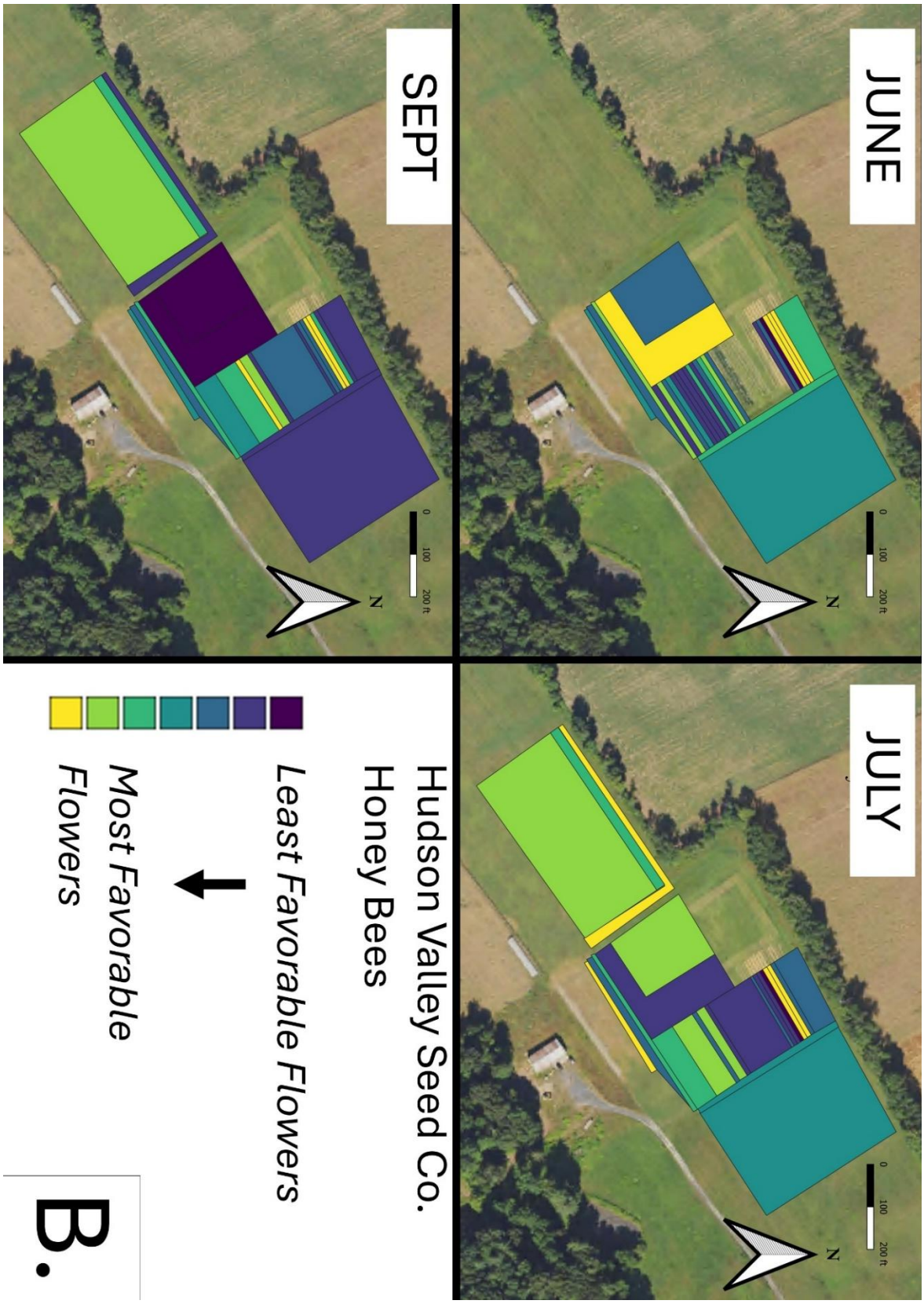


Figure 7B. Flower favorability for honey bees in the different survey units and different months at Hudson Valley Seed Co.. Generally, darker signifies less favored flowers, and lighter colors mean more favored.

