# METHOD FOR DETERMINING DISTRIBUTION

## STANDS FOR SEGMENTED SUGAR-BEET PLANTINGS

## AND PRESENTATION OF RESULTING DATA

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This paper deals with a method of determining distribution of segmented sugar-beet seedlings and presentation of the data in such a manner that the actual field distribution is more clearly pictured. Heretofore, germination-stand has been used for this purpose. Germination-stand refers to the percentage of inches containing seedlings in any given number of row-inches. Germination-stand is a total; therefore, provides no measure or picture of distribution.

When determining whether or not a field can be mechanically blocked, the distribution of the inches containing seedlings is the most important consideration, not the total number of inches containing seedlings. The total number of inches containing seedlings is important only insofar as it may denote changes in actual distribution characteristics.

The following table of distributions will be used to depict the method employed. Counts of 120 inches of row were made in 12-inch units and the number of inches containing seedlings in each unit recorded. A two-way table was used to record the data. The units from 1 to 10 were listed down the side of the table, and the number of 120-inch determinations, "A" to "G", was listed across the top of the table. By looking at the table it is easy to picture distribution characteristics of the seedlings as to uniformity and range, in addition to the percentage of inches containing seedlings.

In table 1 determination "A" each unit has the same number of inches containing seedlings.

Inasmuch as each unit contains the same number of seedlings it is reasonable to assume that the distribution within the unit is also uniform. Determination "B" has seedlings in each unit; the range in number of seedlings in each unit was from 2 to 4 which indicates even distribution. Determinations "C" to "G" show progressively poorer distributions. In determination "G" only 6 of the 10 units contains seedlings; the range in number of seedlings in each unit was from 0 to 9, and the units which did not contain seedlings were grouped. This denotes very poor distribution with spaces of over 24 inches in the row without seedlings.

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Note that the germination-stand and the percentage of inches containing single seedlings is identical for all determinations; indicating the fallacy of using a total as a measure of distribution.

### Table 1.- Distribution stands. (hypothetical)

| Units (12 inches) | Number of Inches Containing Seedlings per Foot | | | | | | |
|---|---|---|---|---|---|---|---|
| | A | B | C | D | E | F | G |
| 1. 1st 12 inches | 3 | 4 | 1 | 3 | 7 | 1 | 9 |
| 2. 2nd 12 inches | 3 | 2 | 5 | 5 | 0 | 5 | 0 |
| 3. 3rd 12 inches | 3 | 3 | 4 | 1 | 3 | 4 | 0 |
| 4. 4th 12 inches | 3 | 3 | 3 | 2 | 1 | 0 | 5 |
| 5. 5th 12 inches | 3 | 2 | 3 | 4 | 1 | 4 | 4 |
| 6. 6th 12 inches | 3 | 4 | 2 | 1 | 5 | 4 | 3 |
| 7. 7th 12 inches | 3 | 2 | 3 | 6 | 4 | 2 | 0 |
| 8. 8th 12 inches | 3 | 3 | 3 | 1 | 1 | 0 | 0 |
| 9. 9th 12 inches | 3 | 3 | 5 | 2 | 2 | 7 | 5 |
| 10. 10th 12 inches | 3 | 4 | 1 | 5 | 6 | 3 | 4 |
| Number of Inches Containing Seedlings in each 120 inches of row | 30 | 30 | 30 | 30 | 30 | 30 | 30 |
| Germination Stand = $\dfrac{\text{Inches Containing Seedlings}}{120 \text{ Inches}}$ | 25 | 25 | 25 | 25 | 25 | 25 | 25 |
| Percentage of Beet Containing Inches which Contained Single Seedlings | 60 | 60 | 60 | 60 | 60 | 60 | 60 |
| Range in Number of Seedlings in Each Unit | 3-3 | 2-4 | 1-5 | 1-6 | 0-7 | 0-7 | 0-9 |
| Number of Units which Contained Seedlings | 10 | 10 | 10 | 10 | 9 | 8 | 6 |

In table 2 determinations "A" and "B" indicate even distribution, and it is reasonable to deduct that fields represented by such distributions could be mechanically blocked. Determination "C" shows bunching tendencies which indicates uneven distribution. Determination "D" denotes even distribution, but the stand is too thin for mechanical thinning. Determination "E" indicates a high germination stand with uneven distribution. The advisability of mechanically blocking such stands is questionable. Determination "F" and "G" show stands which are too thin and uneven for mechanically blocking. Determination "F" is ideal for hand blocking and thinning.

Table 2.- Distribution stands.  (hypothetical)

| Units (12 inches) | Number of Inches Containing Seedlings per Foot | | | | | | |
|---|---|---|---|---|---|---|---|
| | A | B | C | D | E | F | G |
| 1.  1st 12 inches | 4 | 3 | 4 | 3 | 9 | 3 | 4 |
| 2.  2nd 12 inches | 3 | 5 | 6 | 2 | 6 | 1 | 5 |
| 3.  3rd 12 inches | 6 | 2 | 2 | 2 | 0 | 4 | 0 |
| 4.  4th 12 inches | 4 | 3 | 5 | 4 | 4 | 2 | 4 |
| 5.  5th 12 inches | 6 | 3 | 1 | 2 | 7 | 0 | 6 |
| 6.  6th 12 inches | 5 | 5 | 7 | 2 | 5 | 3 | 2 |
| 7.  7th 12 inches | 2 | 4 | 5 | 3 | 4 | 2 | 8 |
| 8.  8th 12 inches | 3 | 2 | 4 | 2 | 6 | 3 | 4 |
| 9.  9th 12 inches | 4 | 3 | 6 | 3 | 1 | 2 | 7 |
| 10. 10th 12 inches | 5 | 3 | 1 | 2 | 8 | 1 | 0 |

| | A | B | C | D | E | F | G |
|---|---|---|---|---|---|---|---|
| Inches Containing Seedling in Each 120 inches of row | 42 | 33 | 41 | 25 | 50 | 21 | 40 |
| Germination Stand = $\dfrac{\text{Inches Containing Seedlings}}{120 \text{ Inches}}$ | 35 | 27.5 | 34.3 | 20.1 | 42.0 | 17.5 | 33.3 |
| Percentage of Beet Containing Inches which Contained single Seedlings | 52 | 65 | 57 | 61 | 49 | 75 | 51 |
| Range in Number of Seedlings in Each Unit | 2-6 | 3-3 | 1-7 | 2-4 | 0-9 | 0-3 | 0-8 |
| Number of Units which Contained Seedlings | 10 | 10 | 10 | 10 | 9 | 9 | 8 |

The adoption of an accurate and standard method of determining field distribution and the presentation of the resulting data would help materially in the interpretation of the data presented by the various sugar-beet areas.  This would be especially helpful when trying to compare mechanical blocking results of the different sugar-beet growing areas.