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## Overseeding Bermudagrass to Cool-season Grasses<sup>1</sup>

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The successful conversion from bermudagrass to a cool season turf such as bluegrass, fescue, or rye usually requires three major steps: (1) elimination of the bermuda by carefully timed herbicide applications, (2) power-raking or other cultivation to incorporate or remove the organic thatch layer, and (3) proper establishment and management of the cool-season grass.

Initial tests of several herbicides to eliminate bermudagrass indicated Roundup (Glyphosate) provided the most complete kill, based on spring recovery (Table 1).

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**Table 1. Regrowth of bermudagrass following late summer application of herbicides<sup>1</sup>**

Herbicide	Rate	Dates of application	Recovery rating on 5/24/77 <sup>2</sup>
Roundup	1½ oz/gal	Aug. 20	1.0
Roundup	1½ oz/gal	Aug. 20 and Sept. 2	1.0
Dowpon	3.0 oz/gal	Aug. 20	2.0
Dowpon	3.0 oz/gal	Aug. 20 and Sept. 2	1.5
Phytar 560	2.5 oz/gal	Aug. 20	8.5
Phytar 560	2.5 oz/gal	Aug. 20 and Sept. 2	6.0
Control (untreated)			9.0

- All herbicides applied at manufacturers' recommended dilutions. Amount of water applied was equal to 1.5 qts. per 30 sq. ft. plot = 4 gal/1000 sq. ft. applied with hand held 3-gallon sprayer.
- Recovery based on visual rating on scale of 1 to 9 with 1 = no live turf, 9 = most regrowth.

Overseeding studies indicated good success by power-raking and seeding within one week after applying Roundup although double applications somewhat reduced establishment, especially of ryegrass (Table 2).

**Table 2. Cool-season grass establishment following herbicide applications.**

Treatment	% Green bermuda on 9/7/76	Seedling establishment <sup>1</sup>	
		Bluegrass	Ryegrass
1. Roundup Aug. 20	8.33	8.6	6.8
2. Roundup Aug. 20 & Sept. 2	8.89	6.2	4.6
3. Phytar 560 Aug. 20	26.11	9.0	8.2
4. Phytar 560 Aug. 20 & Sept. 2	7.22	8.6	7.6
5. Dowpon Aug. 20	3.89	7.6	7.6
6. Check (untreated)	97.22	9.0	8.8

- Grass seeded Sept. 8 and establishment rated Sept. 29, 1976, on scale of 1 to 9 with 1 = no live turf, 9 = best stand. Mean of 5 replications.

Three application methods were compared: (1) a three-gallon, hand-held, compressed-air sprayer, (2) a gravity fed Meter-miser (trade name) providing large droplets to reduce drift, and (3) a calibrated plot sprayer that delivered exactly 1 gallon per 1000 square feet at 15 pounds per square inch at 2.5 miles per hour. Spraying was in late summer when bermuda was seeding;

moisture was adequate for active growth. All methods provided good control of bermudagrass. The second application served primarily to touch up skips due to improper overlap of sprayer nozzles.

Although seedbed preparation is best done by incorporating dead grass and thatch, satisfactory results were obtained by power-raking. Establishment ratings of bluegrass and fescue following one and two applications of Roundup appear in Table 3. Seeding one week after the last application indicated no significant difference in stand or vigor from one or two applications of Roundup at the 3-ounce per gallon rate. Establishment was significantly improved over untreated plots with competitive live grass.

**Table 3. Establishment of bluegrass and fescue following Roundup applications<sup>1</sup>**

Date sprayed	Stand, %		Plant vigor <sup>2</sup>	
	Bluegrass	Fescue	Bluegrass	Fescue
Aug. 30	82	87	7.6	8.0
Aug. 30 & Sept. 6	73	85	7.7	8.3
Control (untreated)	47	72	5.3	5.7

- Roundup applied at 6 tablespoons per gallon of water per 1000 sq. ft. @ 15 pounds pressure. Grass was seeded Sept. 13, 1978.
- Estimated visually. Vigor based on scale of 1 to 9 with 9 = most vigorous, mean of 3 applications. Rated Nov. 10, 1978.

Most tests were conducted on seeds (Arizona) bermuda where one application usually provides good control. In tests on various improved bermudas, some clonal resistance was noted. Common bermuda with very deep rhizomes has been the most difficult to control. Therefore two applications of Roundup at the 3-ounce per gallon rate are recommended.

**Note: Herbicides are only tools to use in converting from bermuda to cool season grasses. The combination of a dense stand, higher mowing (2-3 inches) and fertilizing spring and fall, will favor cool-season grasses over bermuda. Spot applications may be necessary to achieve complete control of bermuda.**

It is important to follow these steps in using herbicides:

1. Spray in late summer after bermuda is seeding but with adequate moisture for growth.
2. Spray on a bright sunny day at least six hours before a rain for maximum absorption.
3. Allow one week before seeding (or two weeks if double application) when using Roundup, or four to six weeks if using Dowpon.
4. Avoid drift to desirable ornamentals. Roundup established plants has not caused appreciable damage when spray does not contact foliage or green bark.
5. Read entire label before using pesticides.