MANAGEMENT OF CHOPPER HARVESTER-GENERATED GREEN CANE TRASH BLANKETS: A NEW CONCERN FOR LOUISIANA

E. P. Richard, Jr.
U.S. Department of Agriculture, Agriculture Research Service
Southern Regional Research Center, Sugarcane Research Unit
Houma, Louisiana 70361, USA

ABSTRACT

Field experiments were conducted between 1993 and 1997 throughout the Louisiana sugarcane industry to evaluate effects of chopper-harvester generated green cane trash blankets (GCTB) on weed and sugarcane development. Sugarcane development and ultimately cane and sugar yields were similar in five experiments when the GCTB was either allowed to remain over the winter months or removed in the early spring at the start of the ratoon growing season. Of the removal methods evaluated (burning, raking, and shaving), the use of a revolving disk shaver to remove the GCTB had the greatest potential for negatively influencing sugar yield. Burning the residue in early March did not adversely impact the crop, but burning in early April did. In three experiments where the GCTB was removed in the fall shortly after harvest, sugar yields were higher than the no removal and spring removal treatments in both first- and second-ratoon crops. Coincidentally, the GCTB suppressed the emergence of cool-and warm-season weeds by at least 62%. Results suggest that despite obvious benefits in weed suppression and some freeze protection, growers in Louisiana should remove the GCTB as soon as possible after harvest to limit the potential deleterious effects of the GCTB on the subsequent ratoon crop.

Keywords: Crop litter, crop residues, green cane trash blankets, sugarcane, Saccharum spp.

INTRODUCTION

For over 40 years, sugarcane in Louisiana has been harvested with whole-stalk harvesters. With whole-stalk harvesters, cane stalks are cut at the base, topped, and piled into heaps. Extraneous leaf material is removed from the piles of harvested stalks by burning before the stalks are loaded and transported to the mill. In contrast, the majority of the sugarcane mechanically-harvested in the rest of the U.S. and the other sugarcane producing countries is done with chopper harvesters. Chopper harvesters are specifically designed to harvest high tonnage sugarcane cultivars that are usually lodged.

Recently, sugarcane breeders in Louisiana released a new, small barreled, high population, sugarcane cultivar, LCP 85-384, which produces cane and sugar yields that are considerably higher than currently grown cultivars (Milligan et al.). Harvestibility of this cultivar with whole-stalk harvesters has been categorized as being moderate to poor because stalks are brittle and its high tonnage makes it susceptible to lodging (Anon, 1997).

The practice of burning in Louisiana to remove extraneous leaf matter from harvested stalks is also being threatened by environmentalist concerned about smoke in inhabited areas and on highways adjacent to harvested fields. During wet-weather harvest periods, burning is also impossible. Chopper harvesters are most efficient when cane is burned prior to harvest. However, during the chopping of the stalks into billets the harvester can remove a significant portion of the cane tops and leaf material from green cane as well. The inability to efficiently harvest lodged LCP 85-384 sugarcane with the whole-stalk harvester and potential limitations on the use of burning has increased the attractiveness of the chopper-harvester system for the Louisiana sugarcane industry.
Leaf and shoot litter removed by the chopper harvester’s extractor fans creates a uniform blanket over the harvested field. This green cane trash blanket (GCTB) can have several positive influences on the subsequent ratoon crop. It can act as a physical barrier to the loss of soil moisture through evaporation and can shade the soil thereby reducing weed seed germination (Facelli and Pickett, 1991, Rozeff, 1998). During decomposition, organic matter and essential plant nutrients are returned to the soil. The decomposition process may also liberate chemicals that are phytotoxic to weeds (Chou, 1992). The blanket can reduce soil erosion by slowing the movement of water across the soil. The GCTB may also provide some cold protection by providing resistance to the natural diffusion of cooler atmospheric temperatures into the soil and warmer soil temperatures to the atmosphere.

In dry, non-irrigated areas, initial ratooning is generally slower where the GCTB is allowed to remain on the field. As the growing season progresses, differences in sugarcane development diminishes and by harvest sugar yields are generally similar (Seeruttun et al, 1992). In a more temperate climate, as temperatures warm early in the growing season, soil temperatures may actually be cooler under the blanket (Seeruttun et al, 1992), and where moisture is excessive, the barrier may also prevent the soils from drying. Thus, ratooning and ultimately cane and sugar yields may be adversely impacted (Rozeff, 1995, Seeruttun et al, 1992).

