

Just Build..Your Modules

Since modules were introduced in 1972, their use has steadily increased. Today nearly all seed-cotton is stored in modules prior to ginning. Handling and storing seed-cotton in modules clearly benefits both growers and ginners by de-coupling the harvesting from ginning processes.

Producers can harvest cotton when the quality is at its peak and then store it in modules, rather than leaving the crop exposed to weather in the field. Modules allow gins to handle seed-cotton more efficiently, to help extend the ginning season and to operate more hours each year without expensive down time. Properly built modules will withstand adverse weather and losses during storage, loading and hauling. However, to avoid damage to lint and seed quality, modules must be carefully managed.

Harvest Preparation

Harvested seed-cotton (lint, seed and trash combined) that is twelve percent moisture content or lower, may be stored without deterioration of lint or seed if modules are carefully built, covered and stored on a well drained site.

Defoliation

Safe storage of seed-cotton dictates a first rate defoliation and/or desiccation prior to harvest. Excess vegetative growth and late-season re-growth can contribute to high levels of green trash at harvest and excessive moisture content (greater than 12%) of seed-cotton in the module. High moisture content causes modules to heat and increases the frequency of light-spot (or lower) grades and reduces seed quality.

Monitor Moisture

To ensure safe storage conditions, seed-cotton moisture levels should be monitored during harvest using a moisture meter. Moisture readings are particularly important for cotton harvested early and late in the day when relative humidity is higher and seed-cotton moisture levels are also higher than during the midday hours. Check seed-cotton moisture every day before starting your harvesters. It is a good practice to read the moisture of a sample two or three times and use an average value. Each successive reading should be taken after the sample has been removed from the meter and reinserted. Remember, your goal is to only harvest cotton when its moisture content is twelve percent or lower.

If a moisture meter is not available, you can get an indication of seed-cotton moisture from the cottonseed. Bite the cottonseed, see if it readily cracks, and listen

for a snapping sound. Cottonseed that readily cracks indicates the seed and lint can probably be stored safely, provided: (1) the seed-cotton is free of high-moisture trash; (2) modules are well built and stored in dry, well drained areas (see photo); (3) precautions are taken to protect the module from inclement weather during storage.



Site Selection and Preparation

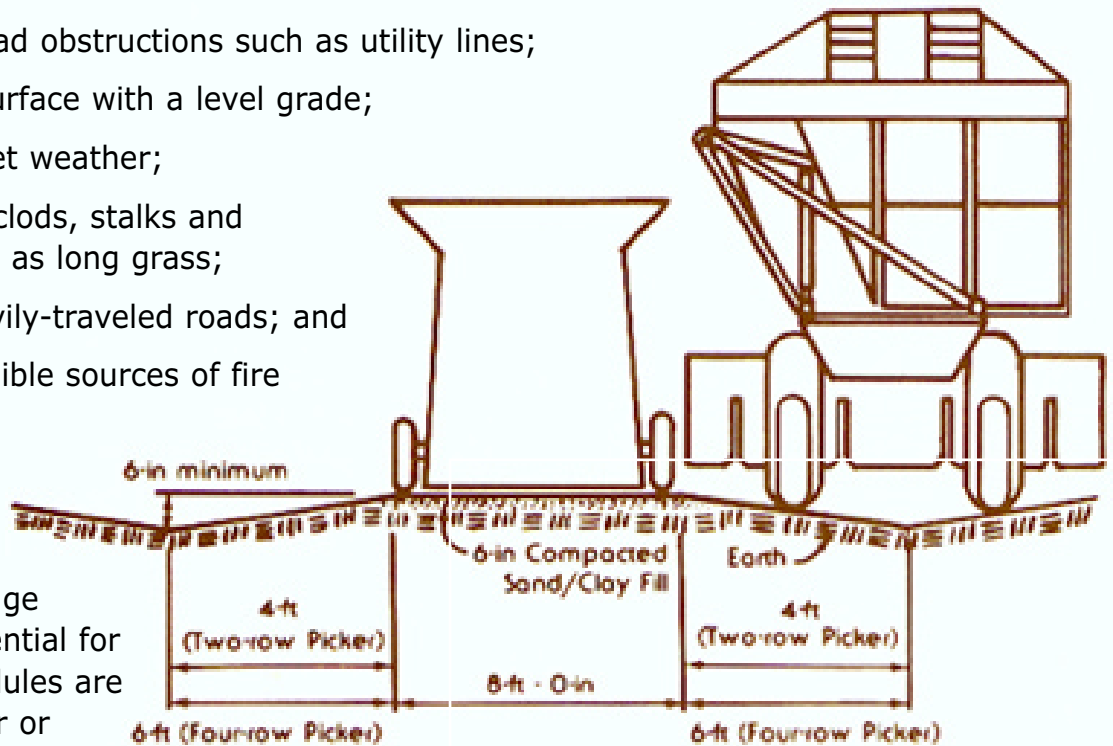
Damage to stored seed-cotton caused by precipitation has been a persistent problem. Poorly drained module sites, poorly shaped modules, improperly applied tarps, leaky tarps and intense rainstorms accompanied by high winds all contribute to losses. Seed-cotton can be safely stored for extended periods if care is taken.

