A study was conducted to evaluate the effects of dietary total sulfur amino acids (TSAA) to lysine on performance of Ac layers. A total of 800 laying hens from 38 to 50 weeks of age was allocated according to a completely randomized design with five treatments and 20 replicates of 8 birds each. The basal diet contained 16% crude protein, 2755 kcal/kg ME, 0.482% Met, 0.925% TSAA (A) and 1.12% Lys. The TSAA: Lys ratio of A was 0.85. There were five diets used with lower and upper of A at 10 or 20% increments as followed: 0.762, 0.857, 0.952, 1.047 and 1.142% TSAA. Decreasing or increasing TSAA from 0.952% did not affect feed intake or egg production. However, further TSAA decreases from 0.857 to 0.762% led to reducing egg weight (P<0.01), which was increased with curvilinear trend as level of TSAA in the diets were increased. The TSAA did not influence nutrient digestibility, but affect on nitrogen retention in a quadratic trend, hens fed diets containing 0.952 and 1.047% TSAA deposited more nitrogen than the other treatments. Increasing dietary TSAA increased white and yolk index and Haugh unit, whereas egg shell thickness, yolk color and egg components were not influenced. The TSAA: Lys ratio of 0.85 improved egg weight and nitrogen retention of Ac layers.

Keywords: Ac layer, egg weight, lysine, egg production, nitrogen retention.