In Louisiana, the growing season begins with the last killing frost, usually in March, and ends with the October through December harvest. During the winter months (January through March) soils generally remain cool and wet. Under these conditions, where the crop must emerge from a cool wet soil, the growing season may not be long enough to allow the crop under a GCTB to catch up with a crop whose GCTB has been removed (Rozeff, 1998). The objective of these studies was to assess the impact of the GCTB on crop and weed development in Louisiana.

**MATERIALS AND METHODS**

**GCTB Effects on Weed and Second-Ratoon Sugarcane Development (Study 1).**

First-ratoon fields of cane variety CP 70-321 were harvested on November 23, 1993 (experiment 1) and on December 12, 1994 (experiment 2). The GCTB’s were raked by hand from the row tops and placed in the wheel furrows within 10 days of harvest. Counts (number/plot) of cool- and warm-season weeds in a 30.5 cm wide by 91.4 cm long (0.9 m²) section of the non-cultivated row top containing the planted line of sugarcane were made on the center row of each plot on March 1 and June 1, respectively, each year. Cool-season weeds present on March 1, included: *Poa annua* L., *Alopecurus carolinianus* Walt., *Cardamine hirsuta* L., *Cerastium glomeratum* Thuill.), *Lamium amplexicaule* L., *Ranunculus parviflorus* L., *Senecio glabellus* Poir., *Sibara virginica* (L.) Rollins, *Sonchus asper* (L.) Hill, *Stellaria media* (L.) Cyrillo, *Triodanis perfoliata* (L.) Nieuwl., and *Verbascum thapsus* L. *Ipomoea coccinea* L., *I. hederacea* var. integrisculus Gray, and *I. hederacea* (L.) Jacq. were the predominant warm-season weeds present on June 1, 1994. Environmental conditions were not conducive to the development of warm-season weeds in 1995.

Second-ratoon crops were mechanically harvested and piled in late November with a whole-stalk harvester. Excessive leaf material was removed from the piles of harvested stalks by burning prior to weighing to determine cane yield. A sample consisting of 15 harvested stalks selected at random was collected from each plot for stalk weight determinations and sugar analysis.

**GCTB Effects on First-Ratoon Sugarcane Development (Study 2).**

In the first experiment, a plant-cane crop of variety CP 70-321 was harvested in mid-December, 1995. Treatments consisted of 1996 GCTB removal dates of: February 27, March 19, and April 4 and either no removal or removal by raking (described above) or shaving. Raking removed the residue with minimal impact on emerged shoots. Shaving was done mechanically with a tractor-mounted, hydraulically-powered, revolving disk shaver adjusted to remove 1.5 cm of soil from above the planted line of sugarcane. Shaving also removed all of the GCTB residue and any emerged sugarcane shoots.

In a second experiment, treatments included removal of the GCTB by raking immediately after the mid December, 1996, harvest of a plant-cane crop of variety LCP 85-384 and a March 3, 1997, removal of the GCTB by raking or burning at the start of the first-ratoon crop’s growing season. The foliage on the emerged shoots was generally destroyed during burning.
A third experiment was also conducted where GCTB's generated during December 1996 harvests of plant-cane crops of varieties LCP 85-384, LCP 82-89, and CP 70-321 were removed from the first-ratoon crops in 1997 on March 6 and April 2 by raking, burning, and shaving. A no-removal treatment was included in all experiments conducted in 1997. A sample consisting of 15 (in 1996) or 30 (in 1997) stalks selected at random was hand-harvested from each plot in the first-ratoon experiments. Harvested stalks were topped at the youngest dewlap and stripped of leaf material to simulate harvest with a chopper harvester.

First-ratoon fields in the third experiment were approximately 5 km apart in Lafourche Parish while the second first-ratoon experiment was in St. Mary Parish approximately 150 km west of Lafourche Parish. The first experiment was located in Rapides Parish approximately 180 km northwest of Lafourche Parish.

**Conditions Common to Experiments of Both Studies.**

GCTB's were generated on commercial fields with chopper harvesters operated at approximately the same ground and extractor fan speeds. Fields were subjected to standard tillage and fertilizer practices. Tillage included off-barring the conventional 1.8-m wide rows in early spring and a layby cultivation in late May. During the off-barring operation, residue on the row sides and in the wheel furrows was incorporated into the soil. At layby, soil from row sides was placed on top of the row covering the remaining residue.

