

# Appendix

**Table A 1. Irrigated feed barley yield response to nitrogen fertilizer under optimum irrigation management. Crop yield is in bu/ac and is based on the assumption that 40 lb N/ac will be mineralized and available for crop uptake in the growing season.**

| Soil Test N (lb/ac) | Fertilizer Nitrogen Rate (lb/ac) |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|---------------------|----------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
|                     | 0                                | 10  | 20  | 30  | 40  | 50  | 60  | 70  | 80  | 90  | 100 | 110 | 120 | 130 | 140 | 150 | 160 | 170 | 180 | 190 | 200 |
| 0-24"               | 0                                | 10  | 20  | 30  | 40  | 50  | 60  | 70  | 80  | 90  | 100 | 110 | 120 | 130 | 140 | 150 | 160 | 170 | 180 | 190 | 200 |
| 10                  | 30                               | 42  | 53  | 63  | 73  | 82  | 91  | 99  | 107 | 114 | 121 | 127 | 133 | 138 | 143 | 147 | 151 | 154 | 157 | 159 | 161 |
| 20                  | 42                               | 53  | 63  | 73  | 82  | 91  | 99  | 107 | 114 | 121 | 127 | 133 | 138 | 143 | 147 | 151 | 154 | 157 | 159 | 161 |     |
| 30                  | 53                               | 63  | 73  | 82  | 91  | 99  | 107 | 114 | 121 | 127 | 133 | 138 | 143 | 147 | 151 | 154 | 157 | 159 | 161 |     |     |
| 40                  | 63                               | 73  | 82  | 91  | 99  | 107 | 114 | 121 | 127 | 133 | 138 | 143 | 147 | 151 | 154 | 157 | 159 | 161 |     |     |     |
| 50                  | 73                               | 82  | 91  | 99  | 107 | 114 | 121 | 127 | 133 | 138 | 143 | 147 | 151 | 154 | 157 | 159 | 161 |     |     |     |     |
| 60                  | 82                               | 91  | 99  | 107 | 114 | 121 | 127 | 133 | 138 | 143 | 147 | 151 | 154 | 157 | 159 | 161 |     |     |     |     |     |
| 70                  | 91                               | 99  | 107 | 114 | 121 | 127 | 133 | 138 | 143 | 147 | 151 | 154 | 157 | 159 | 161 |     |     |     |     |     |     |
| 80                  | 99                               | 107 | 114 | 121 | 127 | 133 | 138 | 143 | 147 | 151 | 154 | 157 | 159 | 161 |     |     |     |     |     |     |     |
| 90                  | 107                              | 114 | 121 | 127 | 133 | 138 | 143 | 147 | 151 | 154 | 157 | 159 | 161 |     |     |     |     |     |     |     |     |
| 100                 | 114                              | 121 | 127 | 133 | 138 | 143 | 147 | 151 | 154 | 157 | 159 | 161 |     |     |     |     |     |     |     |     |     |
| 110                 | 121                              | 127 | 133 | 138 | 143 | 147 | 151 | 154 | 157 | 159 | 161 |     |     |     |     |     |     |     |     |     |     |
| 120                 | 127                              | 133 | 138 | 143 | 147 | 151 | 154 | 157 | 159 | 161 |     |     |     |     |     |     |     |     |     |     |     |
| 130                 | 133                              | 138 | 143 | 147 | 151 | 154 | 157 | 159 | 161 |     |     |     |     |     |     |     |     |     |     |     |     |
| 140                 | 138                              | 143 | 147 | 151 | 154 | 157 | 159 | 161 |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 150                 | 143                              | 147 | 151 | 154 | 157 | 159 | 161 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |

**Table A 2. Irrigated malt barley yield response to nitrogen fertilizer under optimum irrigation management. Crop yield is in bu/ac and is based on the assumption that 40 lb N/ac will be mineralized and available for crop uptake in the growing season.**

