Seed Cutting for Higher Yields of Burbanks, Rangers, and Norkotahs

Bigger seed planted usually means bigger spuds at harvest. And oppositely, smaller seed planted almost always produces smaller spuds at harvest. Yield and tuber size are often related to seed size. The goal of any seed cutting operation is to have 75% of your seed size profile in the 1.75 to 3.00 ounce range. The other 20% can be in the 1.50-1.74 ounce range. You should plant nothing under 1.50 ounces, if possible. Seed larger than 3.00 ounces adds to seed cost with no added benefit to yield or size.

It has been known since the 1940s that bigger cut seed usually out-yields the smaller cuts. The best seed-cut profile for yield and tuber size is between 1.75 to 3.00 ounces, with about a 2.30 ounce average. Seed cuts of 1.50-1.74 ounces are acceptable, but they usually yield less than larger seed cuts. Seed smaller than 1.50 ounces is useless and should be eliminated and tossed away. I would rather have a skip, than planting a hill with a small seed piece. Besides, small seed pieces are often planted as doubles as they 'piggy-back' the bigger seed.

Table 1 shows the effects of seed size, yield, and tuber size. Seed piece size at about 1.75 ounces or bigger produces bigger tubers and higher yields. You are better to waste your money by having seed too big, than planting small seed pieces around 1.65 ounces and less and not eliminating to keep those percentages down. Most will say, "We know this". Yet at cutting time, I will measure as many as 30% of seed cuts between 1.35 to 1.65 ounces in some seed cutting operations. For those fields, 30% of the hills planted will have smaller tubers and lessened yields as compared to the other hills planted with bigger seed.

Table 2 shows that bigger seed will supply more carbon, phosphorus, and potassium per stem than smaller seed. For example, a 2.40 ounce seed with 3 stems will supply 7 grams more carbon and nearly double the phosphorous as the 1.50 ounce seed with 3 stems. Bigger seed (1.75 oz to 3.00 oz) provides more nutrients per stem than smaller seed.

Table 1: Russet Burbank

Seed Size oz	Yield	%8 oz +
1.0-1.5	265	12%
1.5-1.8	358	30%
1.8-2.1	410	38%
2.1-2.5	445	48%
2.5-3.0	440	45%
3.0+	465	42%

Seed planted in same field; Western Labs 1995

Table 2: Grams of Carbon for 3-Stems

Seed Size	C g/stem	P g/stem	K g/stem
1.25	9.5	0.020	0.24
1.50	11.4	0.025	0.27
1.75	13.2	0.030	0.31
2.00	15.1	0.033	0.35
2.40	18.2	0.040	0.39
2.70	20.4	0.045	0.47

John Taberna Jr

One reason Norkotah crops have bigger tubers than Burbank crops is that Norkotah 'mother' seed is almost always bigger before cutting than Burbank 'mother' seed, and the result is larger seed cuts for the Norkotah crop planted.

- Smaller 'Mother' seed profile (2 oz to 8 oz) before cutting have less 2-cuts and 3-cuts, with more 1-cuts and single drops.
- Bigger 'Mother' seed profile (4 oz to 10 oz) before cutting will have more 2-cut and 3-cut seed pieces, and less 1-cut and single drops.

The best way to achieve bigger seed for planting is by the following:

1. Eliminate seed weighing 1.50 ounces or less even if it means a few 1.60 oz seed gets eliminated too.
2. Cut bigger single drops (3.0 oz +) in half.
3. Weigh your seed profile using seed collected from a 2-3 gallon bucket, and try to maintain 75% of seed in the 1.75 to 3.00 ounce range with about a 2.40 ounce average. Adjust if necessary.

The two data sets shown are seed cuts from morning and afternoon measurements on one farm. The data #1 showed too many small seed pieces of where 15.2% of hills planted will have small spuds no matter what is done due to seed too small at 1.50 ounces or less. The smaller spud profile of seed planted at 1.75 ounces or less will represent 44.8% of the hills planted. This means the other 55.2% of hills planted with bigger seed will have to make the difference if a larger tuber profile is needed.

The data #2 shown is the result of adjusting the eliminators only, and not the cutter-sizer. As you can see, this dropped the smalls (1.75 oz or less) from 44.8% to just 22.4%. Also, the money cuts (1.75-3.00) increased from 38.9% to 64.5%. Even though the seed came from the same source, the seed from data#2 will out-yield and size than the seed planted in data #1.

Data #1: Totals from 3 bucket samples of cut seed 4-20-2012 AM

Seed Size Oz	Number of seed	Percentage
1.50 ounce or less	26	15.2
1.50 to 1.75 ounce	51	29.6
1.75 to 3.00 ounce	67	38.9
3.00 ounce +	28	16.3
Total # of seed collected	172	100%

Data #2: Totals from 3 bucket samples of cut seed 4-20-2012 PM

Seed Size Oz	Number of seed	Percentage
1.50 ounce or less	10	5.5
1.50 to 1.75 ounce	31	16.9
1.75 to 3.00 ounce	118	64.5
3.00 ounce +	24	13.1
Total # of seed collected	183	100%

If you have any questions, call me at 681-5081. Thanks.

John Taberna Jr
Certified Professional Agronomist CPAg—Western Laboratories; Western Ag Research

Photo 1: The window pane to the right is a seed piece (2.40 oz) planted 7-inches deep. The root system is growing good. The window pane to the left is a 1.50 oz seed piece planted only 4-inches deep. The root system is starting, but not as good as the bigger seed. The pane in the middle is a seed piece of about 1.30 oz. Root growth is very slow. Plant emergence was faster with the bigger seed even though it was planted 3-inches deeper.

Photo 2: The different seed cuts. First row is barrels. You should cut the bigger barrels in half. The second row is 3-cuts. The third row is single drops. The larger single drops should be cut in half. The fourth row is 1-cut stem-ends. The fifth row is 1-cut flower-ends. The flower-ends and single drops have the most 'eyes'. Not shown are two cuts.