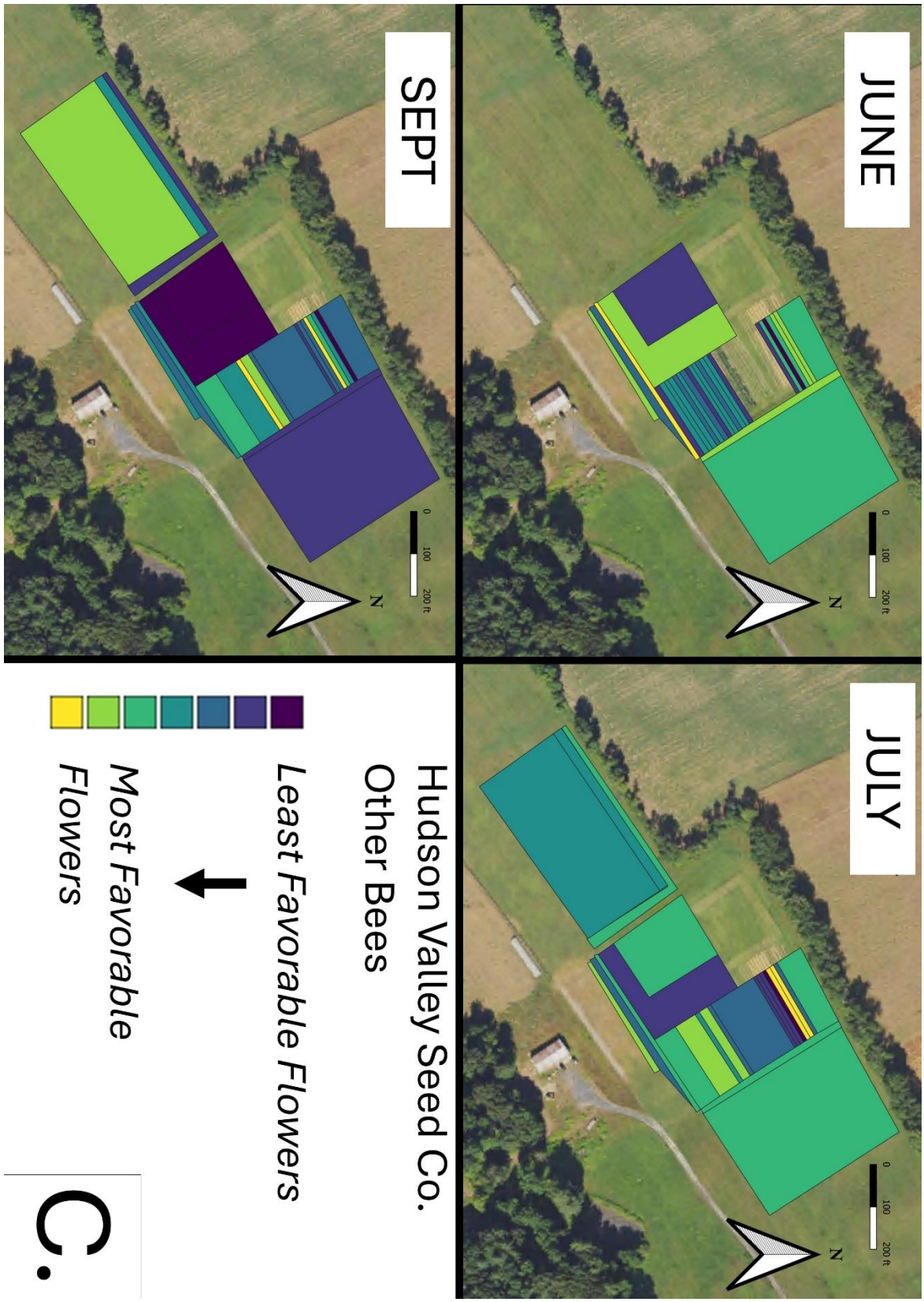


Figure 7C. Flower favorability for other bees in the different survey units and different months at Hudson Valley Seed Co.. Generally, darker signifies less favored flowers, and lighter colors mean more favored.