| Soil Test N (lb/ac) | Fertilizer Nitrogen Rate (lb/ac) |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|---------------------|----------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
|                     | 0                                | 10  | 20  | 30  | 40  | 50  | 60  | 70  | 80  | 90  | 100 | 110 | 120 | 130 | 140 | 150 | 160 | 170 | 180 | 190 | 200 |
| 0-24"               | 0                                | 10  | 20  | 30  | 40  | 50  | 60  | 70  | 80  | 90  | 100 | 110 | 120 | 130 | 140 | 150 | 160 | 170 | 180 | 190 | 200 |
| 10                  | 30                               | 40  | 49  | 58  | 66  | 74  | 81  | 88  | 94  | 100 | 105 | 110 | 115 | 119 | 123 | 127 | 130 | 133 | 135 | 137 | 138 |
| 20                  | 40                               | 49  | 58  | 66  | 74  | 81  | 88  | 94  | 100 | 105 | 110 | 115 | 119 | 123 | 127 | 130 | 133 | 135 | 137 | 138 |     |
| 30                  | 49                               | 58  | 66  | 74  | 81  | 88  | 94  | 100 | 105 | 110 | 115 | 119 | 123 | 127 | 130 | 133 | 135 | 137 | 138 |     |     |
| 40                  | 58                               | 66  | 74  | 81  | 88  | 94  | 100 | 105 | 110 | 115 | 119 | 123 | 127 | 130 | 133 | 135 | 137 | 138 |     |     |     |
| 50                  | 66                               | 74  | 81  | 88  | 94  | 100 | 105 | 110 | 115 | 119 | 123 | 127 | 130 | 133 | 135 | 137 | 138 |     |     |     |     |
| 60                  | 74                               | 81  | 88  | 94  | 100 | 105 | 110 | 115 | 119 | 123 | 127 | 130 | 133 | 135 | 137 | 138 |     |     |     |     |     |
| 70                  | 81                               | 88  | 94  | 100 | 105 | 110 | 115 | 119 | 123 | 127 | 130 | 133 | 135 | 137 | 138 |     |     |     |     |     |     |
| 80                  | 88                               | 94  | 100 | 105 | 110 | 115 | 119 | 123 | 127 | 130 | 133 | 135 | 137 | 138 |     |     |     |     |     |     |     |
| 90                  | 94                               | 100 | 105 | 110 | 115 | 119 | 123 | 127 | 130 | 133 | 135 | 137 | 138 |     |     |     |     |     |     |     |     |
| 100                 | 100                              | 105 | 110 | 115 | 119 | 123 | 127 | 130 | 133 | 135 | 137 | 138 |     |     |     |     |     |     |     |     |     |
| 110                 | 105                              | 110 | 115 | 119 | 123 | 127 | 130 | 133 | 135 | 137 | 138 |     |     |     |     |     |     |     |     |     |     |
| 120                 | 110                              | 115 | 119 | 123 | 127 | 130 | 133 | 135 | 137 | 138 |     |     |     |     |     |     |     |     |     |     |     |
| 130                 | 115                              | 119 | 123 | 127 | 130 | 133 | 135 | 137 | 138 |     |     |     |     |     |     |     |     |     |     |     |     |
| 140                 | 119                              | 123 | 127 | 130 | 133 | 135 | 137 | 138 |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 150                 | 123                              | 127 | 130 | 133 | 135 | 137 | 138 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |

**Table A 3. Irrigated barley silage yield response to nitrogen fertilizer under optimum irrigation management. Crop yield is in tons/ac (dry weight basis) and is based on the assumption that 40 lb N/ac will be mineralized and available for crop uptake in the growing season. If field has been manure to previous 3 years, nitrogen mineralization could be considerably higher.**

| Soil Test N (lb/ac) | Fertilizer Nitrogen Rate (lb/ac) |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |  |
|---------------------|----------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|
|                     | 0                                | 10  | 20  | 30  | 40  | 50  | 60  | 70  | 80  | 90  | 100 | 110 | 120 | 130 | 140 | 150 | 160 | 170 | 180 | 190 | 200 |  |
| 0-24"               | 0                                | 10  | 20  | 30  | 40  | 50  | 60  | 70  | 80  | 90  | 100 | 110 | 120 | 130 | 140 | 150 | 160 | 170 | 180 | 190 | 200 |  |
| 10                  | 2.0                              | 2.7 | 3.4 | 4.1 | 4.7 | 5.3 | 5.8 | 6.3 | 6.7 | 7.1 | 7.4 | 7.7 | 7.9 | 8.1 | 8.3 | 8.4 | 8.5 | 8.6 |     |     |     |  |
| 20                  | 2.7                              | 3.4 | 4.1 | 4.7 | 5.3 | 5.8 | 6.3 | 6.7 | 7.1 | 7.4 | 7.7 | 7.9 | 8.1 | 8.3 | 8.4 | 8.5 | 8.6 |     |     |     |     |  |
| 30                  | 3.4                              | 4.1 | 4.7 | 5.3 | 5.8 | 6.3 | 6.7 | 7.1 | 7.4 | 7.7 | 7.9 | 8.1 | 8.3 | 8.4 | 8.5 | 8.6 |     |     |     |     |     |  |
| 40                  | 4.1                              | 4.7 | 5.3 | 5.8 | 6.3 | 6.7 | 7.1 | 7.4 | 7.7 | 7.9 | 8.1 | 8.3 | 8.4 | 8.5 | 8.6 |     |     |     |     |     |     |  |
| 50                  | 4.7                              | 5.3 | 5.8 | 6.3 | 6.7 | 7.1 | 7.4 | 7.7 | 7.9 | 8.1 | 8.3 | 8.4 | 8.5 | 8.6 |     |     |     |     |     |     |     |  |
| 60                  | 5.3                              | 5.8 | 6.3 | 6.7 | 7.1 | 7.4 | 7.7 | 7.9 | 8.1 | 8.3 | 8.4 | 8.5 | 8.6 |     |     |     |     |     |     |     |     |  |
| 70                  | 5.8                              | 6.3 | 6.7 | 7.1 | 7.4 | 7.7 | 7.9 | 8.1 | 8.3 | 8.4 | 8.5 | 8.6 |     |     |     |     |     |     |     |     |     |  |
| 80                  | 6.3                              | 6.7 | 7.1 | 7.4 | 7.7 | 7.9 | 8.1 | 8.3 | 8.4 | 8.5 | 8.6 |     |     |     |     |     |     |     |     |     |     |  |
| 90                  | 6.7                              | 7.1 | 7.4 | 7.7 | 7.9 | 8.1 | 8.3 | 8.4 | 8.5 | 8.6 |     |     |     |     |     |     |     |     |     |     |     |  |
| 100                 | 7.1                              | 7.4 | 7.7 | 7.9 | 8.1 | 8.3 | 8.4 | 8.5 | 8.6 |     |     |     |     |     |     |     |     |     |     |     |     |  |
| 110                 | 7.4                              | 7.7 | 7.9 | 8.1 | 8.3 | 8.4 | 8.5 | 8.6 |     |     |     |     |     |     |     |     |     |     |     |     |     |  |
| 120                 | 7.7                              | 7.9 | 8.1 | 8.3 | 8.4 | 8.5 | 8.6 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |  |
| 130                 | 7.9                              | 8.1 | 8.3 | 8.4 | 8.5 | 8.6 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |  |
| 140                 | 8.1                              | 8.3 | 8.4 | 8.5 | 8.6 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |  |
| 150                 | 8.3                              | 8.4 | 8.5 | 8.6 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |  |

