



Impact of Planting Date and Maturity Group Selection on Soybean Yield

2014 Learning Center Demo Report
Monsanto Learning Center at Scott, MS



Background



- Nearly 25 years of research in Mississippi has demonstrated that soybean products with maturity groups (MG) 4, 5, and 6 have increased time in the vegetative stages as MG increases.¹
- When planted at any time, later maturing soybean products have a longer vegetative period and later reproductive stages compared to earlier maturing soybean products.¹

Background



- The purpose of this demonstration was to show the effects of soybean product and MG selection on soybean yield potential in a mid-southern cropping system. Specifically:
 - What effect does planting date have on soybean yield in the midsouth?
 - Which soybean products/MGs are optimized in the system at the Learning Center at Scott, MS?
 - How do MG and planting date interact in the demonstrated system?

Materials and Methods



- Experimental design included several soybean products from MG 2 to MG 7 planted on 5 dates from very early (March 26) to very late (June 27) in the planting cycle.
- 2 Replicates
- Harvested over a long period due to spread in maturity:
 - The first MG (2) harvested in mid June.
 - The last MG (7) harvested in early November.

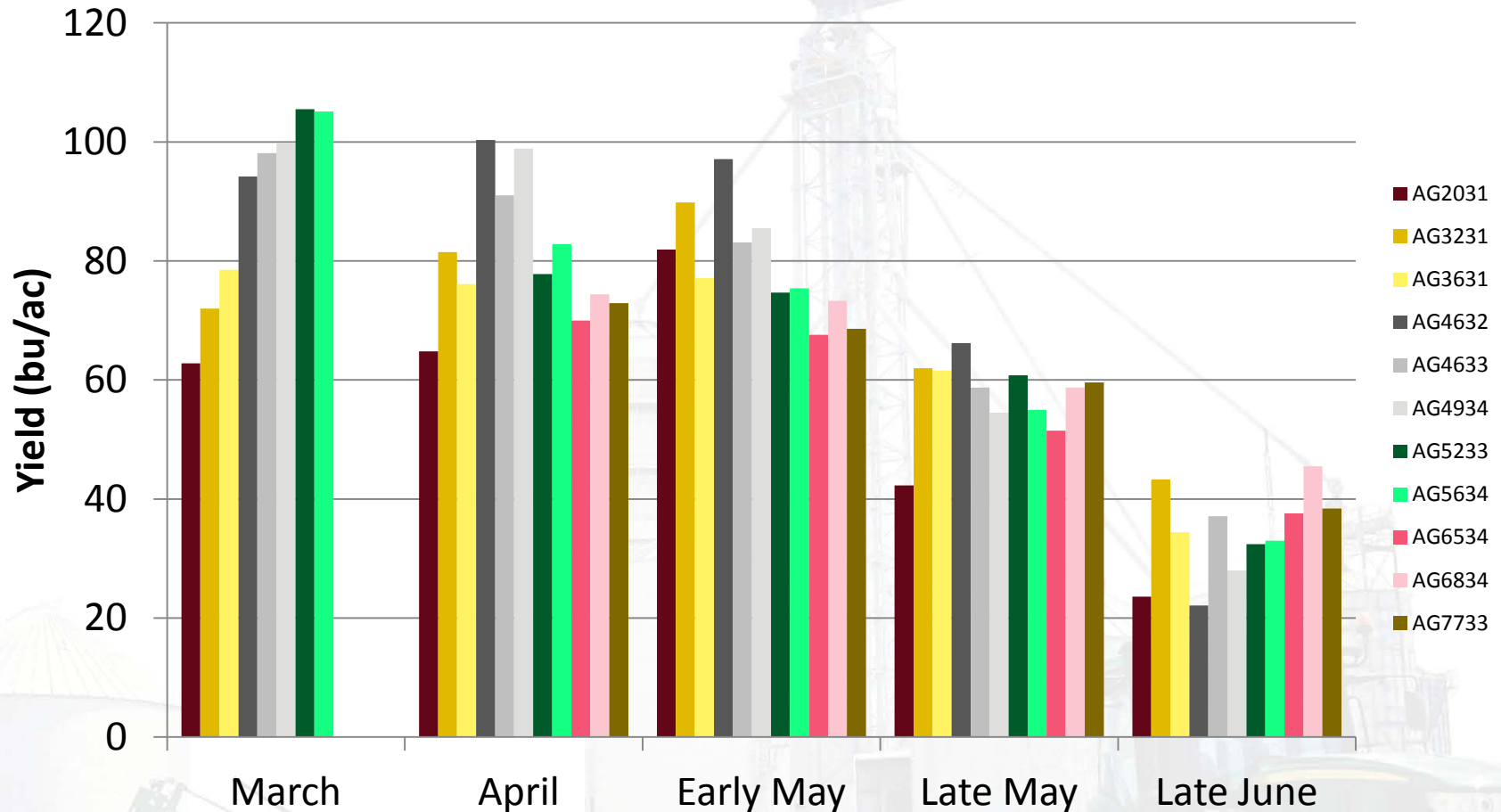
Yield of 11 Soybean Products for 5 Different Planting Dates