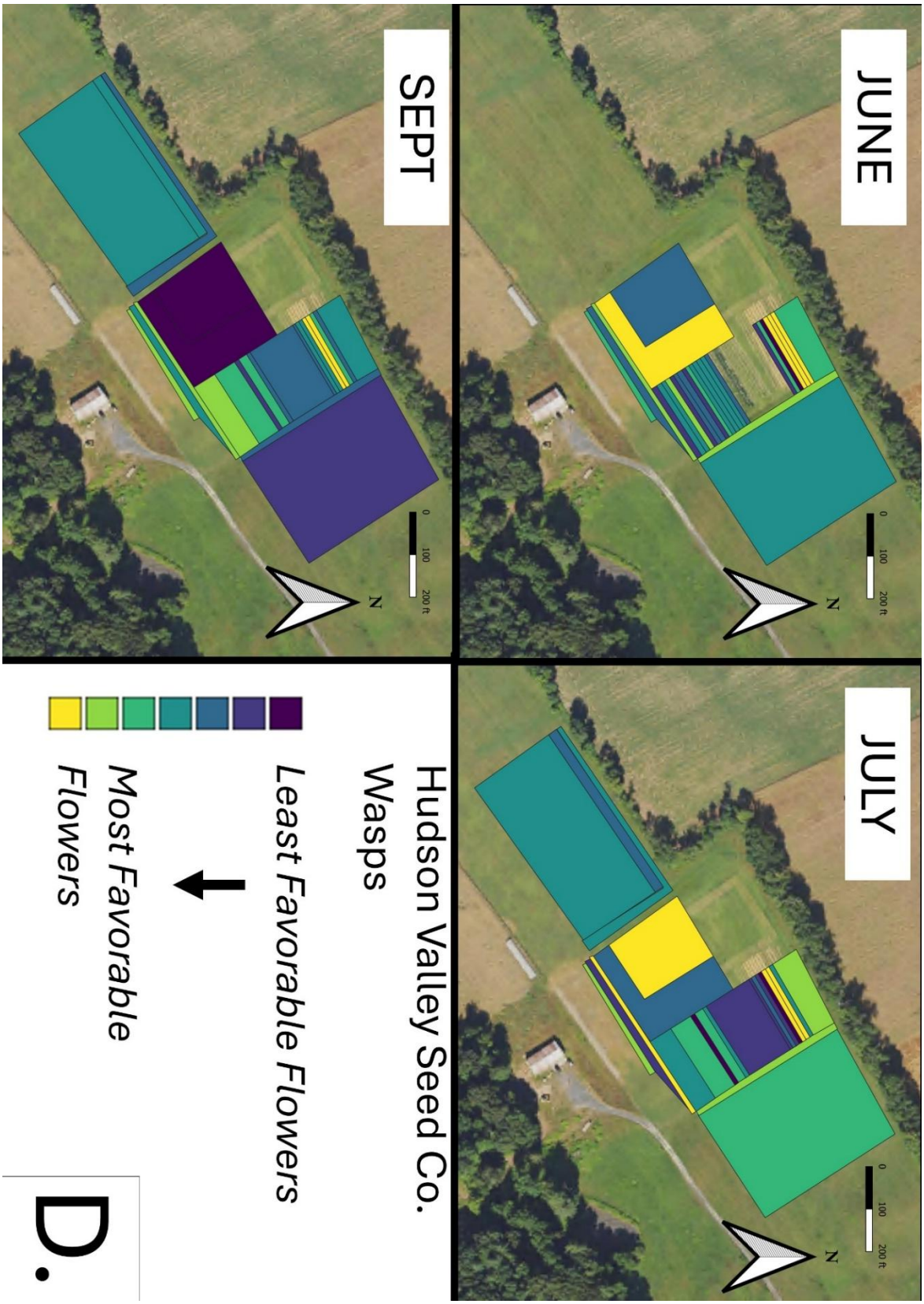


Figure 7D. Flower favorability for wasps in the different survey units and different months at Hudson Valley Seed Co.. Generally, darker signifies less favored flowers, and lighter colors mean more favored.