**Table A 4. Irrigated soft white spring wheat yield response to nitrogen fertilizer under optimum irrigation management. Crop yield is in bu/ac and is based on the assumption that 40 lb N/ac will be mineralized and available for crop uptake in the growing season.**

| Soil Test N (lb/ac) | Fertilizer Nitrogen Rate (lb/ac) |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |  |
|---------------------|----------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|
|                     | 0                                | 10  | 20  | 30  | 40  | 50  | 60  | 70  | 80  | 90  | 100 | 110 | 120 | 130 | 140 | 150 | 160 | 170 | 180 | 190 | 200 |  |
| 0-24"               | 0                                | 10  | 20  | 30  | 40  | 50  | 60  | 70  | 80  | 90  | 100 | 110 | 120 | 130 | 140 | 150 | 160 | 170 | 180 | 190 | 200 |  |
| 10                  | 32                               | 43  | 53  | 63  | 72  | 81  | 89  | 97  | 104 | 111 | 117 | 123 | 128 | 133 | 137 | 141 | 144 | 147 | 149 | 151 | 152 |  |
| 20                  | 43                               | 53  | 63  | 72  | 81  | 89  | 97  | 104 | 111 | 117 | 123 | 128 | 133 | 137 | 141 | 144 | 147 | 149 | 151 | 152 |     |  |
| 30                  | 53                               | 63  | 72  | 81  | 89  | 97  | 104 | 111 | 117 | 123 | 128 | 133 | 137 | 141 | 144 | 147 | 149 | 151 | 152 |     |     |  |
| 40                  | 63                               | 72  | 81  | 89  | 97  | 104 | 111 | 117 | 123 | 128 | 133 | 137 | 141 | 144 | 147 | 149 | 151 | 152 |     |     |     |  |
| 50                  | 72                               | 81  | 89  | 97  | 104 | 111 | 117 | 123 | 128 | 133 | 137 | 141 | 144 | 147 | 149 | 151 | 152 |     |     |     |     |  |
| 60                  | 81                               | 89  | 97  | 104 | 111 | 117 | 123 | 128 | 133 | 137 | 141 | 144 | 147 | 149 | 151 | 152 |     |     |     |     |     |  |
| 70                  | 89                               | 97  | 104 | 111 | 117 | 123 | 128 | 133 | 137 | 141 | 144 | 147 | 149 | 151 | 152 |     |     |     |     |     |     |  |
| 80                  | 97                               | 104 | 111 | 117 | 123 | 128 | 133 | 137 | 141 | 144 | 147 | 149 | 151 | 152 |     |     |     |     |     |     |     |  |
| 90                  | 104                              | 111 | 117 | 123 | 128 | 133 | 137 | 141 | 144 | 147 | 149 | 151 | 152 |     |     |     |     |     |     |     |     |  |
| 100                 | 111                              | 117 | 123 | 128 | 133 | 137 | 141 | 144 | 147 | 149 | 151 | 152 |     |     |     |     |     |     |     |     |     |  |
| 110                 | 117                              | 123 | 128 | 133 | 137 | 141 | 144 | 147 | 149 | 151 | 152 |     |     |     |     |     |     |     |     |     |     |  |
| 120                 | 123                              | 128 | 133 | 137 | 141 | 144 | 147 | 149 | 151 | 152 |     |     |     |     |     |     |     |     |     |     |     |  |
| 130                 | 128                              | 133 | 137 | 141 | 144 | 147 | 149 | 151 | 152 |     |     |     |     |     |     |     |     |     |     |     |     |  |
| 140                 | 133                              | 137 | 141 | 144 | 147 | 149 | 151 | 152 |     |     |     |     |     |     |     |     |     |     |     |     |     |  |
| 150                 | 137                              | 141 | 144 | 147 | 149 | 151 | 152 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |  |