Asgrow® Soybean Brands	Maturity Group	Planting Date March 26	Planting Date April 21	Planting Date May 7	Planting Date May 21	Planting Date June 27
		Average Yield (bu/acre)				
AG2031	2.0	62.8	64.8	81.9	42.3	23.6
AG3231	3.2	72	81.5	89.9	62	43.3
AG3631	3.6	78.5	76.1	77.1	61.6	34.4
AG4632	4.6	94.2	100.3	97.1	66.2	22.1
AG4633	4.6	98.1	91	83.1	58.7	37.1
AG4934	4.9	99.8	98.9	85.5	54.5	28
AG5233	5.2	105.5	77.8	74.7	60.8	32.4
AG5634	5.6	105.1	82.8	75.4	55	33
AG6534	6.5	-	70	67.6	51.5	37.6
AG6834	6.8	-	74.4	73.3	58.7	45.5
AG7733	7.7	-	72.9	68.6	59.6	38.4

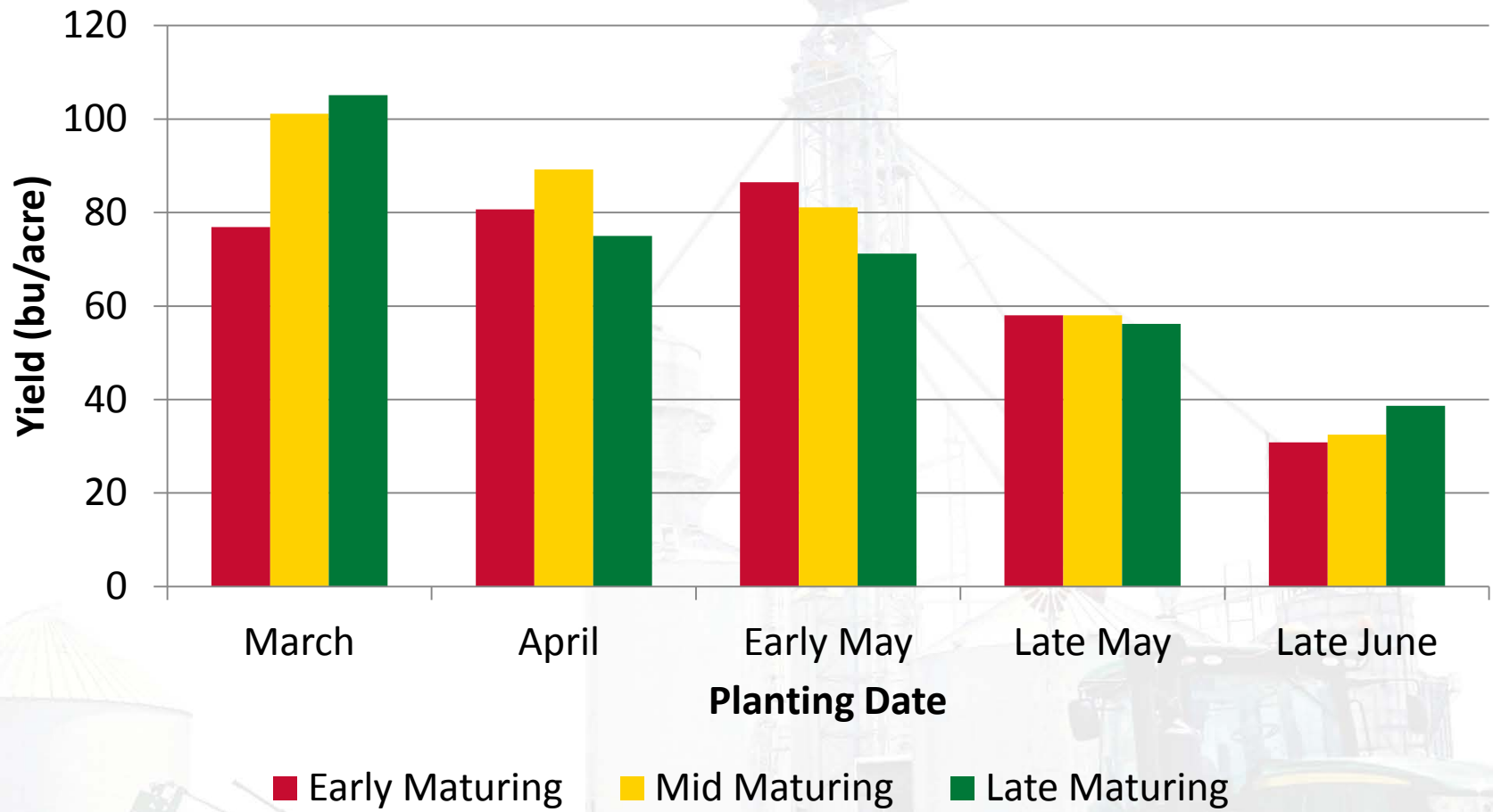
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Planting Date Effect on Yield of Asgrow[®] Soybean Brands