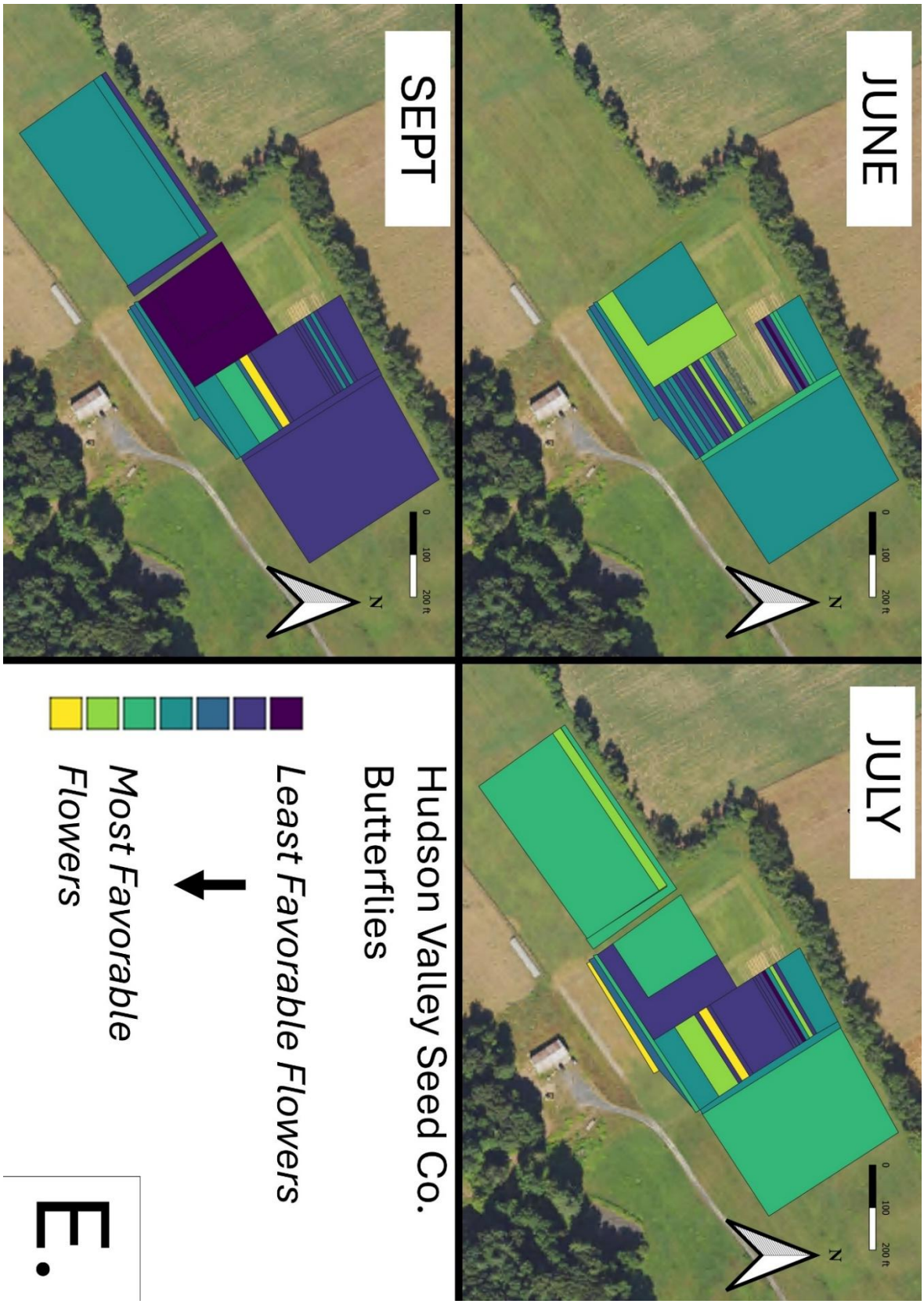


Figure 7E. Flower favorability for butterflies in the different survey units and different months at Hudson Valley Seed Co.. Generally, darker signifies less favored flowers, and lighter colors mean more favored.

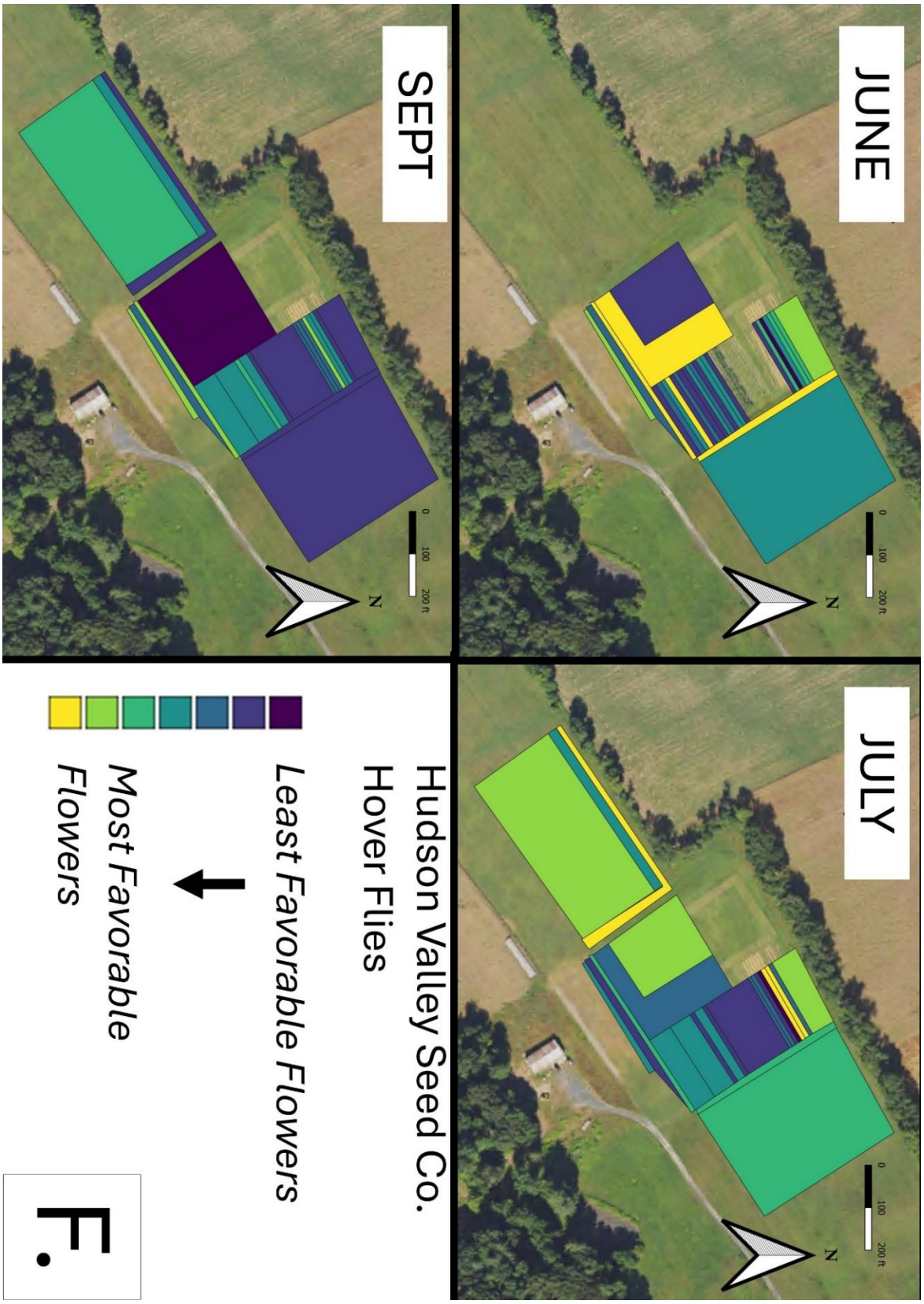


Figure 7F. Flower favorability for hover flies in the different survey units and different months at Hudson Valley Seed Co.. Generally, darker signifies less favored flowers, and lighter colors mean more favored.