Use the following guidelines when selecting module sites to ensure the sites are:

- Well-drained turnrows or field roads (avoid low lying areas);
- Clear of overhead obstructions such as utility lines;
- Smooth, firm surface with a level grade;
- Accessible in wet weather;
- Free of gravel, clods, stalks and vegetation such as long grass;
- Away from heavily-traveled roads; and
- Away from possible sources of fire and vandalism.

Field turnrows can be improved by preparing an elevated site. Drainage precautions are essential for any area where modules are built. Standing water or persistently wet soil will

cause a layer of seed-cotton in contact with the ground to deteriorate. When practical, orient the long axis of modules north to south so they can dry faster after rain than when oriented east to west. In some situations, utilizing a seed-cotton cart will improve harvester efficiency and allow module construction in well suited sites away from the harvested fields.



Module Builder Operation

Safety First

The module builder is a simple implement, but it is up to you and your managers to ensure that it is operated safely. The following is a partial list of safety items. Refer to your operator's manual for specific safety instructions relating to your particular module builder.

- Never operate the unit close to electric lines.
- Keep out of the machine when it is in use.
- Keep everybody away from the top of the module builder and the compactor bridge when the unit is operating. The operator's platform is the only safe place for viewing the operation.

- Do not work on the machine while it is operating or operate the machine with chain guards or hose shrouds removed.
 - Be certain that people and vehicles are clear of the tailgate when it is being raised or lowered.
 - Read, understand and fully follow the instructions in your operator's manual concerning preparation of the module builder for transportation from one field to another field or for transporting the module builder over roads or highways.
 - Never reach under a raised module builder.
 - Do not allow smoking or use welding equipment around a module builder when cotton is present.
 - Check and repair damaged hydraulic hoses. Use paper, not your hand, to check for leaks in a system that is under pressure. Do not wait for a hose to burst before initiating repairs!
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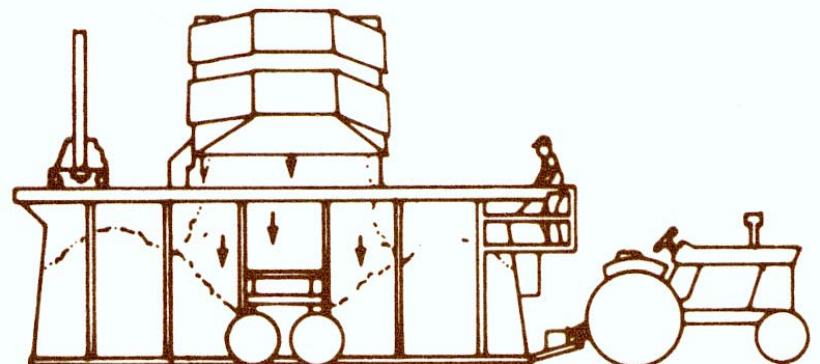
Building a Module

Properly built modules will withstand adverse weather and losses during storage, loading and hauling. Schedule harvesters so that only one dumps at a time. The first and second dumps should be made in opposite ends of the builder. The third dump should be made near the middle. Leveling and tramping should begin immediately and continue until the module is completed. The tighter the module is compacted, the better it sheds rainfall on the sides and the less seed cotton is lost during storage, loading and hauling. Dumps should be made to make the module look like a giant loaf of bread so that the top is round, making it better able to shed water when covered. Depressions in which water can collect are serious problems.

