



Current Report

Oklahoma Cooperative Extension Fact Sheets are also available on our website at: osufacts.okstate.edu

Sesame Research at OSU in 2010

Chad Godsey
Assistant Professor, Cropping Systems

Joe Armstrong
Assistant Professor, Weed Science

In 2010, a significant amount of sesame research was carried out at the OSU North Central Research Station at Lahoma, OK to improve best management practices. Studies included, nitrogen fertilizer trials, row spacing and several herbicide evaluations. The following is a brief summary of the research that was conducted.

Nitrogen Fertility in Sesame

In 2010, a nitrogen study was conducted to determine the optimum amount of N for maximizing yield. Treatments included rates of 0, 20, 40, 60, 80 and 100 pounds of N per acre. Ammonium nitrate was broadcast prior to planting. Sesame variety S32 was used for the trial and planted on 15-inch rows. The trial was planted on June 3 behind winter wheat that was terminated in April.

Seed yields were excellent at Lahoma. Average yield was 1,371 pounds per acre when averaged across all N treatments. A linear increase in seed yield was observed when N rate was increased from 0 to 100 pounds of N per acre (Figure 1). Even though N rate increased yield at the higher rates, the extra N may not provide an economic benefit depending on the price of N fertilizer. Also, optimum N rate depends on yield goal. If you are trying to produce 1,500 pounds per acre sesame you will likely need 80 to 100 pounds per acre. However, if your historic production is 800 to 1,000 pounds per acre a N recommendation of 40 to 60 pounds of N per acre seems appropriate. One adverse effect of higher N application rates is the reduction of sesame seed oil content (Figure 2). This study will be repeated in 2011.

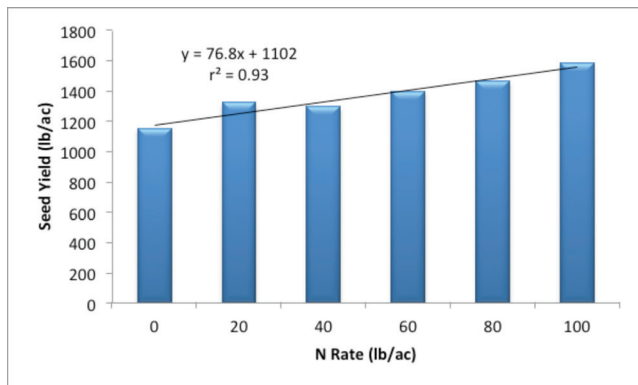


Figure 1. Sesame seed yield response to nitrogen at Lahoma in 2010.

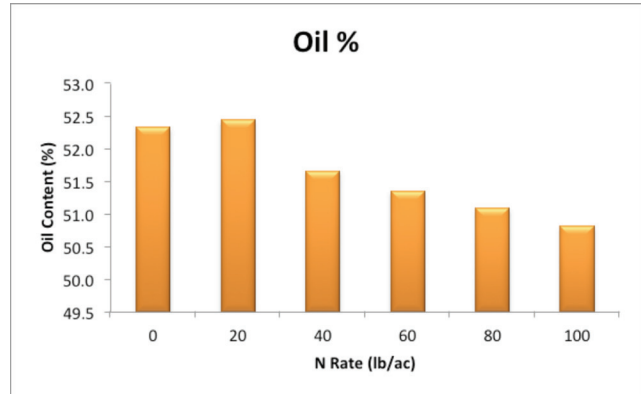


Figure 2. Effect of N rate on seed oil content.

Row Spacing Studies

Four sesame varieties (S30, S32, EXP1 and S70) were used to evaluate seed yield differences in two row spacings (7.5-inch and 15-inch). Both row spacings were planted with a Great Plains no-till drill at 4 pounds of seed per acre.

Seed yields were excellent for the row spacing study (Tables 1 and 2). No significant differences were observed between varieties or row spacing. It appears like yield potential is similar between the 7.5-inch and 15-inch rows. Certain advantages may exist for certain row spacing, but row spacing comes down to producer preference and what equipment is available. Regardless of row spacing, using planting equipment that can accurately meter seed and place the seed at a uniform depth is critical.

Table 1. Seed yield means for variety and row spacing at Lahoma, OK in 2010.

