Index of 2026 Pain Points

Pests, Diseases & Weeds (Biotic Constraints)

1. Inability to identify and differentiate weed species early enough for effective control
2. Delayed or imprecise disease risk identification at critical crop growth stages
3. Inconsistent ability to differentiate high-risk versus low-risk disease situations
4. Limited visibility into below-ground and soil-borne pest and disease pressure
5. Difficulty timing pest and disease interventions within biologically optimal windows
6. Difficulty integrating multiple pest management inputs into timely, field-level decisions
7. Herbicide-resistant weeds across major cropping systems
8. Reduced effectiveness of chemical and biological control tools due to rapid resistance development
9. Spatial variability of insect pressure that limits reliable scouting and threshold-based management
10. Delayed early warning of emerging and migratory insect threats

Soil Health & Nutrient Efficiency

11. Difficulty predicting crop nutrient requirements and yield response under variable conditions
12. Inefficient nutrient use due to static application strategies misaligned with crop demand

13. Spatial variability in soil fertility and function limiting site-specific nutrient management

14. Degraded soil physical structure and compaction restricting root growth and nutrient uptake

15. Chemical soil constraints such as pH, salinity, and alkalinity limiting crop establishment and nutrient availability

16. Soil erosion and surface runoff reducing productive capacity and increasing nutrient loss risk

17. Lack of reliable frameworks to predict and validate biological input performance

Water Management & Weather Volatility

18. Increasingly narrow and unpredictable operational windows limiting timely field activities

19. Excess soil moisture and poor drainage restricting field access and crop performance

Labor & Operational Capacity

20. Limited availability of skilled labor during peak operational periods

21. Operational complexity of modern production systems limiting efficiency and scalability

22. Limited access to affordable, flexible, and autonomous equipment

Data Fragmentation & Digital Infrastructure

23. Information overload and inefficient scouting workflows limiting timely decision-making

24. Fragmented data systems preventing integration into actionable insights

25. Limited reliability of digital tools and connectivity during peak operational periods

Profitability & Sustainability Metrics

26. Uncertain and inconsistent return on investment for precision agriculture and advanced technologies

27. Difficulty capturing economic value from quality traits, identity preservation, and end-use performance

28. Limited ability to measure, verify, and compare sustainability and carbon outcomes

29. Limited scalability of traceability and market access systems within bulk commodity supply chains