If harvesters have a metering unloading system, use it to spread cotton the length of the builder. This accomplishes faster unloading with less spillage and it is easier for the operator to level and tramp the module, especially when nearing completion. Give the module-builder operator the authority to call in pickers and direct the dumping process when a partial basket is needed to top off a module.

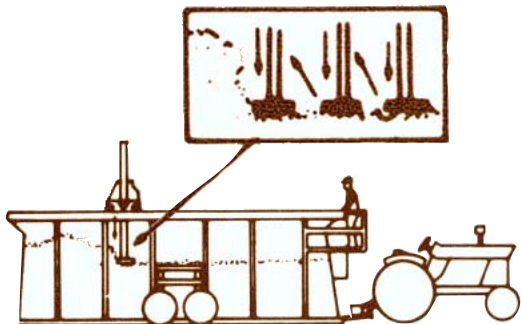
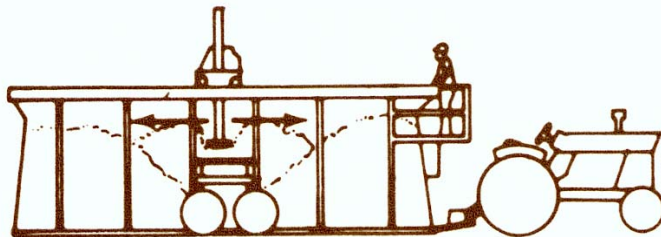
Step 1.

Module builder receives seed cotton from harvester or cart before beginning spreading and tramping operations. Proper building sequence should prevent the need to remove cotton from baskets by hand.



Step 2.

Cotton is spread into even layers by lowering the tamper foot into the cotton, then moving the foot to distribute cotton toward the ends of the module builder.

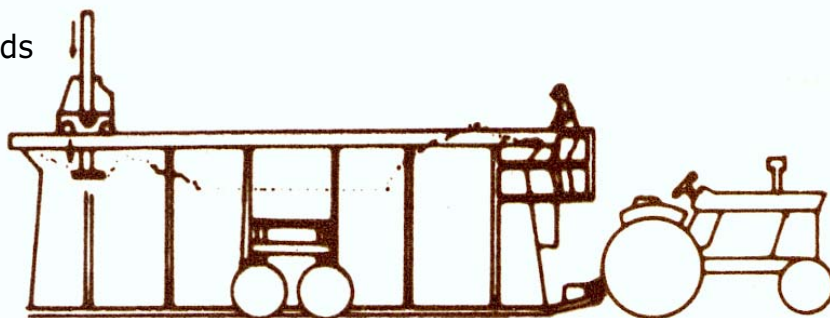


Step 3.

Once the lint is evenly distributed, the tamper foot is raised, then lowered with full pressure to compact the cotton. This process should start at the control platform of the module builder. Next the tamper is raised, moved laterally 14-16 inches and lowered with full pressure.

Step 4.

Building modules with well compacted ends is necessary if modules are going to be picked up and moved without damage. To prevent sloughing off of module ends, extra cotton should be tightly tamped on both ends then leave space in the center of the module for the last dump.



NOTE: Properly built modules must be rounded off from the center to the ends to prevent water accumulation on the tarp. Well built modules should look like giant bread loaves.

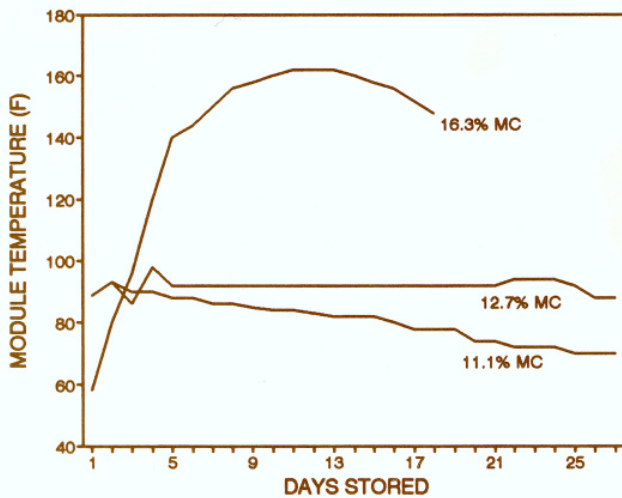
Moving a Module Builder

Certain safety precautions need to be taken with moving a module builder on the farm and on the highway. Refer to your operator's manual for safety instructions relating to your particular module builder. The following is a partial list of safety rules.

