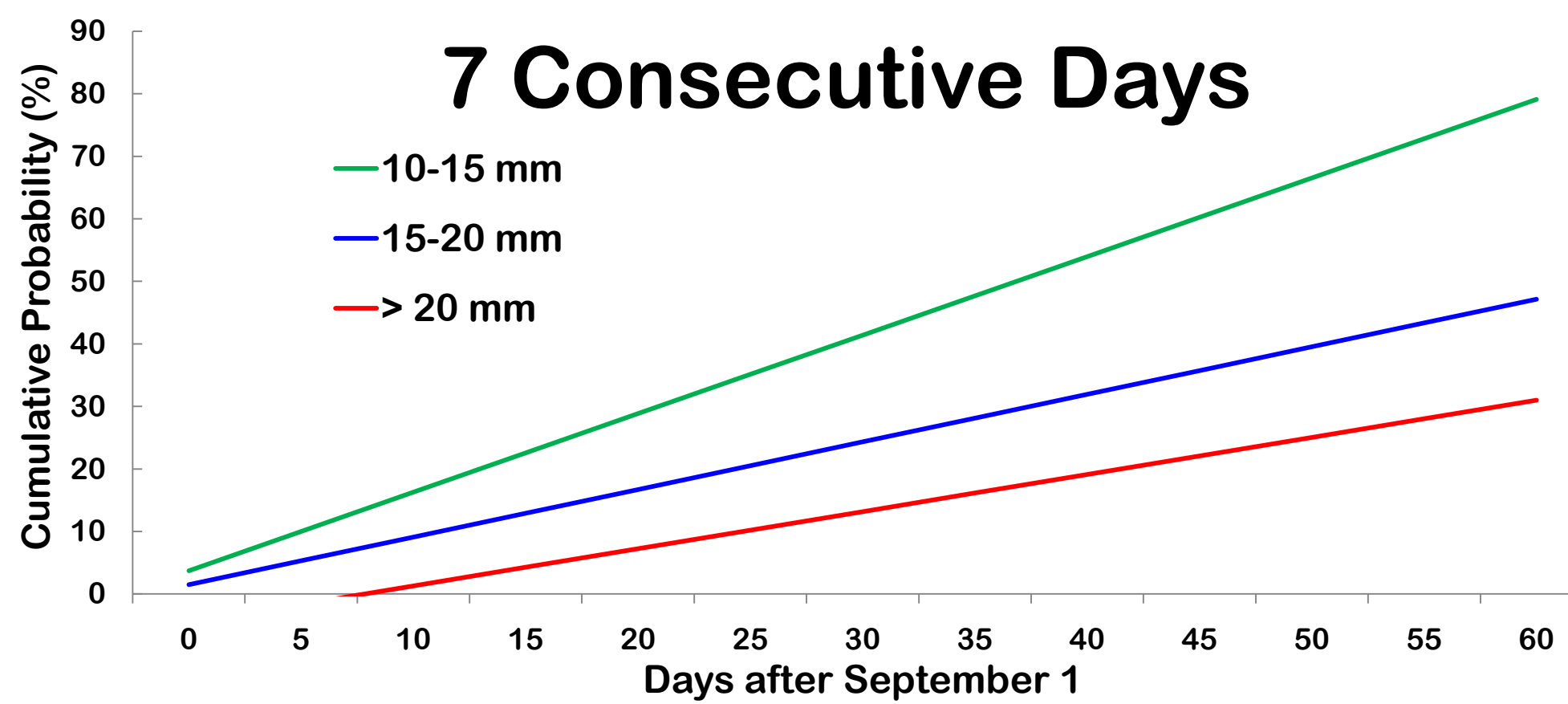
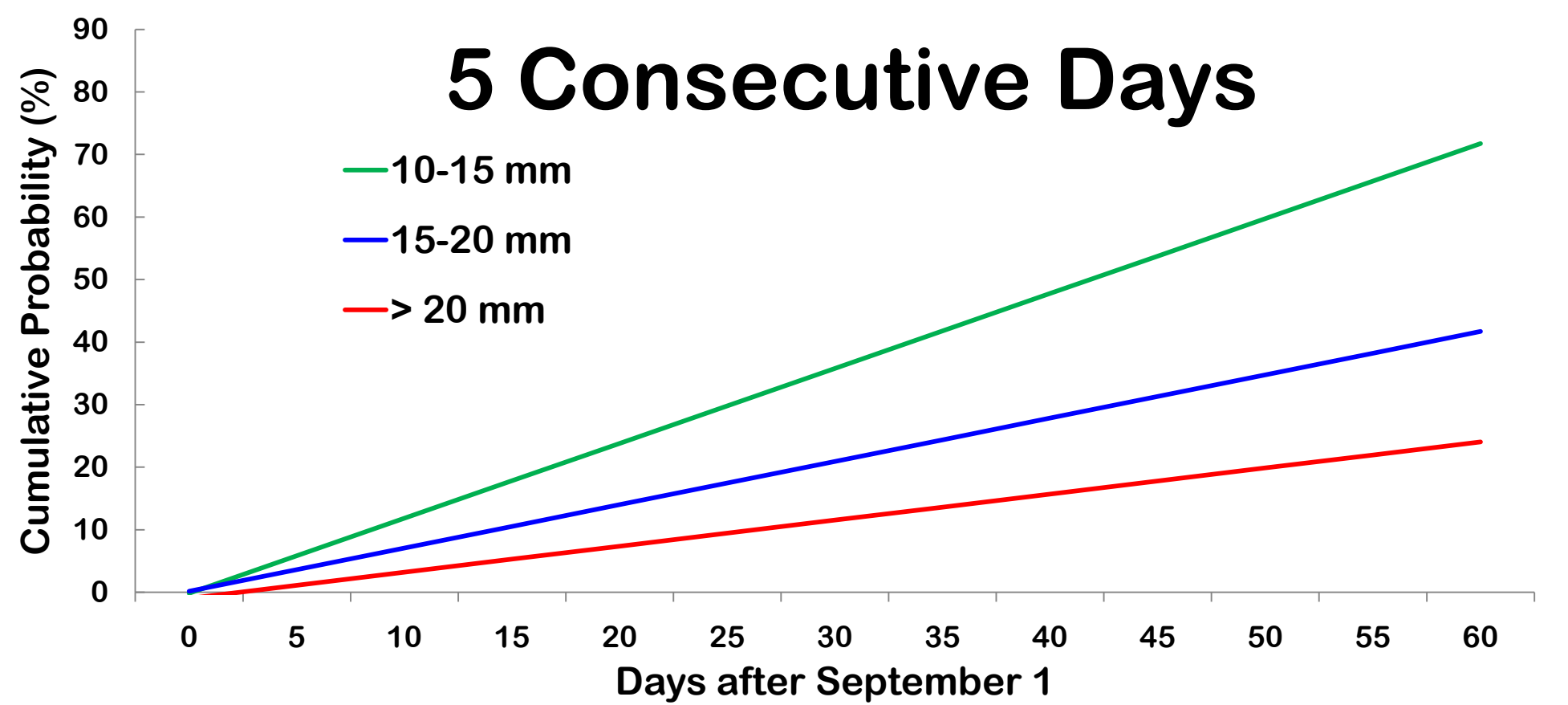
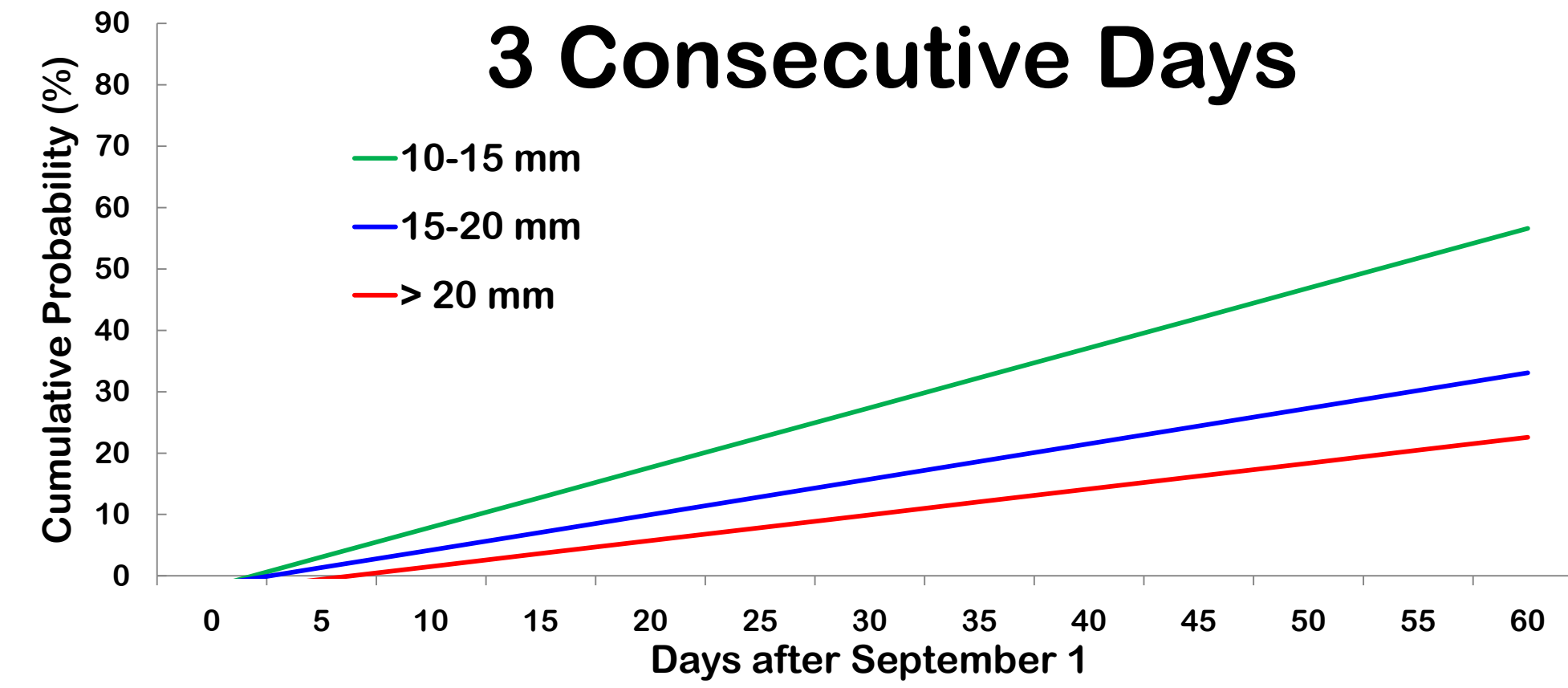


Probability of Rain in September and October at Pendleton and Moro, OR

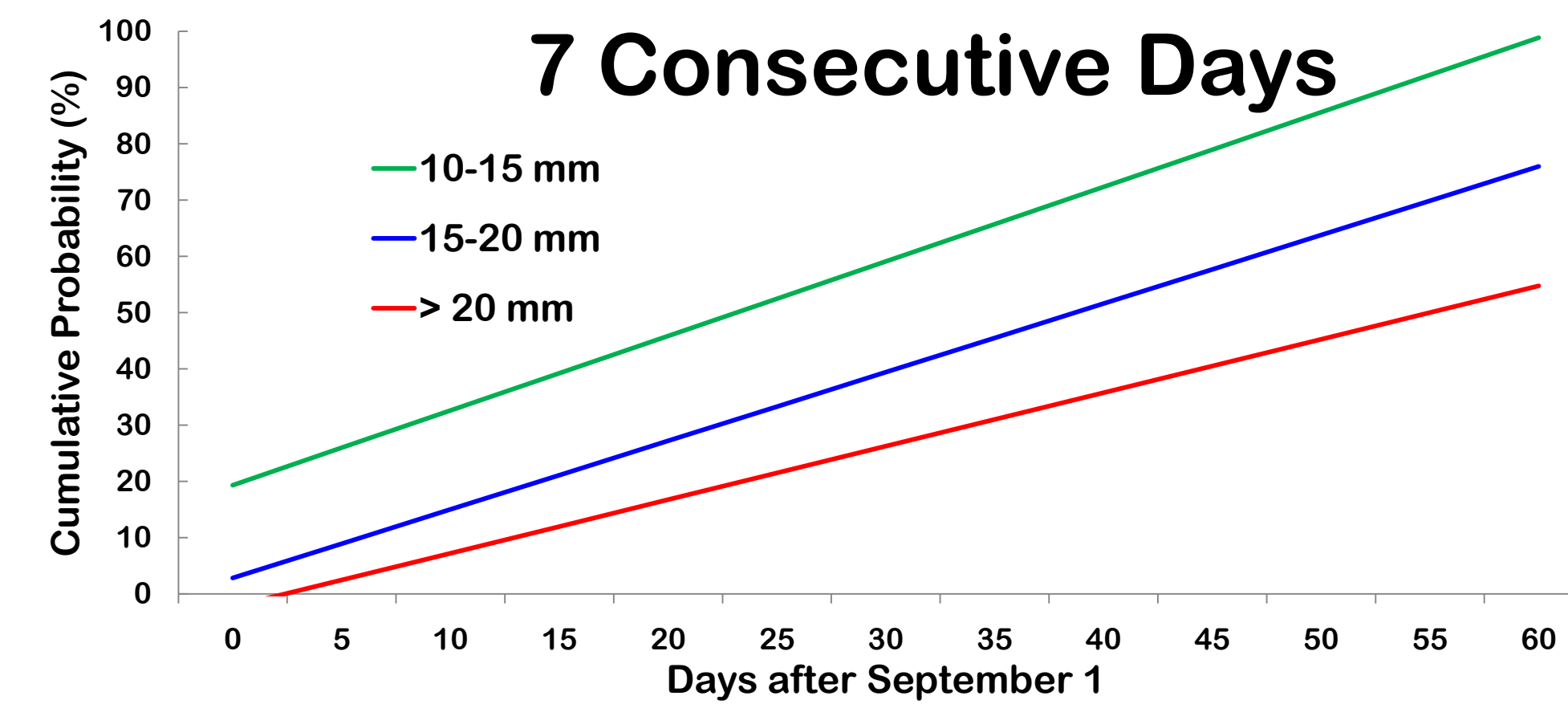
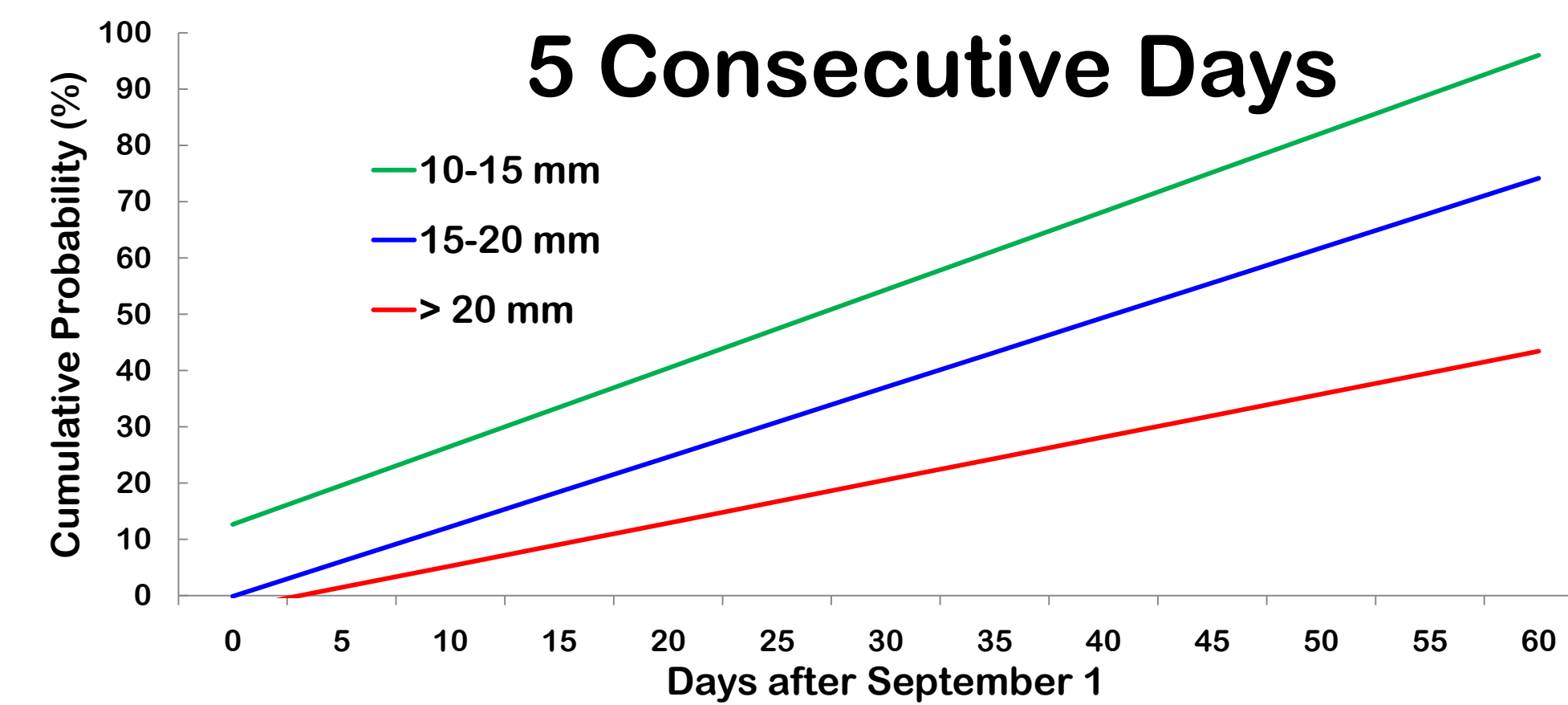
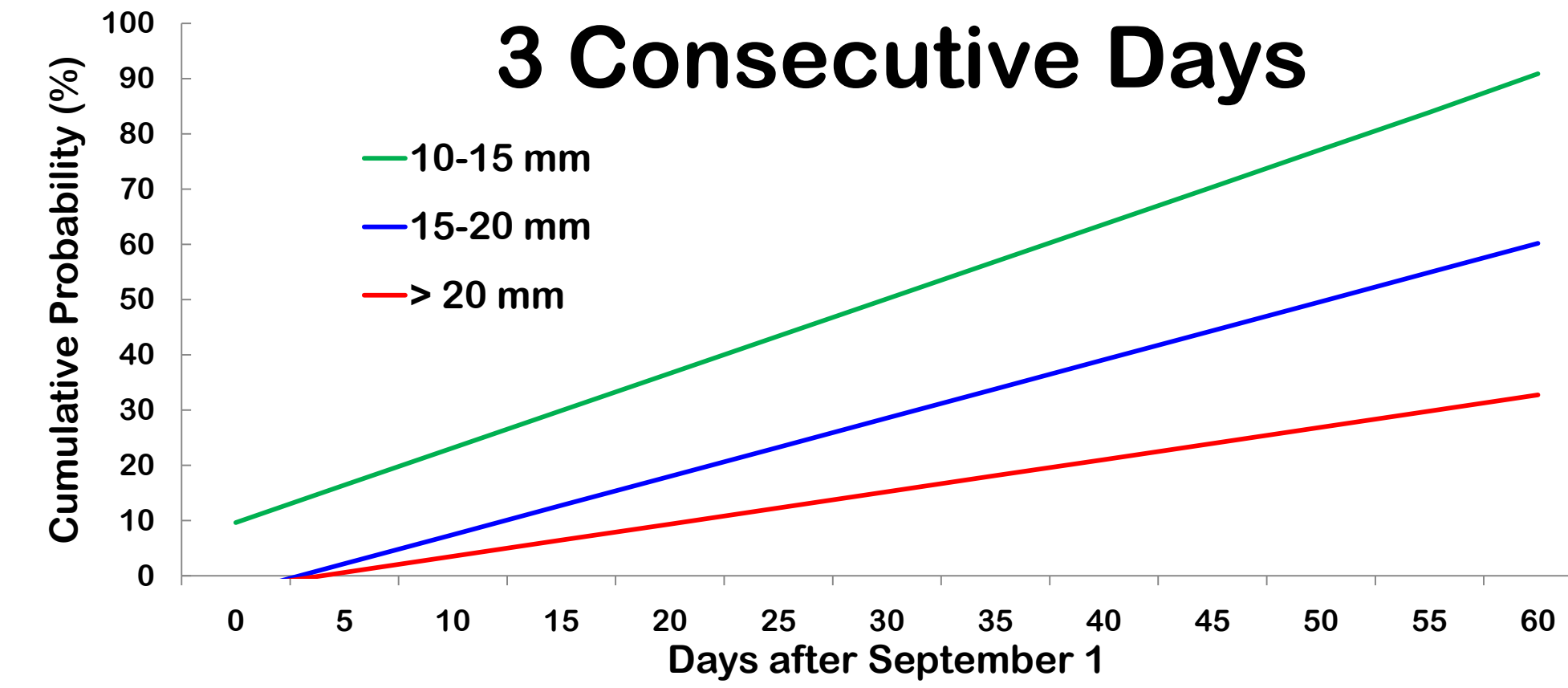
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Abstract

Successful seeding of winter wheat and other crops requires sufficient moisture in the seed zone to foster