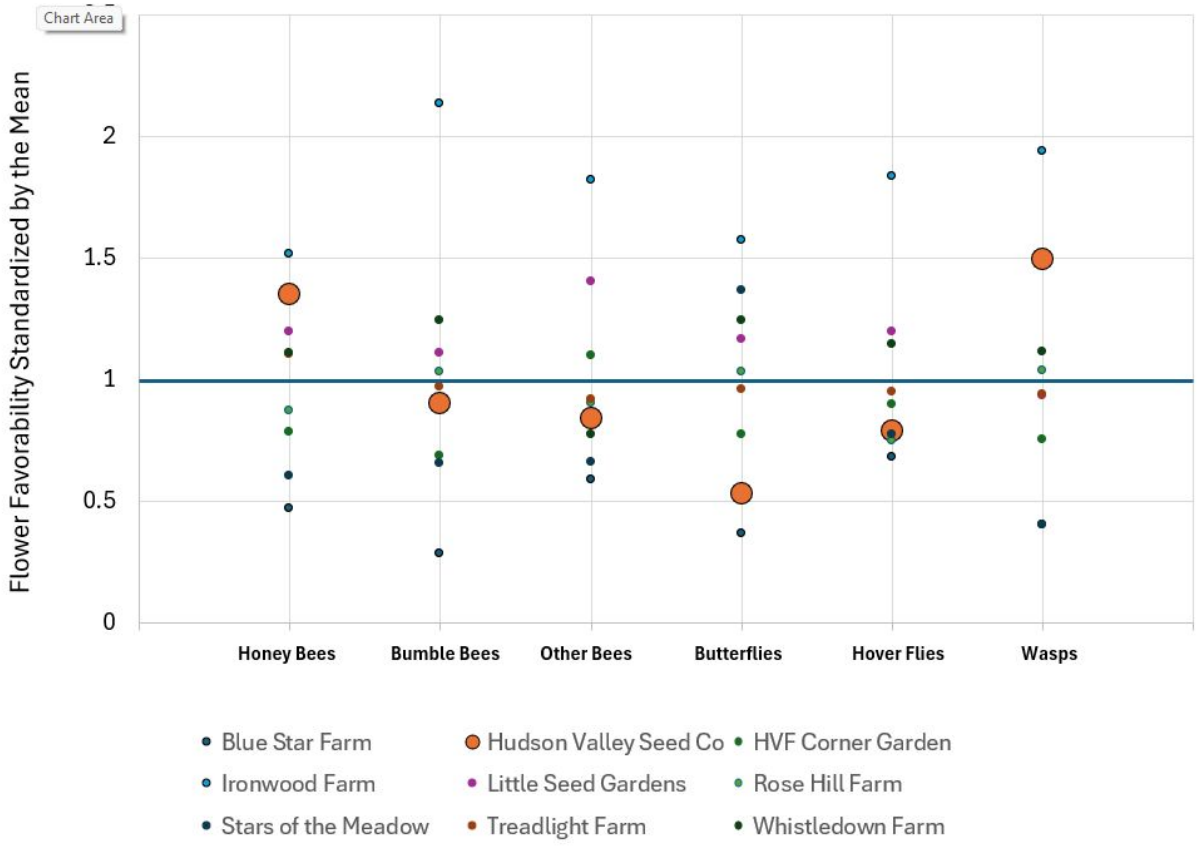


Figure 8. Standardized flower favorability scores by insect group. The solid line at one indicates the mean value across all farms.

Management Considerations

Were the conservation of flower visitors a goal, then adding more flowers, with special focus on late-season flowers and flowers favored by butterflies and hover flies (see Table 1) might increase insect abundances. The planned installation near the study area of a pollinator meadow with Partners for Climate Action is a great step in the right direction. There are also extensive areas of fallow and cover crop inside the fence, which—in their current state—did not supply much resources for insects. If those areas are not earmarked for future cultivation, it might be worth considering installing annual or perennial pollinator meadows to augment the flower offering in the study area.

Potential Next Steps

Hudson Valley Seed Company's seed production is dependent on the successful pollination of those plants. Getting a deeper understanding of who was pollinating what at Hudson Valley Seed Co. might help us better understand the potential relevance of

flower management – which bees are needed for pollination and which flowers do they seem to favor when not visiting the flowers grown for seed production?

As was true at other farms, a better understanding of the relevance of our work to production could come not only from a better understanding of pollination, but also from an understanding of the relevant plant pests and the potential role of wasps and hover flies in their control. While estimating demographic significance might be too complicated, documentation of pests and any evidence of their parasitization by wasps or their consumption by hover fly maggots would add context.

We would also be curious to have a closer look at the cultivated flowers on the other side of the driveway, which seemed to be available in great abundance throughout most of the season. Do they have a higher insect visitation rate than those in the area studied in 2025? And what is the role of the nearby old field and wetland in providing early and late season flowers?

Finally, the aforementioned 2026 installation of a large wildflower meadow in the hay field east of the flower beds could provide an opportunity to evaluate the effects of such an installation on adjacent farmland.