- Never transport unit with tamper cylinder in raised position. Make sure Tamper Bridge is at front of Module Builder and tamper cylinder is in the down (transport) position.
- All personnel except operator should stand clear of the Module Builder during preparation for and movement of Module Builder from one location to another.
- Turn on flashing lights when transporting unit on highway unless prohibited by law.
- Do not pull unit without first placing safety pins in transporting holes to prevent damage to wheel cylinders
- Always check the PTO before moving a module builder. Be sure the PTO is not engaged prior to moving.

Monitoring Modules

It is not uncommon for modules to heat slightly during the initial periods of storage and internal module temperatures should be checked daily for the first five to seven days. A rapid and continuing temperature rise of 15 degrees F to 20 degrees F or more signifies a high-moisture problem, and the module should be ginned as soon as possible. Typical temperature-rise curves for modules at various moistures are shown above. Tests have shown that fiber yellowing and light-spot grades result from elevated module temperatures.



Curley et al. ASAE 88-1049

If a temperature of 110 degrees F is reached, the module should be ginned immediately to avoid the possibility of major loss. All modules should be checked for high temperature twice a week after the initial five to seven-day storage period and after rainstorms. High-moisture modules, especially those harvested late in the season when ambient temperatures are low, may continue to increase in temperature at a slow rate over a period of several weeks. **If at any time the temperature increases by more than 20 degrees F, gin the module immediately.** The temperature of modules that are harvested at safe storage moistures will not increase more than 10 to 15 degrees F and will then level off and cool down as the storage period is extended.

Record Keeping

Each module should have a record (with a duplicate kept in the office) including the date and weather conditions when picked, the approximate number of bales in the module, the FSA identification number and monitoring records with temperature data included. These records are essential to substantiate insurance claims in the event of a loss, to satisfy FSA/CCC seed-cotton loan requirements, to provide the gin with information for preparing bale records and to aid in decisions about ginning the module. To be covered by the gin's insurance and to comply with CCC's seed-cotton loan requirements, you must report the necessary data to the gin within twenty-four hours after building the module.

Any records or numbers assigned to modules should be as permanent as possible. Permanent marker pens should be used to write on tags/cards that are attached to modules. The cards should be in sealable plastic bags, although this is no guarantee against leakage. Each module should be numbered successively on the cards. The sides of modules may be numbered using a non-contaminating spray marker, such as BRAND-A-BALE® spray, developed by Cotton Incorporated. Other textile-industry approved brands of spray markers may also be used.

Radio Frequency Identification (RFID) tags are available that can be incorporated into module covers for record keeping purposes. The technology provides gins with the ability to assign and track covers as they leave gin yards. Once modules are built and covered, the information contained in the cover's RFID tag can be used to verify module ownership both on the turnrow and on the gin yard. The tags are capable of storing the records from several modules during a ginning season.

Conclusion

Modules are no substitute for good management practices at the farm level or at the gin. Cooperation between the grower, his harvesting crew and his gin are necessary in order to complete a successful growing season and a successful cotton harvest. Remember to protect the investment you make each year by closely monitoring your harvest crew. Reward yourself by making sure your modules are firmly packed, well shaped and protected with well secured quality covers before they leave your fields. Your module hauler and your ginner will appreciate your attention to details.

Disclaimer

This document is based on the best information available and is offered as an educational service for the benefit of the U.S. cotton industry. This document is in no way intended to be an endorsement of any module cover, product or manufacturer. The National Cotton Council, Cotton Incorporated and USDA-ARS cannot be held responsible for problems associated with modules, module builders or module covers.

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