rapid germination and emergence. The objective of this work was to estimate the likelihood of receiving sufficient rainfall to bring about consistent germination in the low (<300 mm) and intermediate (300-450 mm) rainfall zones of eastern Oregon. We searched the weather records for crop years 1929 to 2005 inclusive for the Pendleton (430 mm annual ppt) and weather records from 1929 to 2008 for the Sherman (280 mm annual ppt) Stations of the Columbia Basin Agricultural Research Center to determine the likelihood of receiving 10-15, 15-20, and >20 mm of rainfall within 3, 5, or 7 days in September and October. Conditions at the Sherman Station in September were infrequently optimum for seeding; there was >20 mm of rain within 3 days in only 7 of 80 years. There were only 8 of 80 years when >20 mm of rainfall fell within 7 days. We found only 34 years out of 80 in which 10-15 mm of rainfall occurred within 5 days, the minimum we determined to be adequate to promote germination. Conditions for seeding in September at Pendleton were only slightly better than at the Sherman Station; >20 mm was received within 3 days in 9 of 77 years and within 7 days in only 17 of 77 years. We found 47 years of 77 in which 10-15 mm of rainfall occurred within 7 days. We used the information to develop graphs showing the cumulative probability of receiving 10-15, 15-20, and >20 mm of rain in 3, 5, or 7 days for any date in September and October. For example, there is 5 percent chance of receiving 20 mm of rain within 3 days by September 20th at the Sherman Station



Sherman Station near Moro, OR



Pendleton Station near Pendleton, OR

Table 1. Selected precipitation data from the Sherman and Pendleton Stations.

| Parameter | Location | |
|---------------------------------|-------------|---------------|
| | Sherman Stn | Pendleton Stn |
| Period | 1929-2008 | 1929-2005 |
| # of days | 4,819 | 4,636 |
| # of days with measurable ppt | 854 | 958 |
| % of days with measureable ppt | 17.7 | 20.7 |
| # of days with > 12.7 mm of ppt | 39 | 61 |
| % of days with >12.7 mm of ppt | 0.8 | 1.3 |

Summary and Conclusions

Fall precipitation patterns in the low (300 mm) and intermediate (300-450 mm) annual precipitation zones drive seeding practices. Deep furrow drills are used to place seed into moisture as fall rain is usually insufficient to permit timely seeding. Crops that cannot emerge from deep seeding are unlikely to be successful in these areas.