To estimate the amount of residue present on the soil surface, residue from a randomly selected 30.5 cm by 90.1 cm rectangular (0.9 m²) section was collected from each row top in plots designated for raking. The residue was oven-dried at 60°C for 7 days before determining dry weight. Counts of sugarcane shoots (number/plot) and height measurements were made monthly, generally at the start of each month and beginning approximately 30 days after the last killing frost (study 1) or after the last spring removal date. Shoot height was measured from the soil surface to the youngest dewlap below the whorl. Shoot height is the average of 12 measurements per plot (4/row). Counts of "harvestable" sugarcane stalks were made August 3 ± 3 days in the second-ratoon crops (study 1) and for the first-ratoon experiments (study 2) on September 17, 1996 and October 3 ± 3, 1997. To be considered harvestable, sugarcane stalks had to be at least 1.4 m tall. Collected stalk samples were weighed to determine stalk weight before crushing in a three-roller mill. Sugar yield is the product of theoretically recoverable sugar (TRS) levels in the extracted juice and actual cane yield (study 1) or estimated cane yields based on harvestable stalk counts and their weights (study 2).

The treatments for each experiment were arranged in randomized complete block designs and replicated six times. Individual plots consisted of three adjacent, 1.8 m wide rows 15.2 m in length. A factorial treatment arrangement was used for the first and third experiments of study 2. Data were subjected to analyses of variance. Where applicable and interactions did not occur (\( P = 0.05 \)), data were pooled. Means were separated using Fisher's Protected LSD tests at \( P = 0.05 \).

**RESULTS AND DISCUSSION**

**GCTB Effects on Weed and Second-Ratoon Sugarcane Development (Study 1).**

The GCTB produced by the chopper harvester weighed 6.40 t/ha in the 1993/1994 experiment and 7.40 t/ha in the 1994/1995 experiment. The residue formed blankets approximately 10-cm thick over the entire field. Compared to where the GCTB was removed, there were 62% fewer cool-season winter weeds in the 1993/1994 experiment where the residue was allowed to remain on the soil surface and no herbicide was applied (Table 1). In the 1994/1995 experiment, cool-season weed numbers were lower overall, but there still were 71% fewer weeds where the residue was allowed to remain. As with the cool-season weeds, there were 79% fewer *Ipomoea* plants where the residue in the 1993/1994 experiment was not removed.

Counts and height measurements of sugarcane shoots were initiated in March each year with the last killing frost (1°C) being recorded on February 14, 1994 and February 9, 1995. In addition to suppressing weed development, the GCTB also suppressed sugarcane shoot populations (Figure 1). In March, sugarcane shoot emergence was reduced by 29% when the residue was allowed to remain on the row top. The degree of suppression decreased late in the growing season with stalk populations being only 5% lower in August where the GCTB was not removed (Figure 1 and Table 1).
Table 1. Green cane trash blanket (GCTB) effects on weed development and second-ratoon CP 70-321 sugarcane growth and yield parametersa.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>GCTB</th>
<th>+GCTB</th>
<th>LSD (0.05)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cool-Season Weeds (no./m²)b</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1993/1994</td>
<td>321.1</td>
<td>122.0</td>
<td>—</td>
</tr>
<tr>
<td>1994/1995</td>
<td>34.3</td>
<td>9.9</td>
<td>—</td>
</tr>
<tr>
<td>Warm-Season Weeds (no./m²)b</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1993/1994</td>
<td>22.7</td>
<td>4.7</td>
<td>—</td>
</tr>
<tr>
<td>1994/1995</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Stalk population (no./ha)c</td>
<td>98,800</td>
<td>94,100</td>
<td>3,500</td>
</tr>
<tr>
<td>Stalk height (cm)c</td>
<td>147</td>
<td>139</td>
<td>4</td>
</tr>
<tr>
<td>Stalk weight (kg)</td>
<td>0.76</td>
<td>0.76</td>
<td>NS</td>
</tr>
<tr>
<td>TRS (kg/t)</td>
<td>130</td>
<td>129</td>
<td>NS</td>
</tr>
<tr>
<td>Cane yield (t/ha)</td>
<td>69.0</td>
<td>65.9</td>
<td>2.2</td>
</tr>
<tr>
<td>Sugar yield (t/ha)</td>
<td>8.96</td>
<td>8.40</td>
<td>0.34</td>
</tr>
</tbody>
</table>

a The dry weight of the GCTB averaged 6.40 and 7.40 t/ha for the 1993/1994 and 1994/1995 experiments of study 1, respectively.

b Weeds counts represent the sum of all weeds present on a 30.5 cm wide by 91.4 cm long (0.9 m²) rectangular section of the non-cultivated row top directly over the planted line of sugarcane.

c Stalk population and stalk heights were determined in August with sugarcane being harvested in November.

