What Concentration is the best?

Why was calcium chloride sold as a 35% solution?

Only one reason; because it was cheaper to transport a high concentration, not better!!!

How do you determine the best concentration for my road?

The final % concentration of calcium chloride solution in water is determined by Mother Nature dependent on the relative humidity. (Source: Allied Chemical, Calcium Chloride: Technical and Engineering Service Bulletin No. 16)

Relative Humidity (RH)	Final % $CaCl_2$
95	8.5
90	14.2
85	18.3
80	22.0
75	25.0
70	27.5

It does not matter what the initial concentration of the calcium chloride brine was. Calcium chloride is very **hygroscopic** meaning it will absorb water from the environment. Conversely, calcium chloride will also give up water, both dependent on the relative humidity.

What are the Relative Humidity's for Ontario?

Calculated are the 30 year average morning relative humidity's averaged from select areas of Ontario; Windsor, Toronto, Kingston, Sudbury, and Ottawa. (Source: Environment Canada).

Dust Control Months	Average Morning RH%	Final % $CaCl_2$
May	75	24%
June	77	23%
July	80	21%
August	86	16%
September	88	13%
Average	81.2	19.4%

Whether you apply a 35% solution or a 20% solution, Mother Nature will adjust the concentration on the road dependent on the RH. The average morning concentration of the calcium chloride solution will range from 13% to 24% during the dust control months with an average concentration of 19.4%.

So, what is the best concentration?

It does not matter whether it is a 20% or 35%, they will both end up the same, just different application rate