PEANUT GRADING – TERMINOLOGY AND ECONOMIC SIGNIFICANCE
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The following definitions are intended to assist growers in understanding the economic significance of peanut grading terminology. A simplified description of the grading process is used which does not include all aspects of USDA approved peanut grading procedures.

Farmers’ Stock Peanuts: The peanuts the grower brings to the buying point.

Foreign Material (FM): Everything other than loose peanut kernels and in-shell peanuts in the farmers’ stock sample. Foreign material includes dirt, peanut vines, sticks, stones, insect parts, peanut hulls, and “raisins” or “twisters”. Raisins or twisters are very immature, shriveled pods which can not be commercially shelled.

Foreign material is the first component to be separated from the grade sample of farmers’ stock peanuts. There is no penalty for foreign material up to 4%. At 5% FM there is a 0.05 cents/lb ($1/ton) penalty which increases with additional % FM. At 10% FM, the penalty is 0.3 cents/lb ($6/ton or $12/A for 2-ton peanuts). Foreign matter penalties may vary at different buying points. For example, some charge no penalty up to 7% but then impose a $10/ton cleaning fee.

LSK (loose shelled kernels): Kernels and parts of kernels which are free from the hull in a load of farmers’ stock peanuts.

LSKs are the second component separated out in grading. LSKs are undesirable because they spoil more rapidly and are more likely to be contaminated with aflatoxin. LSKs are checked for Aspergillus mold by the grader.

LSKs are worth only $0.07/lb ($140/ton) vs. $0.18/lb ($360/ton) for an “average” 72% TSMK load. So each percent LSK results in a $2.20/ton loss ($4.40/A for 2-ton peanuts).

At this point the grade sample has had the foreign material and LSKs removed. The remaining intact pods are then run down a set of sizing rollers to presize them for proper shelling and to determine the percent “fancy pods” for Virginia types.

Fancy Pods: The percentage of fancy (larger) pods is determined (Virginia types only) by the percentage that rides a 34/64” roller spacing. The grower is not rewarded for fancy pods other than that they must meet the 40% fancy pod minimum to qualify for the Virginia type market.

At this point the sample is shelled and the kernels will be mechanically shaken on screens.

ELK (extra large kernels): An ELK screen is used only for Virginia types. ELK is the percentage by weight of kernels from the shelled sample that rides a 21.5/64 x 1” screen.

There is a premium of 0.0175 cents/lb (36 cents/ton) for each percent ELK. A 40% ELK has a premium value of $14.40/ton (about $29/A for 2-ton peanuts). Let’s say you grow an NCV-11 with a 38% ELK vs. a Gregory with a 48% ELK, the 10% ELK difference would be worth $3.60/ton or only about $7.20/A for assuming the extra risk of growing a large-pod variety.
SMK (sound mature kernels): The percentage by weight of kernels from the shelled sample that rides a 15/64 x 1" (Virginia type) or 16/64 x ¾" (Runner type) screen.

Each percent increase in SMK increases peanut value by about $5.00/ton. See TSMK below.

SS (sound splits): The percentage by weight of kernels from the shelled sample that consists of undamaged split kernels or broken kernels (undamaged ¼ to ¼ kernel pieces; pieces less than ¼ kernel remain in OK (other kernel category); pieces larger than ¼ kernel are considered SMKs.

There is no sound split penalty up to 4% and for each percent above 4, the penalty is only 80 cents per ton.

TSMK (total sound mature kernels): TSMK is the total of SMK (sound mature kernels) + SS (sound splits). ELKs (extra large kernels) are also included in TSMK for Virginia types.

This is the number that counts. Each percent increase in TSMK is worth about 0.25 cents/lb ($4.96/ton), or about $10.00/A for 2-ton peanuts. So a 1 point increase in TSMK is worth more than a 10 point increase in ELK. Higher TSMK also correlates with higher yield.

OK (other kernels): The percentage by weight of kernels from the shelled sample that falls through the SMK screen. Other kernels are mostly smaller, less mature kernels. Pieces of broken kernels less than ¼ kernel size are also included in other kernels.