Figure 1. Sugarcane shoot development during the second-ratoon crop (CP 70-321) as influenced by the removal of the green cane trash blanket (GCTB) in the fall immediately after the harvest of the first-ratoon crop with a chopper harvester. Data pooled over experiments conducted during the 1993/1994 and 1994/1995 growing seasons. Monthly responses followed by the same letter are not significantly different (P = 0.05).
Sugarcane shoot heights early in the season were not affected by the GCTB (data not presented). However, harvestable sugarcane stalk heights in August were 5% lower where the GCTB was allowed to remain on the row top (Table 1). The presence of the GCTB did not affect stalk weights and TRS levels. Reductions in stalk number associated with the failure to remove the GCTB in the fall after harvest were reflected as a 5 to 6% reduction in the second-ratoon crop's cane and sugar yields.

**GCTB Effects on First-Ratoon Sugarcane Development (Study 2).**

Experiment 1 conducted during the 1996 growing season was located at the northern-most latitude of the Louisiana sugarcane industry. The GCTB residue remaining on the soil surface at the time of the initial removal on February 27, 1996, averaged 7.70 t/ha. Unusually low temperatures were recorded February 3rd up to the 5th (-8°C) and March 9 through 11 (-4°C). Sugarcane shoots emerged at the time of these freezes were killed with the February freeze resulting in 0°C temperatures as deep as 5 cm in the soil.

Harvestable stalk counts were not influenced by residue removal dates at the start of the first-ratoon growing season in the first experiment (data not presented). However, stalk counts were higher, as an average of all removal dates, when the residue was removed by raking despite the occurrence of a substantial freeze (-4°C) between the February 27 and March 19 removal dates (Table 2). Treatment effects (removal timing and method) were not detected for sugar yield and any of the other parameters evaluated. The response suggest that in areas where freeze protection is desirable, delaying the removal of the GCTB until after freeze concerns are over would not result in an increase in sugar yield. However, the potential responses to removals in January or earlier in February were not considered in this experiment.

**Table 2. Green cane trash blanket (GCTB) effects on first-ratoon CP 70-321 sugar yield as influenced by removal method and date. Experiment 1 (1996)**

<table>
<thead>
<tr>
<th>Removal method</th>
<th>Sugarcane stalks (no./ha)</th>
<th>Sugar yield (t/ha)</th>
<th>2/27b</th>
<th>3/19</th>
<th>4/4</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>85,400</td>
<td>9.80</td>
<td>9.18</td>
<td>9.11</td>
<td>9.36</td>
<td></td>
</tr>
<tr>
<td>Shave</td>
<td>88,400</td>
<td>9.69</td>
<td>9.57</td>
<td>9.45</td>
<td>9.57</td>
<td></td>
</tr>
<tr>
<td>Rake</td>
<td>90,900</td>
<td>10.20</td>
<td>9.75</td>
<td>9.75</td>
<td>10.00</td>
<td></td>
</tr>
<tr>
<td>Mean</td>
<td></td>
<td>9.89</td>
<td>9.59</td>
<td>9.44</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LSD (0.05)</td>
<td>3,600</td>
<td>NS</td>
<td>NS</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*aExperiment was conducted in Rapides Parish on first-ratoon CP 70-321 sugarcane harvested in December, 1995.

b*The GCTB removal dates consisted of: February 27 (2/27), March 19 (3/19), and April 4 (4/4).*
of the GCTB in the spring at the start of the first-ratoon growing season did not result in increases in sugar yield over the no-removal treatment.

**Figure 2.** Sugarcane shoot development during the first-ratoon crop (LCP 85-384) as influenced by the removal of the green cane trash blanket (GCTB) in the fall immediately after the harvest of the plant-cane crop with a chopper harvester. Experiment conducted during the 1996/1997 growing season. Monthly responses followed by the same letter are not significantly different (P = 0.05).