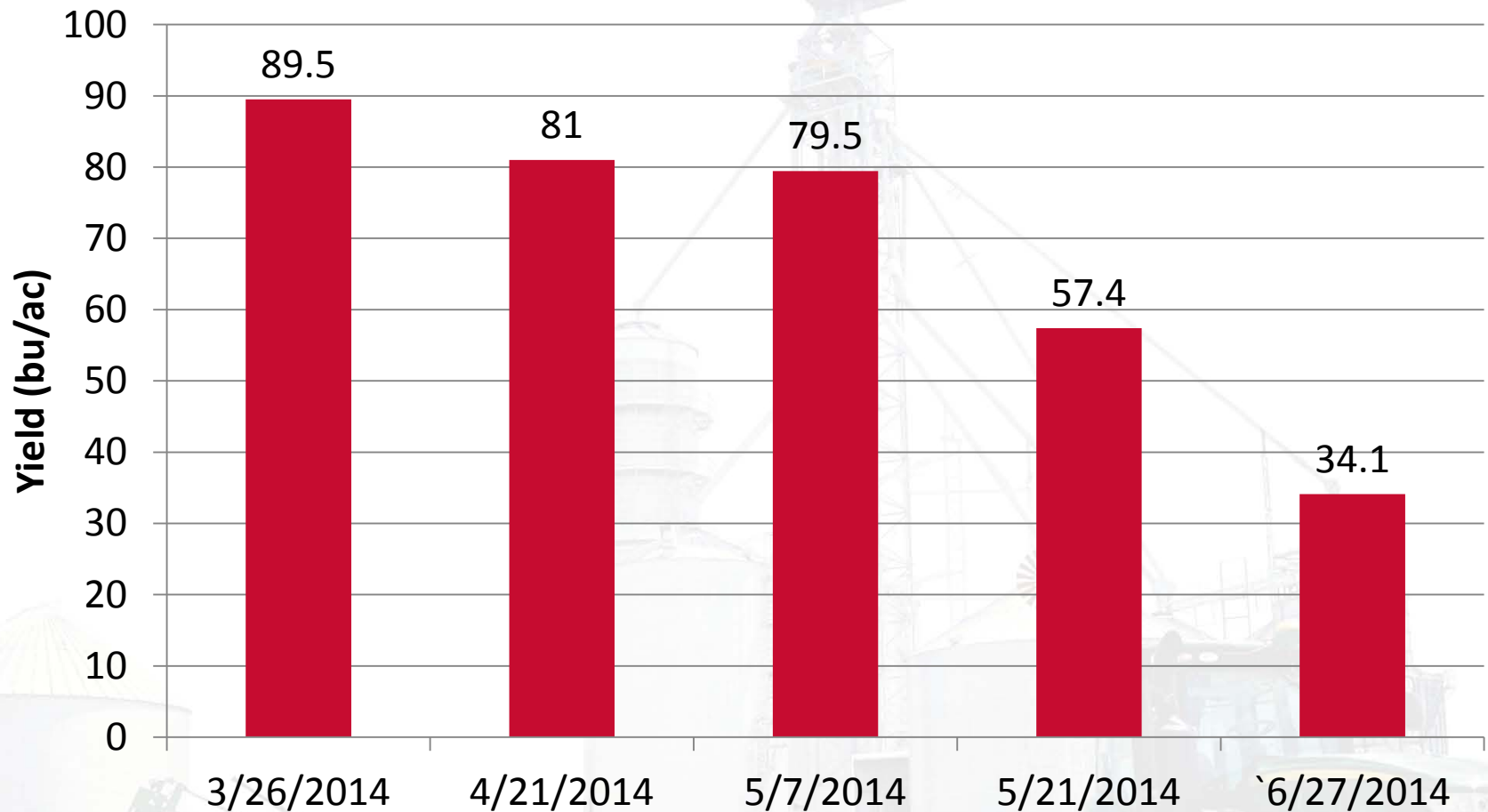
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Effect of Planting Date on Yield of Early, Mid, and Late Maturing Soybean Products