Acknowledgments
Our thanks to Doug Muller and his field and store crew for facilitating our work during the past summer.

Appendix: List of Plants Observed Flowering

On the following three pages, you find the appendix with the list of plants seen in bloom in the survey units of Hudson Valley Seed Co. during three surveys in 2026. The column annotations are explained below.

Native: Indicates whether a species is considered native to the Hudson Valley, "Y" or not, "N." Non-native invasive species are denoted "N-I." Wild-growing species have only the entry "Y," "N," or "N-I." Cultivated species have an added "cult." Additional entries in parentheses indicate that a usually wild-growing plant is occasionally cultivated, "(cult)," or a usually cultivated plant is occasionally also found wild, "(wild)."

Rarity: A star * in this column flags species we consider rare or uncommon in the Hudson Valley.

Ubiquity: The values are calculated as the average % of survey units at the farm which contained the species in bloom during the months of its flowering season.

Duration: The number of months (1 to 3) in which the species was observed in bloom at the farm.

Fl. Season: Indicates with an "x" the months in which the species was observed in bloom at the farm.

Appendix: List of Plants Found in Bloom in the Study Units of Hudson Valley Seed Company During Three Surveys in 2025

			Rarity	Ubiquity	Duration	Fl. Season		
Common Name by Groups	***Scientific Name***	**Native**	**regionally rare/uncommon**	**avg. % of units during flowering season**	**# months in bloom (of 3)**	**June**	**July**	**Aug/Sep**
alfalfa	*Medicago sativa*	N cult		5.5	3	x	x	x
amaranth, globe	*Gomphrena globosa*	N cult		4.1	3	x	x	x
amaranth, red-rooted	*Amaranthus retroflexus*	Y		4.3	1			x
Asian greens; turnip	*Brassica rapa*	N cult		3.7	1	x		
aster, awl	*Symphyotrichum pilosum*	Y		13.0	1			x
aster, Chinese	*Callistephus chinensis*	N cult		4.3	2		x	x
aster, smooth blue	*Symphyotrichum laeve var. laeve*	Y cult	*	4.3	1			x
baby's-breath, showy	*Gypsophila elegans*	N cult		3.7	1	x		
bachelor's button	*Centaurea cyanus*	N cult		4.1	3	x	x	x
balloonplant	*Gomphocarpus physocarpus*	N cult		4.3	2		x	x
basil	*Ocimum basilicum*	N cult		4.1	3	x	x	x
basil, wild	*Clinopodium vulgare*	U		4.2	1		x	
bean	*Phaseolus vulgaris*	N cult		6.4	2		x	x
beardtongue, foxglove	*Penstemon digitalis*	Y cult (wild)		3.7	1	x		
beardtongue, hairy	*Penstemon hirsutus*	Y cult	*	4.1	3	x	x	x
bedstraw	*Galium sp.*	N cult		4.2	1		x	
bedstraw, hedge (wild madder)	*Galium mollugo*	N		21.9	3	x	x	x
bee plant; spiderflower	*Cleome sp.*	N cult		4.3	1			x
beebalm, lemon	*Monarda citriodora*	N cult		4.2	1		x	
beebalm, spotted	*Monarda punctata*	Y cult		5.5	3	x	x	x
bergamot, (common) wild	*Monarda fistulosa*	Y cult (wild)	*	8.3	1		x	
bindweed, black	*Fallopia convolvulus*	N		10.7	2		x	x
blazing-star	*Liatris sp.*	N cult		4.3	2		x	x
blue-eyed-grass, narrow-leaved	*Sisyrinchium angustifolium*	Y	*	3.7	1	x		
buckwheat	*Fagopyrum esculentum*	N cult (wild)		15.5	2	x	x	
butter-and-eggs	*Linaria vulgaris*	N		9.6	3	x	x	x
calendula; marigold	*Calendula officinalis*	N cult		9.5	3	x	x	x
campion, bladder	*Silene vulgaris*	N (cult)		24.4	3	x	x	x
campion, white	*Silene latifolia*	N		47.9	3	x	x	x
cardinal flower	*Lobelia cardinalis*	Y cult	*	4.3	2		x	x
carpetweed	*Mollugo verticillata*	N		23.9	3	x	x	x
carrot, wild	*Daucus carota*	N		23.4	2		x	x
celosia, feather	*Celosia argentea (Plumosa group)*	N cult		8.5	2		x	x
celosia, pink-spiked	*Celosia argentea (Spicata group)*	N cult		5.5	3	x	x	x
chickweed, common	*Stellaria media*	N		3.7	1	x		
chicory	*Cichorium intybus*	N		8.3	1		x	
cinquefoil, silver	*Potentilla argentea*	N		3.7	1	x		
cinquefoil, sulphur	*Potentilla recta*	N		22.2	1	x		
clover, alsike	*Trifolium hybridum*	N		3.7	1	x		
clover, red	*Trifolium pratense*	N (cult)		24.7	3	x	x	x
clover, white	*Trifolium repens*	N		27.6	3	x	x	x
cock's-comb	*Celosia argentea (Cristata group)*	N cult		5.5	3	x	x	x
coleus	*Coleus scutellarioides*	N cult		4.3	1			x
columbine, wild	*Aquilegia canadensis*	Y cult		3.7	1	x		
coneflower (amarillo gold?)	*Rudbeckia cf. hirta 'Amarillo Gold'*	N cult		3.7	1	x		
coneflower varieties	*Echinacea purpurea varieties*	N cult		3.7	1	x		
coneflower, eastern purple	*Echinacea purpurea*	N cult		9.5	3	x	x	x
coral bells	*Heuchera sp.*	N cult		3.7	1	x		
coreopsis, lance-leaved	*Coreopsis lanceolata*	N cult		3.9	2	x	x	
coreopsis, plains	*Coreopsis tinctoria*	N cult		6.2	2	x		x
cosmos, garden (white, pink, red)	*Cosmos bipinnata*	N cult		12.2	3	x	x	x
craspedia, sunball	*Craspedia globosa*	N cult		4.2	1		x	
dahlia (all varieties)	*Dahlia sp.*	N cult		11.2	3	x	x	x
deadnettle, henbit	*Lamium amplexicaule var. amplexicaule*	N		3.7	1	x		
dill	*Anethum graveolens*	N cult		4.3	1			x