**Table 3.** Green cane trash blanket (GCTB) effects on first-ratoon sugar yields as influenced by removal method and date. Experiments 2 and 3 (1997)

<table>
<thead>
<tr>
<th>Removal</th>
<th>datea</th>
<th>Sugar yield (t/ha)</th>
<th>Exp. 2b</th>
<th>Exp 3c</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td></td>
<td>5.82</td>
<td>8.63</td>
<td></td>
</tr>
<tr>
<td>Rake</td>
<td>12/96</td>
<td>7.22</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rake</td>
<td>3/97</td>
<td>5.95</td>
<td>9.05</td>
<td></td>
</tr>
<tr>
<td>Burn</td>
<td>3/97</td>
<td>6.24</td>
<td>9.02</td>
<td></td>
</tr>
<tr>
<td>Shave</td>
<td>3/97</td>
<td>7.92</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rake</td>
<td>4/97</td>
<td>8.20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Burn</td>
<td>4/97</td>
<td>7.77</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shave</td>
<td>4/97</td>
<td>7.64</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LSD (0.05)</td>
<td></td>
<td>0.70</td>
<td>1.30</td>
<td></td>
</tr>
</tbody>
</table>

aGCTB removal dates.
bExperiment 2 was conducted in St. Mary Parish on a first-ratoon field of LCP 85-384 sugarcane.
cExperiment 3 was conducted in Lafourche Parish. Data pooled over first-ratoon crops of LCP 85-384, LCP 82-89, and CP 70-321 sugarcane.
In the third experiment, also conducted during the 1997 growing season, cultivar influences on the first-ratoon crop’s response to the spring removal of the GCTB were considered. Shoot development differed among cultivars as the growing season progressed. However, at each sampling time, sugarcane shoot development was similar regardless of residue removal date or method (data not presented). Removal of the GCTB in March or April did not increase sugar yields above those for no removal (Table 3). However, sugar yields differed among spring removal methods. When the GCTB was removed in early-March, shaving, which also destroyed the emerged sugarcane shoots, produced sugar yields comparable to the no removal treatment. However, sugar yields from shaving were 12% lower than March removal by raking or burning. Delaying shaving until April did not result in a further decrease in sugar yields. Shoot damage from burning in early March was not deleterious to the crop, but when burning was delayed until April, sugar yields were 14% lower than where the GCTB was removed by raking in March.

Sugar yields from the previous plant-cane crops were not determined. However, it can be assumed that plant-cane yields of LCP 85-384 were equivalent to or greater than the yields of the other cultivars evaluated (Anon, 1997). In this experiment, the first-ratoon crop of LCP 85-384 produced the highest sugar yield (10.98 t/ha) and LCP 82-89 (6.03 t/ha) produced the lowest; CP 70-321 was intermediate (8.32 t/ha). The residue produced by the harvest of the previous plant-cane crop and removed from plots designated for raking in March did not follow the predicted pattern based on anticipated plant-cane yields with residue quantities of 9.20, 7.30, and 7.00 t/ha being removed for LCP 82-89, CP 70-321, and LCP 85-384, respectively. The cultivar LCP 85-384 is characterized as a high tonnage cane with the high tonnage primarily resulting from high stalk populations and not stalk size (Milligan et al, 1994). Failure to produce the highest level of residue from the harvest of the plant-cane crop of LCP 85-384 would suggest that leaf removal during the harvest of green cane with a chopper harvester is difficult. The increase in difficulty in removing the leaf material may be attributable to the tighter leaf sheath, characteristic of cultivars originating from Saccharum spontaneum parentage and/or the fact that the higher volume of cane going through the harvester, as a result of the increased tonnage, may make cleaning more difficult.