Other kernels are worth less than sound mature kernels. When you look at a grade sheet this might not be clear because as the percent OKs increases from left to right on the price sheet, the sample value increases by about 0.07 cents/lb ($1.40/ton) for each point increase. So it might look like higher OK values are good news, but compare that 0.07 cent/lb increase to the 0.25 cent/lb ($4.96/ton) value of a 1 point increase in TSMK (read up the chart). Immature kernels (OKs) are worth something, but mature kernels (SMKs) are worth more.

DK (damaged kernels): The percentage by weight of kernels from the shelled sample that are judged to be inedible due to decay, mold, insect damage, sprouting (> 1/8"), discoloration or pitting darker than light yellow, freeze damaged, or skin-discoloration (< 25%).

Although graders do have picture and definition guidelines, the determination of damaged kernels is somewhat subjective. Minor pitting, discoloration, or other damage to the kernel skin or flesh does not constitute a damaged kernel. Notice that broken kernels are also not included in damaged kernels; instead they are classified as sound splits and thus contribute to TSMK.

Damaged kernels are the major component of total damage penalties – see below.

**Freeze Damage:** The percentage by weight of kernels from the shelled sample that have characteristics of freeze damage such as hard, translucent, or discolored flesh. This damage is included in damaged kernels (DK) and thus contributes to total damage.

**Concealed Damage – RMD:**
Concealed damage – rancid, moldy, or decayed, is damage detected after the kernel sample is put through a kernel splitter and examined on a belt. This damage is added to damaged kernels (DK) to determine total damage.

**Total Damage:** The sum of damaged kernels (DK), including freeze damage and concealed RMD.
Once total damaged kernels reach 2.5% by weight, the penalty can be catastrophic. At damage levels slightly above 2.5%, the peanuts can sometimes be cleaned (~$10/ton cleaning fee). If they can't be cleaned below 2.5% damage the load is classified as segregation II and is consigned to the oil market, with a potential value as low as $125 per ton (35% of loan value).

Hulls: The percentage by weight of hulls from the shelled sample. Although no grade premiums or penalties are based on hull weight, the lower the percentage hull weight, the higher the grade. Hull weights in the lower twenties indicate excellent grades because they indicate that the total kernel weight is in the high seventies.

*Aspergillus flavus* mold: This mold is capable of producing aflatoxin. Only three grade components are examined for the presence of *A. flavus* mold (LSKs, OKs, and DKs) because these components have the greatest risk. The grader indicates on the grade sheet that *A. flavus* either was or was not detected.