Treatment Variety	Yield - - lb/ac - -
S30	1,342
S32	1,489
S33	1,371
S70	1,376
Row Spacing	
7.5 in	1,352
15 in	1,437

Table 2. Seed yields of four sesame varieties and two row spacings at Lahoma in 2010.

Variety	Row Spacing (in)	Yield (lb/ac)
S30	7.5	1,370
	15	1,313
S32	7.5	1,486
	15	1,492
EXP1	7.5	1,273
	15	1,470
S70	7.5	1,280
	15	1,472

Weed control in sesame

Burndown and preemergence weed control

A large portion of the sesame produced in Oklahoma is grown with no-till production practices. To prepare the field for planting, it is often necessary to “burn down” any weeds present. Similar to other crops produced with no-till practices, a burndown treatment of glyphosate and 2,4-D will be very effective at controlling grass and broadleaf weeds prior to planting. Based on results from research conducted by OSU during 2010, 2,4-D should be applied at least two weeks prior to planting sesame to avoid potential crop injury and delays in sesame growth.

During the first 30 days after planting, sesame grows very slowly and is not competitive with early-season weed pressure. Therefore, it is especially important to use a preemergence herbicide that will provide weed control until the sesame canopy develops. Currently, the only preemergence herbicide labeled for use in sesame is Dual Magnum®. Dual Magnum® should be applied to the soil surface after planting, but before sesame emergence. Dual Magnum® may be applied at 0.67 to 1.33 pints per acre. Dual Magnum® is effective for controlling many grass weeds and small-seeded broadleaves, such as pigweed species. Dual Magnum® will not control weeds that have emerged from the soil; therefore, any weeds present at planting should be controlled with tillage or glyphosate.

Research conducted by OSU during 2010 showed that Dual Magnum® did not reduce sesame yields compared to an untreated check. Some stand loss and crop injury was observed after application of Dual Magnum®; however, the sesame quickly outgrew any injury and no yield losses were observed.

Postemergence Weed Control

The only postemergence herbicide options currently available for sesame include Select®, Select Max® and other products that contain clethodim as their active ingredient, such as Shadow®, Volunteer®, Arrow 2EC® and several others. These products will only provide control of grass weeds and do not have any activity on broadleaf weeds. Because of the lack of postemergence herbicide options for broadleaf weeds, it is important to use Dual Magnum® as a preemergence treatment.

Select®, Select Max®, and other products that contain clethodim must be applied before the flowering stage of



Figure 3. An example of the injury caused by an application of Select Max during sesame flowering. The flowers between the orange bracket did not form capsules, leading to a substantial reduction in yield.

sesame. If these products are applied during flowering, these flowers will not produce capsules and, as a result, yields will be reduced. This injury is known as “cap gap” and is easily recognizable by the lack of seed capsules on the stem (Figure 3). Research conducted by OSU in 2010 showed yield reductions of nearly 30 percent compared to the untreated check (1,510 pounds per acre) when sesame was treated with Select Max® (1,082 pounds per acre) during flowering, due to fewer capsules formed on the stem.

Recommendations for Weed Control in Sesame for 2011

Because of the lack of herbicide options for postemergence broadleaf weed control in sesame, it is very important to use Dual Magnum® as a preemergence treatment. For the first month after planting, sesame develops very slowly and will not be competitive against weeds. Dual Magnum® applied at planting will provide early-season weed control until the sesame is able to form a canopy and shade out late-season weed growth. Once the sesame is established, Select®, Select Max® or other clethodim-containing products can be used for postemergence grass weed control. However, it is very important not to apply these herbicides during flowering to avoid substantial yield losses due to a lack of seed capsule formation on the stem.

Oklahoma State University, in compliance with Title VI and VII of the Civil Rights Act of 1964, Executive Order 11246 as amended, Title IX of the Education Amendments of 1972, Americans with Disabilities Act of 1990, and other federal laws and regulations, does not discriminate on the basis of race, color, national origin, gender, age, religion, disability, or status as a veteran in any of its policies, practices, or procedures. This includes but is not limited to admissions, employment, financial aid, and educational services.

Issued in furtherance of Cooperative Extension work, acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture, Robert E. Whitson, Director of Cooperative Extension Service, Oklahoma State University, Stillwater, Oklahoma. This publication is printed and issued by Oklahoma State University as authorized by the Vice President, Dean, and Director of the Division of Agricultural Sciences and Natural Resources and has been prepared and distributed at a cost of 20 cents per copy. 0511 GH