When allowed to remain on the soil, a GCTB can provide benefits from moisture conservation and weed suppression to soil amending properties and reduced erosion (Facelli and Pickett, 1991, Rozeff, 1995). The insulating value would also be a major benefit in the Louisiana sugarcane industry where freeze protection is desirable. In the warm, dry climates of the tropical countries that produce sugarcane, a reduction in the emergence and early growth of sugarcane where the GCTB is not removed, as was seen in these studies, is common (Seeruttun et al, 1992). However, Louisiana has a temperate climate, a shorter growing season, and soil moisture is seldom a limiting factor. Hence, the crop is not able to recover from the early suppression imposed by the residue. The removal of the GCTB at the start of the subsequent ratoon crop’s growing season did not overcome the GCTB’s early suppression of the crop. In fact, delaying the removal of the GCTB until the spring in an attempt to obtain freeze protection and control of cool-season weeds may result in a further reduction in sugar yield where the removal method destroys emerged shoots. Finally, weed emergence was slowed in the presence of the trash blanket. However, the need for herbicide treatments applied in the spring and after layby would probably not be eliminated.

REFERENCES


EL MANEJO DE LOS RESIDUOS DE LA COSECHA MECANIZADA EN VERDE:
UNA PREOCUPACION EN LOUISIANA

E. P. Richard, Jr.
U.S. Department of Agriculture, Agriculture Research Service
Southern Regional Research Center, Sugarcane Research Unit
Houma, Louisiana 70361, USA

RESUMEN

Entre el período de 1993 a 1997 se realizaron experimentos para evaluar los efectos de los residuos de la cosecha mecanizada en verde sobre la incidencia de las malezas y desarrollo de la caña. El desarrollo de la caña y las producciones de caña y azúcar fueron similares en cinco experimentos donde los residuos permanecieron en el suelo durante el invierno o removidos temprano en la primavera con el comienzo de la estación de crecimiento de las socas. Los métodos de remoción de residuos incluyeron: quema, encalle y afeitado. El uso de un disco giratorio para afeitar las cepas y remover los residuos tuvo impacto negativo sobre la producción de azúcar. La quema de los residuos a comienzos de Marzo no afectó el cultivo, pero las quemadas en Abril sí tuvieron efectos negativos. En tres experimentos en los que los residuos fueron removidos en el otoño, un poco después de la cosecha, las producciones de azúcar fueron mayores que en el testigo con residuos y también mayor que cuando los residuos se removieron en la primavera, los resultados fueron similares para las primera y segunda soca. Coincidentemente, los residuos de la cosecha en verde suprimieron la emergencia de las malezas de los períodos frío y caliente en 62%. Los resultados sugirieron que a pesar de los beneficios obvios del control de malezas y protección contra las heladas, los cultivadores de Louisiana deben remover los residuos de la cosecha en verde tan pronto como puedan, después de la cosecha, para limitar los efectos negativos sobre el desarrollo del cultivo siguiente.
LA GESTION DE LA PAILLE SUIVANT LA COUPE DE LA CANNE EN VERT PAR LA MOISSONNEUSE TRONÇONNEUSE: UNE NOUVELLE INQUIETUDE POUR LA LOUISIANE

E P Richard, Jr
US Department of Agriculture, Agriculture Research Service Southern Regional Research Centre, Sugar Cane Research Unit, Houma, Louisiana 70361, Etats Unis

RÉSUMÉ

Des essais aux champs furent initiés entre 1993 et 1997 en Louisiane afin d'évaluer les effets du paillis complet, issu de la coupe en vert par la moissonneuse tronçonneuse (GCTB), sur le contrôle d'herbes et la pousse de la canne. Dans cinq essais, la pousse et les rendements canne et sucre étaient similaires dans les deux traitements consistant soit à laisser les résidus in situ pendant les mois d'hiver ou à les enlever au printemps au moment de la repousse. Des méthodes d'enlèvement de la paille (brûlage, ratelage et rasage), l'utilisation d'un disque rotatif avait l'effet le plus dépressif sur le rendement sucre. Le brûlage au début de mars n'affecta pas la culture; par contre celui effectué au début d'avril eut un effet dépressif sur la canne.

Dans trois essais récoltés en première et seconde repousses, le traitement où les résidus avaient été enlevés en automne après la coupe, donna des rendements sucre supérieurs aux traitements de paillis complet et ceux où la paille avait été enlevée au printemps. Par contre, le paillis complet réduisit par au moins 62% l'émergence des herbes saisonnières. Les résultats laissent supposer qu'en dépit des avantages du paillis sur le contrôle d'herbes et la protection contre le gel, les planteurs en Louisiane devraient enlever la paille aussitôt la coupe terminée afin de réduire l'effet négatif de celle-ci sur la repousse.

Mots-clés: litière, résidus (de culture), paillis complet, canne à sucre, Saccharum spp.