Detection of *A. flavus* is bad news. Detection results in the lot being cleaned for a fee and re-examined. If the contamination is not adequately removed by cleaning, the peanuts are consigned to segregation III for the oil market, with a potential value as low as $125/ton (35% of loan value). Avoidance of late-season drought stress is the only sure preventative for aflatoxin.
<table>
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<tr>
<th>Grading Term</th>
<th>Definition</th>
<th>Penalty or Reward</th>
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<tr>
<td>FM Foreign material</td>
<td>Everything but in-shell peanuts and loose kernels.</td>
<td>No penalty up to 4%. At 5% lose $1/ton and increases with each %. FM not usually a problem even in strip-till.</td>
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<tr>
<td>LSK Loose shelled kernels</td>
<td>Kernels free from the hull.</td>
<td>With each percent LSK you lose $2.20/ton. More importantly, LSKs associated with and checked for aflatoxin.</td>
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<tr>
<td>Fancy pods</td>
<td>Pods big enough to ride a 34/64” roller spacing.</td>
<td>No reward or penalty. Only varieties with 40% fancy pods qualify as Virginia types</td>
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<tr>
<td>ELK Extra large kernels</td>
<td>Kernels big enough to ride a 21.5/64 x 1” screen (Virginia types only).</td>
<td>Premium of $0.36/ton for each percent ELK. So a 40% ELK has a $14.40/ton premium. A variety with 10% higher ELK worth only $3.60/ton more.</td>
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<tr>
<td>SMK Sound mature kernels</td>
<td>Kernels mature enough to ride a screen standard: 15/64 x 1” (Virginia type) or 16/64 x ¼” (runner type).</td>
<td>Each percent SMK increases value by about: $5.00/ton (see TSMK below).</td>
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<tr>
<td>SS Sound splits</td>
<td>Undamaged split kernels in the shelled sample.</td>
<td>No penalty up to 4%; $0.80/ton penalty for each percent above 4%.</td>
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<tr>
<td>TSMK Total sound mature kernels</td>
<td>ELKs + SMKs + SSs (only Virginia types are graded for ELKs)</td>
<td>This is the important number. Each percent TSMK increases value by about $5.00/ton. So a 1% increase in TSMK is worth more than a 10% increase in ELK.</td>
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<tr>
<td>OK Other kernels</td>
<td>Smaller, immature kernels that fall through the SMK screen standard.</td>
<td>Each percent increase in other kernels detracts from the sound mature kernels.</td>
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<tr>
<td>DK Damaged kernels</td>
<td>Kernels judged to be inedible due to mold, insect damage, sprouting, or freeze injury.</td>
<td>≥ 2.5% the penalty is severe because if the load can’t be cleaned ($10/ton cleaning fee) it is considered segregation II with an oil market value as low as $125/ton (35% of loan).</td>
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<tr>
<td>FD Freeze damage</td>
<td>Freeze damage is included in damaged kernels.</td>
<td>Same as DK penalty above.</td>
</tr>
<tr>
<td>Concealed RMD Concealed damage – rancid, moldy, decayed.</td>
<td>Damage detected after kernels in the grade sample are split in half.</td>
<td>Same as DK penalty above.</td>
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<tr>
<td>TD Total damage</td>
<td>The total of damaged kernels, freeze damage, and concealed damage.</td>
<td>Same as DK penalty above.</td>
</tr>
<tr>
<td>Aflatoxin</td>
<td>A toxin produced by Aspergillus flavus and related molds.</td>
<td>If the load can’t be cleaned, it goes into segregation III – the oil market (as low as $125/ton). LSKs, DKs, and OKs are checked for Aspergillus.</td>
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PEANUT PRODUCERS’ TOP TEN LIST

Preplant
1. **Field Selection / Rotation:**
   Peanuts require well-drained land and do best on soils with a sandy surface. Avoid fields with recent soybean history as best you can and eliminate soybeans from the rotation in the future. Sustainable peanut production requires a minimum of 2 years (3 years better) of cotton or corn (no legumes) in between peanut crops.

2. **Soil test:**
   P and K are seldom needed if previous crop has adequate fertility. Use the Peanut Fertility Check List (see Peanut Production Guide) to compare soil test values to sufficiency levels for all nutrients. **Zinc can severely stunt or kill peanuts.** Raise pH to reduce toxicity risk in high Zn fields. Soil Ca levels above 600 lb/A and Ca to K ratio of 3:1 or higher are desirable. Raise soil Ca with lime if pH allows.

At-Plant
3. **Get them inoculated:**
   Use only liquid in-furrow inoculants; they have been most consistent and are less likely to clog. Inoculants are live bacteria; handle with care to keep them alive. Make sure a steady stream (no pulse pumps) hits dead center in the bottom of the open furrow and gets into moisture. Use 5 gal minimum. Do not use chlorinated water. Don’t plant too shallow (< 1.5’’). Always plant into moisture; dry soil kills inoculant and causes erratic emergence, which increases virus problems. Peanuts can be planted up to 3” deep if necessary for good moisture.

4. **Reduce tomato spotted wilt virus risk:**
   – Plant resistant varieties to the extent possible. The predominant varieties (e.g., Bailey, Sugg, Sullivan, Georgia 06G, Ga 09B, Florida-07), and many more all have good virus resistance.
   – April – early May planting increases virus risk. The first week of May still has increased virus risk, but large acreages need to get started planting. Optimum planting interval for S. C. is 5 – 25 May.
   – Get a consistent, uniformly emerged stand; target is 4 plants/row ft (need 6 seed/ft, or ≥ 5/ft on Virginia types or large seeded runners).
   – Control thrips with in-furrow insecticide (e.g., Thimet 5.5 oz/1000 row ft (4.7 lb on 38” rows).
   – Strip tillage and twin-row planting reduce tomato spotted wilt.