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			Rarity	Ubiquity	Duration	Fl. Season		
Common Name by Groups	***Scientific Name***	**Native**	regionally rare/uncommon	avg. % of units during flowering season	# months in bloom (of 3)	June	July	Aug/Sep
dock	*Rumex sp.*	N		4.3	1			x
feverfew	*Tanacetum parthenium*	N cult		4.2	1		x	
fleabane, daisy	*Erigeron annuus*	Y		63.7	3	x	x	x
forget-me-not, woodland	*Myosotis sylvatica*	N cult		4.1	3	x	x	x
garden-huckleberry	*Solanum scabrum*	N cult		4.0	2	x		x
geranium (purple)	*Geranium x magnificum*	N cult		3.9	2	x	x	
gilia, scarlet; standing cypress	*Ipomopsis rubra*	N cult		4.3	1			x
gladiola	*Gladiolus sp.*	N cult		4.3	2		x	x
goldenrod, flat-topped	*Euthamia graminifolia*	Y		4.3	2		x	x
goldenrod, gray	*Solidago nemoralis ssp. nemoralis*	Y cult		8.7	1			x
goldenrod, smooth	*Solidago gigantea*	Y		4.2	1		x	
goldenrod, stiff flat-topped	*Solidago rigida var. rigida*	Y cult	*	4.3	1			x
goldenrod, tall	*Solidago altissima ssp. altissima*	Y		8.7	1			x
goldenrod, wrinkle-leaved	*Solidago rugosa var. rugosa*	Y		8.7	1			x
gourd, sponge	*Luffa aegyptica*	N cult		4.3	1			x
ground-cherry, clammy	*Physalis heterophylla*	Y	*	4.2	1		x	
helenium, dwarf	*Helenium amarum*	N cult		4.1	3	x	x	x
hollyhock	*Alcea sp.*	N cult		4.2	1		x	
honeywort	*Cerinthe major*	N cult		3.9	2	x	x	
horse-nettle	*Solanum carolinense var. carolinense*	Y		25.0	3	x	x	x
horseweed	*Erigeron canadensis var. canadensis*	Y		34.5	2		x	x
Indian-hemp	*Apocynum cannabinum*	Y		6.4	2		x	x
knapweed, brown	*Centaurea jacea*	N-I		8.4	2		x	x
knapweed, spotted	*Centaurea stoebe ssp. micranthos*	N-I		9.7	3	x	x	x
knotweed, common	*Polygonum aviculare*	N		11.1	1	x		
lady's-mantle	*Alchemilla mollis*	N cult		3.7	1	x		
lady's-thumb	*Persicaria maculosa*	N		36.7	3	x	x	x
lamb's-quarters	*Chenopodium album*	N		17.4	1			x
larkspur, rocket	*Consolida (Delphinium) ajacis*	N cult		3.7	1	x		
lettuce	*Lactuca sativa*	N cult		4.3	2		x	x
lettuce, prickly	*Lactuca serriola*	N		4.3	1			x
lily, tiger (pink and wh)	*Lilium lancifolium*	N cult		3.7	1	x		
lion's-tail	*Leonotis leonurus*	N cult		6.4	2		x	x
love-in-a-mist	*Nigella damascena*	N cult		3.7	1	x		
love-lies-bleeding	*Amaranthus caudatus*	N cult		3.7	1	x		
lupine, wild	*Lupinus perennis ssp. perennis*	Y cult	*	3.7	1	x		
marigold (all varieties)	*Tagetes sp. (all varieties)*	N cult		8.1	3	x	x	x
milkweed, butterfly	*Asclepias tuberosa*	Y cult	*	4.2	1		x	
milkweed, common	*Asclepias syriaca*	Y		33.3	1	x		
mullein, common	*Verbascum thapsus*	N		5.5	3	x	x	x
mullein, moth	*Verbascum blattaria*	N		3.7	1	x		
mustard, tower	*Arabis glabra*	Y		7.4	1	x		
nightshade species	*Solanaceae sp.*	N cult		3.7	1	x		
nightshade, black	*Solanum nigrum/ptycanthum*	U		12.8	2		x	x
pansy, garden (ye fl)	*Viola tricolor var. hortensis*	N cult		3.7	1	x		
pea, partridge	*Chamaecrista fasciculata var. fasciculata*	Y cult	*	4.3	2		x	x
pepper	*Capsicum sp.*	N cult		4.1	3	x	x	x
phlox, Drummond's	*Phlox drummondii*	N cult		8.1	3	x	x	x
pigweed	*Amaranthus sp.*	N cult		4.3	2		x	x
pilewort	*Erechtites hieraciifolius var. hieraciifolius*	Y		26.1	1			x
pincushion flower (all colors)	*Scabiosa atropurpurea*	N cult		5.5	3	x	x	x
pink, Deptford	*Dianthus armeria*	N		9.7	2	x	x	
plantain, narrow-leaved	*Plantago lanceolata*	N		21.8	3	x	x	x
pokeweed	*Phytolacca americana var. americana*	Y		10.2	2	x	x	
poppy, California	*Eschscholzia californica*	N cult		4.1	3	x	x	x
poppy, corn (pink or red)	*Papaver rhoeas*	N cult		10.2	2	x	x	