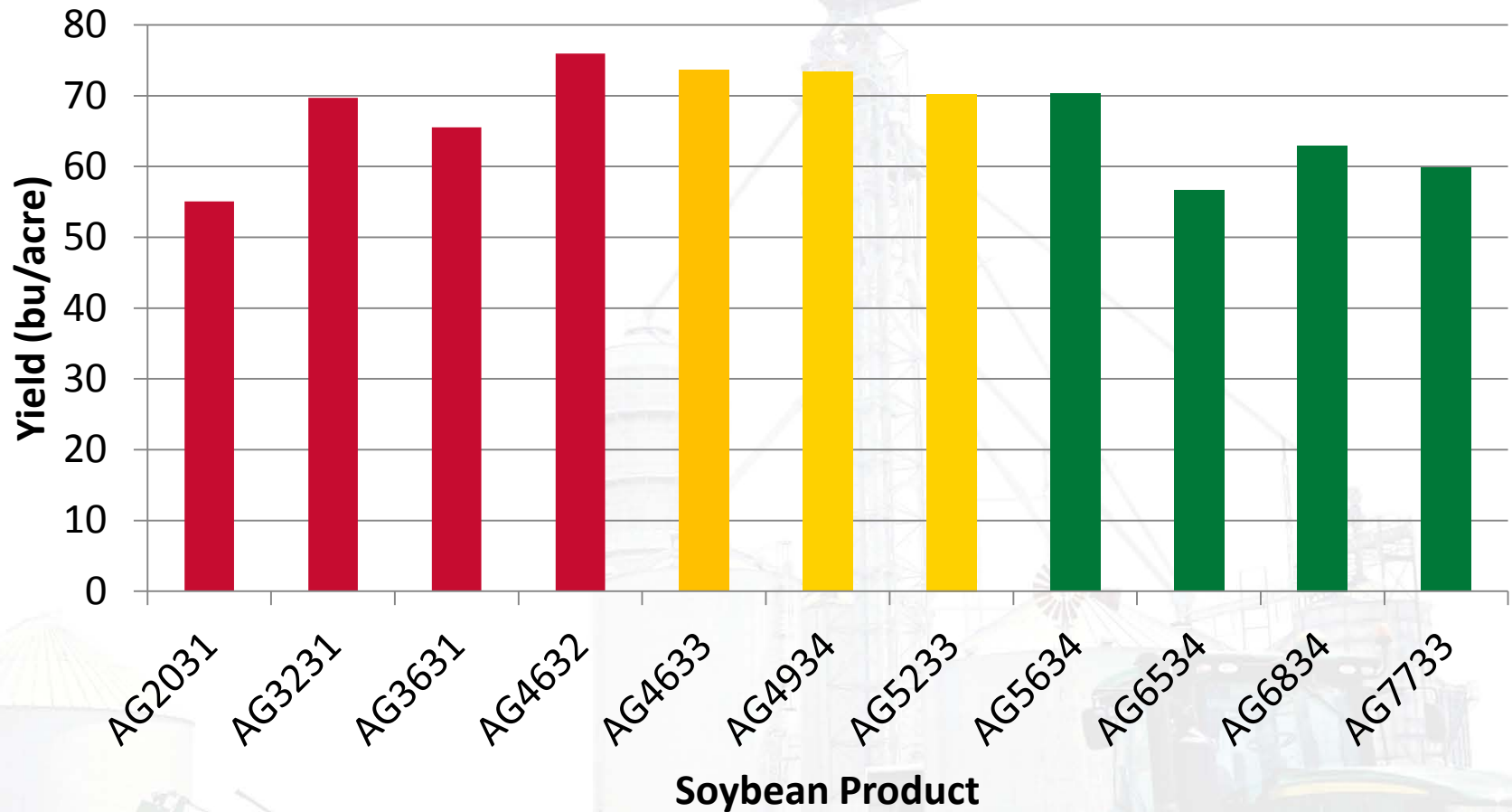
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Effect of Planting Date Across Soybean Maturity Groups