0 to 45 DAP
5. **Establish and maintain weed control (first 45 days critical):**
   – Valor (3 oz) is recommended for severe pigweed pressure. Valor must be applied within 2 days of planting, preferably watered in. Prowl/Sonolair or Dual can be tank-mixed. Do not plant shallower than 1.5” to reduce Valor injury.
   – The first flush of weeds usually needs Gramoxone (+ Basagran or Storm) treatment before Cadre application (30 – 45 DAP). Dual can be applied post-emergence with Gramoxone or Cadre instead of (or in addition to) PPI for extended pigweed control.
   – Use 2,4-DB, Blazer, Cobra or Storm where needed for escapes. Post Plus or Select for grass.

Bloom
6. **Give them calcium:**
   – All Virginia type peanuts should get 300 lb/A Ca (1500 – 2000 lb landplaster) at blooming.
   – Calcium must be available in the pegging zone when the first pods begin to form.
   – Better early than late with land plaster!
45 DAP
7. Prevent foliar and soil disease:
Although peanuts on “new” land should be relatively free of diseases, severe white mold or CBR loss can still occur, particularly in fields with a soybean history. Peanuts have to be protected from a complex of both soil and foliar diseases with a preventative program. **Start leaf spot treatment no later than 45 DAP and white mold treatment at 60 DAP.** Increase leaf spot protection on high risk leaf spot varieties (Champs, Georgia 09B, Georgia 13M, Gregory, TUFRunner 511). See the Production Guide for example fungicide programs. **60 to 90 DAP is the most critical white mold treatment interval.**

60 DAP
8. Irrigation management:
- Peanut is an indeterminate, drought-tolerant crop, but irrigation can be critical to **maximize returns from calcium, activate herbicides and move fungicides** into the soil.
- Irrigation also greatly reduces insect damage (lesser cornstalk borer and burrower bug) thereby reducing Seg. II risk and aflatoxin (Seg. III) risk.
- The critical water use period is during pod fill, approximately 60 – 110 DAP when peanuts need 1.0 – 1.5” per week minus rain. See the irrigation section for scheduling.

25 July – 30 August
9. Check for insects:
- Cutworms occasionally defoliate peanuts in late June or early July.
- Beginning in late June, watch for leafhopper “hopperburn” getting started on field edges.
- Corn earworms, followed by fall armyworms, feed on peanut primarily from the last week of July through August. Velvetbean caterpillars sometimes strip peanuts in the lower part of the state in late (September – October). Fully lapped, unstressed peanuts can tolerate up to 8 worms/ft. The threshold is 4 worms/ft on unlapped or stressed peanuts.
- There are some significant soil pests (lesser cornstalk borer, wireworm, burrower bug, rootworm), but the greatest threats (borers & burrower bugs) can be managed with irrigation.

130 DAP
10. MORE MONEY IS MADE OR LOST WITH DIGGING DECISIONS THAN ANY OTHER ASPECT OF PEANUT PRODUCTION.
**Timing:** Medium maturity Virginia types generally reach harvest maturity in about 130 – 135 DAP under typical S. C. growing conditions. But many practical considerations figure into when the first field is dug, including vine health, acreage, equipment availability, when you started planting and weather predictions. Runner types usually mature later and are more forgiving at harvest. Some varieties require > 150 days to mature. **Start spot checking maturity at about 120 DAP. Use the pod blast or hull scrape method (see this and other techniques in the Peanut Production Guide) to sort pods into color piles and determine which fields should be dug first. Some pod color guidelines for Virginia type maturity: 70% of pods in orange + brown + black categories, 30% in brown + black and 1 – 2% coal black. Runners: 75 – 80% in orange + brown + black, 40% in brown + black and 5% coal black. The grade target is ≥ 70% TSMK. Practical considerations sometimes prevent waiting on full maturity in every field, particularly for the first field to be dug. If digging before 130 DAP, use pod color to make sure you’re not too early; if waiting after 140 DAP, make sure you’re not late.**
**Digger operation:** It is easy to ruin a great crop with the digger. **Staying on the row with the digger is a must (GPS guidance can quickly pay for itself in peanuts).** Matching digger ground speed to shaker speed, digger running depth and soil conditions are also critical.