Appendix: List of Plants Found in Bloom in the Study Units of Hudson Valley Seed Company During Three Surveys in 2025

			Rarity	Ubiquity	Duration	Fl. Season		
Common Name by Groups	***Scientific Name***	**Native**	regionally rare/uncommon	avg. % of units during flowering season	# months in bloom (of 3)	June	July	Aug/Sep
primrose, common evening	*Oenothera biennis*	Y		14.9	2		x	x
quickweed	*Galinsoga sp.*	N		7.9	3	x	x	x
ragweed, common	*Ambrosia artemisiifolia*	Y		43.5	1			x
sage, Jerusalem	*Phlomis fruticosa*	N cult		4.1	3	x	x	x
shepherd's-purse	*Capsella bursa-pastoris*	N		4.2	1		x	
smartweed	*Persicaria sp.*	N cult		8.7	1			x
smartweed, dock-leaved	*Persicaria lapathifolia*	Y		3.9	2	x	x	
smartweed, low	*Persicaria longiseta*	N		26.1	1			x
smartweed, Pennsylvania	*Persicaria pensylvanica*	Y		4.3	1			x
snapdragon, common	*Antirrhinum majus*	N cult		8.3	1		x	
sneezeweed, common	*Helenium autumnale*	Y cult	*	4.3	1			x
sorrel, common yellow wood	*Oxalis stricta*	Y		31.3	3	x	x	x
St. John's-wort, common	*Hypericum perforatum ssp. perforatum*	N		5.8	2	x	x	
strawflower, garden	*Xerochrysum bracteatum*	N cult		6.4	2		x	x
sunflower, common	*Helianthus annuus*	N cult		12.8	2		x	x
sunflower, Maximilian's	*Helianthus maximiliani*	N cult		4.1	3	x	x	x
sunflower, Mexican (orange)	*Tithonia cf. rotundifolia*	N cult		4.2	1		x	
sunflower, Mexican (yellow)	*Tithonia sp.*	N cult		4.3	1			x
Susan, black-eyed	*Rudbeckia hirta*	N cult (wild)		8.4	2		x	x
Susan, black-eyed (w/ red flowers)	*Rudbeckia sp. var*	N cult		4.3	1			x
Susan, brown-eyed	*Rudbeckia triloba var. triloba*	U		4.3	2		x	x
sweet alyssum	*Lobularia maritima*	N cult		3.7	1	x		
sweet william	*Dianthus barbatus*	N cult		3.7	1	x		
thyme, creeping	*Thymus sp.*	N cult		4.0	2	x		x
tickseed (tiny)	*Coreopsis sp.*	N cult		8.3	1		x	
tick-trefoil, showy	*Desmodium canadense*	Y	*	4.2	1		x	
tobacco	*Nicotiana sp.*	N cult		4.2	1		x	
tomato	*Solanum lycopersicum*	N cult		5.5	3	x	x	x
wallflower, Siberian	*Cheiranthus allionii*	N cult		5.3	3	x	x	x
yarrow (pk or yellow)	*Achillea millefolium varieties*	Y cult		7.4	1	x		
yarrow, common	*Achillea millefolium*	Y (cult)		6.7	3	x	x	x
yellowcress, marsh	*Rorippa palustris ssp. palustris*	Y	*	3.7	1	x		
zinnia (small)	*Zinnia cf. angustifolia*	N cult		4.3	2		x	x
zinnia, garden	*Zinnia sp.*	N cult		8.1	3	x	x	x
unknown sp. 1 (5 pets, pk, wh, purple; lvs alt)	*Unknown species 1* (Linum sp.?)	N cult		3.7	1	x		
unknown sp. 2 with delicate pink fl, alm succ, obov, light green leaves	Unknown species 2	N cult		3.7	1	x		