**Table A 5. Irrigated CPS wheat yield response to nitrogen fertilizer under optimum irrigation management. Crop yield is in bu/ac and is based on the assumption that 40 lb N/ac will be mineralized and available for crop uptake in the growing season.**

| Soil Test N (lb/ac) | Fertilizer Nitrogen Rate (lb/ac) |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|---------------------|----------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
|                     | 0                                | 10  | 20  | 30  | 40  | 50  | 60  | 70  | 80  | 90  | 100 | 110 | 120 | 130 | 140 | 150 | 160 | 170 | 180 | 190 | 200 |
| 0-24"               | 28                               | 39  | 49  | 59  | 68  | 77  | 85  | 93  | 100 | 107 | 113 | 119 | 124 | 129 | 133 | 137 | 140 | 143 | 145 | 147 | 148 |
| 10                  | 39                               | 49  | 59  | 68  | 77  | 85  | 93  | 100 | 107 | 113 | 119 | 124 | 129 | 133 | 137 | 140 | 143 | 145 | 147 | 148 |     |
| 20                  | 49                               | 59  | 68  | 77  | 85  | 93  | 100 | 107 | 113 | 119 | 124 | 129 | 133 | 137 | 140 | 143 | 145 | 147 | 148 |     |     |
| 30                  | 59                               | 68  | 77  | 85  | 93  | 100 | 107 | 113 | 119 | 124 | 129 | 133 | 137 | 140 | 143 | 145 | 147 | 148 |     |     |     |
| 40                  | 68                               | 77  | 85  | 93  | 100 | 107 | 113 | 119 | 124 | 129 | 133 | 137 | 140 | 143 | 145 | 147 | 148 |     |     |     |     |
| 50                  | 77                               | 85  | 93  | 100 | 107 | 113 | 119 | 124 | 129 | 133 | 137 | 140 | 143 | 145 | 147 | 148 |     |     |     |     |     |
| 60                  | 85                               | 93  | 100 | 107 | 113 | 119 | 124 | 129 | 133 | 137 | 140 | 143 | 145 | 147 | 148 |     |     |     |     |     |     |
| 70                  | 93                               | 100 | 107 | 113 | 119 | 124 | 129 | 133 | 137 | 140 | 143 | 145 | 147 | 148 |     |     |     |     |     |     |     |
| 80                  | 100                              | 107 | 113 | 119 | 124 | 129 | 133 | 137 | 140 | 143 | 145 | 147 | 148 |     |     |     |     |     |     |     |     |
| 90                  | 107                              | 113 | 119 | 124 | 129 | 133 | 137 | 140 | 143 | 145 | 147 | 148 |     |     |     |     |     |     |     |     |     |
| 100                 | 113                              | 119 | 124 | 129 | 133 | 137 | 140 | 143 | 145 | 147 | 148 |     |     |     |     |     |     |     |     |     |     |
| 110                 | 119                              | 124 | 129 | 133 | 137 | 140 | 143 | 145 | 147 | 148 |     |     |     |     |     |     |     |     |     |     |     |
| 120                 | 124                              | 129 | 133 | 137 | 140 | 143 | 145 | 147 | 148 |     |     |     |     |     |     |     |     |     |     |     |     |
| 130                 | 129                              | 133 | 137 | 140 | 143 | 145 | 147 | 148 |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 140                 | 133                              | 137 | 140 | 143 | 145 | 147 | 148 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 150                 |                                  |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |

**Table A 6. Irrigated durum wheat yield response to nitrogen fertilizer under optimum irrigation management. Crop yield is in bu/ac and is based on the assumption that 40 lb N/ac will be mineralized and available for crop uptake in the growing season.**

| Soil Test N (lb/ac) | Fertilizer Nitrogen Rate (lb/ac) |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|---------------------|----------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
|                     | 0                                | 10  | 20  | 30  | 40  | 50  | 60  | 70  | 80  | 90  | 100 | 110 | 120 | 130 | 140 | 150 | 160 | 170 | 180 | 190 | 200 |
| 0-24"               | 27                               | 38  | 48  | 58  | 67  | 76  | 84  | 91  | 98  | 104 | 110 | 115 | 120 | 124 | 128 | 131 | 134 | 136 | 138 | 139 | 140 |
| 10                  | 38                               | 48  | 58  | 67  | 76  | 84  | 91  | 98  | 104 | 110 | 115 | 120 | 124 | 128 | 131 | 134 | 136 | 138 | 139 | 140 |     |
| 20                  | 48                               | 58  | 67  | 76  | 84  | 91  | 98  | 104 | 110 | 115 | 120 | 124 | 128 | 131 | 134 | 136 | 138 | 139 | 140 |     |     |
| 30                  | 58                               | 67  | 76  | 84  | 91  | 98  | 104 | 110 | 115 | 120 | 124 | 128 | 131 | 134 | 136 | 138 | 139 | 140 |     |     |     |
| 40                  | 67                               | 76  | 84  | 91  | 98  | 104 | 110 | 115 | 120 | 124 | 128 | 131 | 134 | 136 | 138 | 139 | 140 |     |     |     |     |
| 50                  | 76                               | 84  | 91  | 98  | 104 | 110 | 115 | 120 | 124 | 128 | 131 | 134 | 136 | 138 | 139 | 140 |     |     |     |     |     |
| 60                  | 84                               | 91  | 98  | 104 | 110 | 115 | 120 | 124 | 128 | 131 | 134 | 136 | 138 | 139 | 140 |     |     |     |     |     |     |
| 70                  | 91                               | 98  | 104 | 110 | 115 | 120 | 124 | 128 | 131 | 134 | 136 | 138 | 139 | 140 |     |     |     |     |     |     |     |
| 80                  | 98                               | 104 | 110 | 115 | 120 | 124 | 128 | 131 | 134 | 136 | 138 | 139 | 140 |     |     |     |     |     |     |     |     |
| 90                  | 104                              | 110 | 115 | 120 | 124 | 128 | 131 | 134 | 136 | 138 | 139 | 140 |     |     |     |     |     |     |     |     |     |
| 100                 | 110                              | 115 | 120 | 124 | 128 | 131 | 134 | 136 | 138 | 139 | 140 |     |     |     |     |     |     |     |     |     |     |
| 110                 | 115                              | 120 | 124 | 128 | 131 | 134 | 136 | 138 | 139 | 140 |     |     |     |     |     |     |     |     |     |     |     |
| 120                 | 120                              | 124 | 128 | 131 | 134 | 136 | 138 | 139 | 140 |     |     |     |     |     |     |     |     |     |     |     |     |
| 130                 | 124                              | 128 | 131 | 134 | 136 | 138 | 139 | 140 |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 140                 | 128                              | 131 | 134 | 136 | 138 | 139 | 140 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 150                 |                                  |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |

**Table A 7. Irrigated hard red spring wheat yield response to nitrogen fertilizer under optimum irrigation management. Crop yield is in bu/ac and is based on the assumption that 40 lb N/ac will be mineralized and available for crop uptake in the growing season.**

| Soil Test N (lb/ac) | Fertilizer Nitrogen Rate (lb/ac) |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|---------------------|----------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
|                     | 0                                | 10  | 20  | 30  | 40  | 50  | 60  | 70  | 80  | 90  | 100 | 110 | 120 | 130 | 140 | 150 | 160 | 170 | 180 | 190 | 200 |
| 0-24"               | 0                                | 10  | 20  | 30  | 40  | 50  | 60  | 70  | 80  | 90  | 100 | 110 | 120 | 130 | 140 | 150 | 160 | 170 | 180 | 190 | 200 |
| 10                  | 25                               | 30  | 39  | 48  | 56  | 64  | 71  | 78  | 84  | 90  | 95  | 100 | 104 | 108 | 111 | 114 | 116 | 118 | 119 | 120 | 121 |
| 20                  | 30                               | 39  | 48  | 56  | 64  | 71  | 78  | 84  | 90  | 95  | 100 | 104 | 108 | 111 | 114 | 116 | 118 | 119 | 120 | 121 |     |
| 30                  | 39                               | 48  | 56  | 64  | 71  | 78  | 84  | 90  | 95  | 100 | 104 | 108 | 111 | 114 | 116 | 118 | 119 | 120 | 121 |     |     |
| 40                  | 48                               | 56  | 64  | 71  | 78  | 84  | 90  | 95  | 100 | 104 | 108 | 111 | 114 | 116 | 118 | 119 | 120 | 121 |     |     |     |
| 50                  | 56                               | 64  | 71  | 78  | 84  | 90  | 95  | 100 | 104 | 108 | 111 | 114 | 116 | 118 | 119 | 120 | 121 |     |     |     |     |
| 60                  | 64                               | 71  | 78  | 84  | 90  | 95  | 100 | 104 | 108 | 111 | 114 | 116 | 118 | 119 | 120 | 121 |     |     |     |     |     |
| 70                  | 71                               | 78  | 84  | 90  | 95  | 100 | 104 | 108 | 111 | 114 | 116 | 118 | 119 | 120 | 121 |     |     |     |     |     |     |
| 80                  | 78                               | 84  | 90  | 95  | 100 | 104 | 108 | 111 | 114 | 116 | 118 | 119 | 120 | 121 |     |     |     |     |     |     |     |
| 90                  | 84                               | 90  | 95  | 100 | 104 | 108 | 111 | 114 | 116 | 118 | 119 | 120 | 121 |     |     |     |     |     |     |     |     |
| 100                 | 90                               | 95  | 100 | 104 | 108 | 111 | 114 | 116 | 118 | 119 | 120 | 121 |     |     |     |     |     |     |     |     |     |
| 110                 | 95                               | 100 | 104 | 108 | 111 | 114 | 116 | 118 | 119 | 120 | 121 |     |     |     |     |     |     |     |     |     |     |
| 120                 | 100                              | 104 | 108 | 111 | 114 | 116 | 118 | 119 | 120 | 121 |     |     |     |     |     |     |     |     |     |     |     |
| 130                 | 104                              | 108 | 111 | 114 | 116 | 118 | 119 | 120 | 121 |     |     |     |     |     |     |     |     |     |     |     |     |
| 140                 | 108                              | 111 | 114 | 116 | 118 | 119 | 120 | 121 |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 150                 | 111                              | 114 | 116 | 118 | 119 | 120 | 121 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |

**Table A 8. Irrigated triticale yield response to nitrogen fertilizer under optimum irrigation management. Crop yield is in bu/ac and is based on the assumption that 40 lb N/ac will be mineralized and available for crop uptake in the growing season.**

| Soil Test N (lb/ac) | Fertilizer Nitrogen Rate (lb/ac) |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|---------------------|----------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
|                     | 0                                | 10  | 20  | 30  | 40  | 50  | 60  | 70  | 80  | 90  | 100 | 110 | 120 | 130 | 140 | 150 | 160 | 170 | 180 | 190 | 200 |
| 0-24"               | 0                                | 10  | 20  | 30  | 40  | 50  | 60  | 70  | 80  | 90  | 100 | 110 | 120 | 130 | 140 | 150 | 160 | 170 | 180 | 190 | 200 |
| 10                  | 34                               | 47  | 59  | 70  | 80  | 90  | 99  | 107 | 115 | 122 | 128 | 134 | 139 | 144 | 148 | 152 | 155 | 158 | 160 | 162 | 163 |
| 20                  | 47                               | 59  | 70  | 80  | 90  | 99  | 107 | 115 | 122 | 128 | 134 | 139 | 144 | 148 | 152 | 155 | 158 | 160 | 162 | 163 |     |
| 30                  | 59                               | 70  | 80  | 90  | 99  | 107 | 115 | 122 | 128 | 134 | 139 | 144 | 148 | 152 | 155 | 158 | 160 | 162 | 163 |     |     |
| 40                  | 70                               | 80  | 90  | 99  | 107 | 115 | 122 | 128 | 134 | 139 | 144 | 148 | 152 | 155 | 158 | 160 | 162 | 163 |     |     |     |
| 50                  | 80                               | 90  | 99  | 107 | 115 | 122 | 128 | 134 | 139 | 144 | 148 | 152 | 155 | 158 | 160 | 162 | 163 |     |     |     |     |
| 60                  | 90                               | 99  | 107 | 115 | 122 | 128 | 134 | 139 | 144 | 148 | 152 | 155 | 158 | 160 | 162 | 163 |     |     |     |     |     |
| 70                  | 99                               | 107 | 115 | 122 | 128 | 134 | 139 | 144 | 148 | 152 | 155 | 158 | 160 | 162 | 163 |     |     |     |     |     |     |
| 80                  | 107                              | 115 | 122 | 128 | 134 | 139 | 144 | 148 | 152 | 155 | 158 | 160 | 162 | 163 |     |     |     |     |     |     |     |
| 90                  | 115                              | 122 | 128 | 134 | 139 | 144 | 148 | 152 | 155 | 158 | 160 | 162 | 163 |     |     |     |     |     |     |     |     |
| 100                 | 122                              | 128 | 134 | 139 | 144 | 148 | 152 | 155 | 158 | 160 | 162 | 163 |     |     |     |     |     |     |     |     |     |
| 110                 | 128                              | 134 | 139 | 144 | 148 | 152 | 155 | 158 | 160 | 162 | 163 |     |     |     |     |     |     |     |     |     |     |
| 120                 | 134                              | 139 | 144 | 148 | 152 | 155 | 158 | 160 | 162 | 163 |     |     |     |     |     |     |     |     |     |     |     |
| 130                 | 139                              | 144 | 148 | 152 | 155 | 158 | 160 | 162 | 163 |     |     |     |     |     |     |     |     |     |     |     |     |
| 140                 | 144                              | 148 | 152 | 155 | 158 | 160 | 162 | 163 |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 150                 | 148                              | 152 | 155 | 158 | 160 | 162 | 163 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |

**Table A 9. Irrigated triticale silage yield response to nitrogen fertilizer under optimum irrigation management. Crop yield is in tons/ac (dry weigh basis) and is based on the assumption that 40 lb N/ac will be mineralized and available for crop uptake in the growing season.**