Impact of Planting Date and Maturity Group Selection on Soybean Yield

Yield of Asgrow® Soybean Brands Across Planting Dates



Impact of Planting Date and Maturity Group Selection on Soybean Yield

Results and Observations



These data support the optimum planting date and maturity group recommended for Scott, MS:

- Planting dates in Scott, MS can begin as early as late March.
- Typically, a MG between IV and V is optimal at these early planting dates.²

The response to planting date was as expected, specifically:

- Early soybean products planted early – These plants had less yield than later more locally adapted products. This is likely related to adaptation.
- Late soybean products planted early – The latest MG products were not planted by the first planting date due to seed availability. In the mid-date plantings they were often lower yielding than the mid-MG products.
- Early soybean products planted late – These products were limited in development by photoperiod and did not yield particularly well.
- Late soybean products planted late – As the season progressed, the later MGs did better into the season. This has been observed in past years when late-planted products have demonstrated good yields.

Results and Observations



Planting date effect – Across all groups, yields decreased greatly as planting became later.

- The greatest yields were in the earliest planting date. This could be due to multiple factors:
 - Rainfall that benefits the early planted crop.
 - Longer time to develop a crop.
 - An interaction with development and the season that allows this crop to evade insects, disease, and weather due to maturity.
 - A real drop in yield potential occurred between early May and Late May.
 - By late June, yield potential was 1/3 of what it was in Late March or early April.

Results and Observations



We observed the typical response to planting date and MG:

- The highest yields came in the earliest planting dates.
- The limitations on early planting are:
 - 1) cool soils and
 - 2) potential for frost events at that time.
- In the early-planting dates, the mid maturing soybean products generally yielded the greatest.
- With proper soybean product selection we were able to extend the high yield planting dates into early May.

Results and Observations



Results from this demonstration are related to the photoperiod response of soybean.

- As soybean plants grow, they initiate bloom depending on:
 - The photoperiod they have adapted to via breeding.
 - The planting date and associated photoperiod.

Results and Observations



- The following scenarios can occur:
 - **Early soybean products that are planted late** often bloom too early in the cycle and have limited yield.
 - **Late soybean products that are planted too early** may not bloom until June 21 (summer solstice) and are often too tall to yield well.
 - **Early soybean products that are planted early** often have the time and ability to yield well, depending on the response to photoperiod. In this scenario, plants have balanced vegetative and reproductive development.
 - **Late soybean products that are planted late** generally yield well because vegetative growth is limited before they bloom. Plants in this scenario may yield less compared to those planted during early planting dates.
- Blooming period is also influenced by whether soybean products are determinate or indeterminate.

Legal Statements



Sources: ¹ Heatherly, L. 2005. Soybean maturity group, planting date and development related. deltafarmpress.com

² Soybean production in Mississippi. What are the recommended planting dates for soybeans? Mississippi State University. MSUcares.com

The information discussed in this report is from a single site, non-replicated demonstration. This informational piece is designed to report the results of this demonstration and is not intended to infer any confirmed trends. Please use this information accordingly.

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