| Soil Test N (lb/ac) | Fertilizer Nitrogen Rate (lb/ac) |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |  |
|---------------------|----------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|
|                     | 0                                | 10  | 20  | 30  | 40  | 50  | 60  | 70  | 80  | 90  | 100 | 110 | 120 | 130 | 140 | 150 | 160 | 170 | 180 | 190 | 200 |  |
| 0-24"               | 0                                | 10  | 20  | 30  | 40  | 50  | 60  | 70  | 80  | 90  | 100 | 110 | 120 | 130 | 140 | 150 | 160 | 170 | 180 | 190 | 200 |  |
| 10                  | 2.2                              | 2.9 | 3.6 | 4.3 | 4.9 | 5.5 | 6.0 | 6.5 | 6.9 | 7.3 | 7.6 | 7.9 | 8.1 | 8.3 | 8.5 | 8.6 | 8.7 | 8.8 |     |     |     |  |
| 20                  | 2.9                              | 3.6 | 4.3 | 4.9 | 5.5 | 6.0 | 6.5 | 6.9 | 7.3 | 7.6 | 7.9 | 8.1 | 8.3 | 8.5 | 8.6 | 8.7 | 8.8 |     |     |     |     |  |
| 30                  | 3.6                              | 4.3 | 4.9 | 5.5 | 6.0 | 6.5 | 6.9 | 7.3 | 7.6 | 7.9 | 8.1 | 8.3 | 8.5 | 8.6 | 8.7 | 8.8 |     |     |     |     |     |  |
| 40                  | 4.3                              | 4.9 | 5.5 | 6.0 | 6.5 | 6.9 | 7.3 | 7.6 | 7.9 | 8.1 | 8.3 | 8.5 | 8.6 | 8.7 | 8.8 |     |     |     |     |     |     |  |
| 50                  | 4.9                              | 5.5 | 6.0 | 6.5 | 6.9 | 7.3 | 7.6 | 7.9 | 8.1 | 8.3 | 8.5 | 8.6 | 8.7 | 8.8 |     |     |     |     |     |     |     |  |
| 60                  | 5.5                              | 6.0 | 6.5 | 6.9 | 7.3 | 7.6 | 7.9 | 8.1 | 8.3 | 8.5 | 8.6 | 8.7 | 8.8 |     |     |     |     |     |     |     |     |  |
| 70                  | 6.0                              | 6.5 | 6.9 | 7.3 | 7.6 | 7.9 | 8.1 | 8.3 | 8.5 | 8.6 | 8.7 | 8.8 |     |     |     |     |     |     |     |     |     |  |
| 80                  | 6.5                              | 6.9 | 7.3 | 7.6 | 7.9 | 8.1 | 8.3 | 8.5 | 8.6 | 8.7 | 8.8 |     |     |     |     |     |     |     |     |     |     |  |
| 90                  | 6.9                              | 7.3 | 7.6 | 7.9 | 8.1 | 8.3 | 8.5 | 8.6 | 8.7 | 8.8 |     |     |     |     |     |     |     |     |     |     |     |  |
| 100                 | 7.3                              | 7.6 | 7.9 | 8.1 | 8.3 | 8.5 | 8.6 | 8.7 | 8.8 |     |     |     |     |     |     |     |     |     |     |     |     |  |
| 110                 | 7.6                              | 7.9 | 8.1 | 8.3 | 8.5 | 8.6 | 8.7 | 8.8 |     |     |     |     |     |     |     |     |     |     |     |     |     |  |
| 120                 | 7.9                              | 8.1 | 8.3 | 8.5 | 8.6 | 8.7 | 8.8 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |  |
| 130                 | 8.1                              | 8.3 | 8.5 | 8.6 | 8.7 | 8.8 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |  |
| 140                 | 8.3                              | 8.5 | 8.6 | 8.7 | 8.8 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |  |
| 150                 | 8.5                              | 8.6 | 8.7 | 8.8 |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |  |

**Table A 10. Irrigated canola yield response to nitrogen fertilizer under optimum irrigation management. Crop yield is in bu/ac and is based on the assumption that 40 lb N/ac will be mineralized and available for crop uptake in the growing season.**

| Soil Test N (lb/ac) | Fertilizer Nitrogen Rate (lb/ac) |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |  |
|---------------------|----------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-----|--|
|                     | 0                                | 10   | 20   | 30   | 40   | 50   | 60   | 70   | 80   | 90   | 100  | 110  | 120  | 130  | 140  | 150  | 160  | 170  | 180  | 190  | 200 |  |
| 0-24"               | 0                                | 10   | 20   | 30   | 40   | 50   | 60   | 70   | 80   | 90   | 100  | 110  | 120  | 130  | 140  | 150  | 160  | 170  | 180  | 190  | 200 |  |
| 10                  | 20                               | 26   | 32   | 37.5 | 43   | 48   | 53   | 57.5 | 62   | 66   | 70   | 73.5 | 77   | 79   | 81   | 83.5 | 86   | 88   | 90   | 91.5 | 93  |  |
| 20                  | 26                               | 32   | 37.5 | 43   | 48   | 53   | 57.5 | 62   | 66   | 70   | 73.5 | 77   | 79   | 81   | 83.5 | 86   | 88   | 90   | 91.5 | 93   |     |  |
| 30                  | 32                               | 37.5 | 43   | 48   | 53   | 57.5 | 62   | 66   | 70   | 73.5 | 77   | 79   | 81   | 83.5 | 86   | 88   | 90   | 91.5 | 93   |      |     |  |
| 40                  | 37.5                             | 43   | 48   | 53   | 57.5 | 62   | 66   | 70   | 73.5 | 77   | 79   | 81   | 83.5 | 86   | 88   | 90   | 91.5 | 93   |      |      |     |  |
| 50                  | 43                               | 48   | 53   | 57.5 | 62   | 66   | 70   | 73.5 | 77   | 79   | 81   | 83.5 | 86   | 88   | 90   | 91.5 | 93   |      |      |      |     |  |
| 60                  | 48                               | 53   | 57.5 | 62   | 66   | 70   | 73.5 | 77   | 79   | 81   | 83.5 | 86   | 88   | 90   | 91.5 | 93   |      |      |      |      |     |  |
| 70                  | 53                               | 57.5 | 62   | 66   | 70   | 73.5 | 77   | 79   | 81   | 83.5 | 86   | 88   | 90   | 91.5 | 93   |      |      |      |      |      |     |  |
| 80                  | 57.5                             | 62   | 66   | 70   | 73.5 | 77   | 79   | 81   | 83.5 | 86   | 88   | 90   | 91.5 | 93   |      |      |      |      |      |      |     |  |
| 90                  | 62                               | 66   | 70   | 73.5 | 77   | 79   | 81   | 83.5 | 86   | 88   | 90   | 91.5 | 93   |      |      |      |      |      |      |      |     |  |
| 100                 | 66                               | 70   | 73.5 | 77   | 79   | 81   | 83.5 | 86   | 88   | 90   | 91.5 | 93   |      |      |      |      |      |      |      |      |     |  |
| 110                 | 70                               | 73.5 | 77   | 79   | 81   | 83.5 | 86   | 88   | 90   | 91.5 | 93   |      |      |      |      |      |      |      |      |      |     |  |
| 120                 | 73.5                             | 77   | 79   | 81   | 83.5 | 86   | 88   | 90   | 91.5 | 93   |      |      |      |      |      |      |      |      |      |      |     |  |
| 130                 | 77                               | 79   | 81   | 83.5 | 86   | 88   | 90   | 91.5 | 93   |      |      |      |      |      |      |      |      |      |      |      |     |  |
| 140                 | 79                               | 81   | 83.5 | 86   | 88   | 90   | 91.5 | 93   |      |      |      |      |      |      |      |      |      |      |      |      |     |  |
| 150                 | 81                               | 83.5 | 86   | 88   | 90   | 91.5 | 93   |      |      |      |      |      |      |      |      |      |      |      |      |      |     |  |

**Table A 11. Irrigated flax yield response to nitrogen fertilizer under optimum irrigation management. Crop yield is in bu/ac and is based on the assumption that 40 lb N/ac will be mineralized and available for crop uptake in the growing season.**

| Soil Test N (lb/ac) | Fertilizer Nitrogen Rate (lb/ac) |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |  |
|---------------------|----------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-----|--|
|                     | 0                                | 10   | 20   | 30   | 40   | 50   | 60   | 70   | 80   | 90   | 100  | 110  | 120  | 130  | 140  | 150  | 160  | 170  | 180  | 190  | 200 |  |
| 0-24"               | 16                               | 21   | 26   | 30.5 | 35   | 39   | 43   | 46.5 | 50   | 53   | 56   | 58.5 | 61   | 63   | 65   | 66.5 | 68   | 69   | 70   | 70.5 | 71  |  |
| 10                  | 21                               | 26   | 30.5 | 35   | 39   | 43   | 46.5 | 50   | 53   | 56   | 58.5 | 61   | 63   | 65   | 66.5 | 68   | 69   | 70   | 70.5 | 71   |     |  |
| 20                  | 26                               | 30.5 | 35   | 39   | 43   | 46.5 | 50   | 53   | 56   | 58.5 | 61   | 63   | 65   | 66.5 | 68   | 69   | 70   | 70.5 | 71   |      |     |  |
| 30                  | 30.5                             | 35   | 39   | 43   | 46.5 | 50   | 53   | 56   | 58.5 | 61   | 63   | 65   | 66.5 | 68   | 69   | 70   | 70.5 | 71   |      |      |     |  |
| 40                  | 35                               | 39   | 43   | 46.5 | 50   | 53   | 56   | 58.5 | 61   | 63   | 65   | 66.5 | 68   | 69   | 70   | 70.5 | 71   |      |      |      |     |  |
| 50                  | 39                               | 43   | 46.5 | 50   | 53   | 56   | 58.5 | 61   | 63   | 65   | 66.5 | 68   | 69   | 70   | 70.5 | 71   |      |      |      |      |     |  |
| 60                  | 43                               | 46.5 | 50   | 53   | 56   | 58.5 | 61   | 63   | 65   | 66.5 | 68   | 69   | 70   | 70.5 | 71   |      |      |      |      |      |     |  |
| 70                  | 46.5                             | 50   | 53   | 56   | 58.5 | 61   | 63   | 65   | 66.5 | 68   | 69   | 70   | 70.5 | 71   |      |      |      |      |      |      |     |  |
| 80                  | 50                               | 53   | 56   | 58.5 | 61   | 63   | 65   | 66.5 | 68   | 69   | 70   | 70.5 | 71   |      |      |      |      |      |      |      |     |  |
| 90                  | 53                               | 56   | 58.5 | 61   | 63   | 65   | 66.5 | 68   | 69   | 70   | 70.5 | 71   |      |      |      |      |      |      |      |      |     |  |
| 100                 | 56                               | 58.5 | 61   | 63   | 65   | 66.5 | 68   | 69   | 70   | 70.5 | 71   |      |      |      |      |      |      |      |      |      |     |  |
| 110                 | 58.5                             | 61   | 63   | 65   | 66.5 | 68   | 69   | 70   | 70.5 | 71   |      |      |      |      |      |      |      |      |      |      |     |  |
| 120                 | 61                               | 63   | 65   | 66.5 | 68   | 69   | 70   | 70.5 | 71   |      |      |      |      |      |      |      |      |      |      |      |     |  |
| 130                 | 63                               | 65   | 66.5 | 68   | 69   | 70   | 70.5 | 71   |      |      |      |      |      |      |      |      |      |      |      |      |     |  |
| 140                 | 65                               | 66.5 | 68   | 69   | 70   | 70.5 | 71   |      |      |      |      |      |      |      |      |      |      |      |      |      |     |  |
| 150                 |                                  |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |     |  |